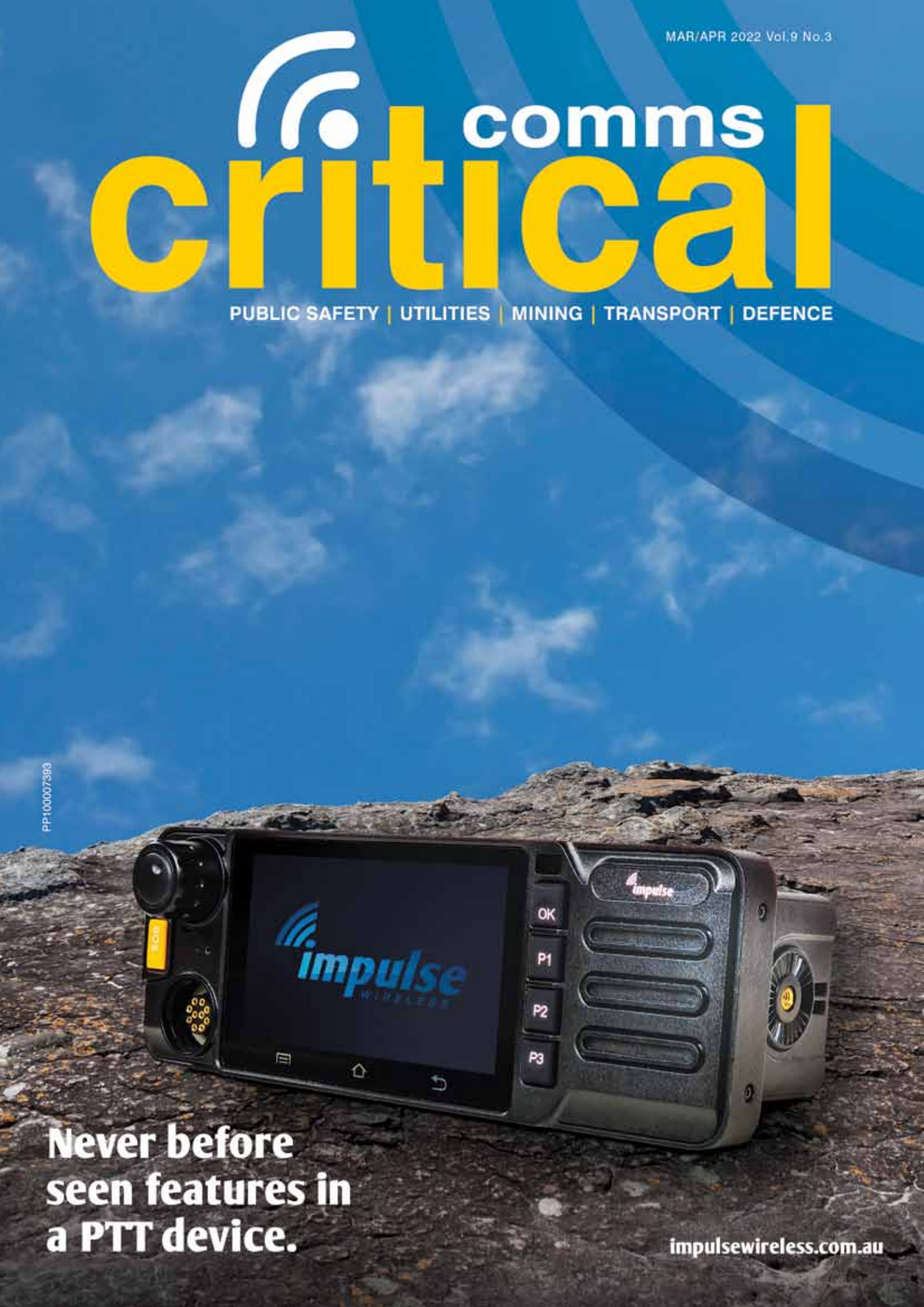
MAR/APR 2022 Vol.9 No.3

comms critical

PUBLIC SAFETY | UTILITIES | MINING | TRANSPORT | DEFENCE



The Power of Reliability

PLATINUM SERIES

NEXT GENERATION HIGH PERFORMANCE DC POWER SUPPLY NOW AVAILABLE WITH LITHIUM-ION BATTERY SUPPORT

High Performance and Enhanced Reliability with Standard TCP/IP Monitoring and Control and Advanced Battery Management Features

The all new Platinum Series from ICT provides an ideal DC power solution for wireless communications professionals who demand Intelligent, Ethernet-enabled high efficiency space-saving DC power supplies for Land Mobile Radio, broadband, and network communications equipment.

- 12, 24 or 48 volts with 800 or 1600 watts of output power in a 1RU rack mount chassis with 90 to 93% efficiency
- TCP/IP Ethernet is standard on every model and provides complete and easy-to-use remote monitoring and control of the power supply using its built-in web server
- Enhanced security and reliability features including SNMPv1/v2c/v3, TLS 1.2, conformal coating, and extra high margin components designed for long life and enhanced durability
- Remote communications maintained even when AC mains power fails
- Available battery backup and LVD with adjustable disconnect and reconnect voltage setpoints
  - Advanced battery management features include discharge testing, state of charge, and estimated battery run-time remaining reporting
  - Adjustable battery charge current limit

Powering Communications For
Emergency Services
Mining and Resources
Government
Fleet Operators
Transportation
Utilities

Available From
HELIOS POWER SOLUTIONS
www.heliosps.com.au
Email: sales@heliosps.com.au
Tel: (02) 7200 9200

comms critical

Inside

March/April 2022

READ ONLINE! *This issue is available to read and download at*
www.criticalcomms.com.au/magazine

ON THE COVER

The VM3 is much more than just another PTT/PoC radio. It has a range of features which have never before been seen in a PTT device.

Some new features, exclusive to IMPULSE Wireless, include: 1x digital input and 1x digital output, with expansion available for more; telephone-style handset available, or fist mic as standard; prioritised PTT call queuing and management system.

Digital inputs and outputs are used for ignition or PTO sense, telemetry, or integration with other onboard systems — CCTV, duress buttons, alarms, PA systems, and more.

A telephone-style handset, paired with the unique IMPULSE Wireless CallBank system, maximises dispatch efficiency. Its discreet communications are typically beneficial for operations such as passenger transport, where sensitive information must not be disclosed to passengers.

The CallBank system increases productivity for the radio dispatch operators and reduces communication bottlenecks. Drivers no longer receive a "busy" response when calling control. Instead, they enter a prioritised call queue, and may be responded to by the next available operator. Each operator may handle single or multiple regions, and multiple operators may handle multiple regions.

The CallBank overcomes another frustration of typical digital radio private calls, by allowing instant communications with other users such as supervisors or mechanics if further assistance is required.

The VM3 can reduce costs through intelligent GPS and integration with other onboard systems; and improves efficiency and safety with its smart and unique features.

IMPULSE Wireless
www.impulsewireless.com.au

Transmit

Just under my first year in the job as editor for this industry magazine and I managed to join in the industry sailing regatta day here in Sydney. Have not had the opportunity to attend a Comms Connect conference yet, but attended the next best thing: a day on the water.

Known as the 'Spurious Challenge' and organised by RFI Technology Solutions, it was definitely the case of always being a better day on the water, even in pouring rain, than a dry day in the office! Congrats to RFI and the Middle Harbour Yacht Club.

Coming from my editing background, in my mind 'spurious' means something that is not what it is purporting to be and, of course, this is much like what it refers to in radio casting. As a clever piece of word play, I am guessing it may also refer to the fact that, for a lot of the radio industry folk, sailors they are not. Any claims to the opposite can be seen as being spurious at best.

All of which means it was a wonderful way to get out of the office/home office and enjoy some fresh air and catch up with old acquaintances not seen for what seems like millennia. Sailing was merely the vehicle for doing so and added a bit of adventure to the day.

While it was all a bit of fun, from an industry point of view days like this are an important part of business nowadays and on so many levels; especially during these stressful times of epidemics controlling everyday lives. The opportunity to get out and reunite on a social level is a fantastic stop gap to any rise of mental stress that may be felt by staff.

There is the added bonus of having the opportunity to mix with what would normally be considered competitors in the business arena. This is also relevant as there will always be times when the industry will need to come together to either work on government regulations or to maybe join in mutual assistance to others in the industry that may seek coordinated support.

One of my previous jobs was as the editor for a refrigeration industry magazine during the 90s and 00s. It was through the whole period of the banning of CFC refrigerants to save the ozone layers at the earth's poles. The industry as a collective whole formed an amazing organisation and ensured this transition was sensible, logical, quick and inexpensive; instead of each going off in their own self-interest.

A delight to be involved in and report on.

That time may yet come to pass within this industry and it is days like the Spurious Challenge and Comms Connect where we can retain that sense of camaraderie and love of the industry as a whole that will stand us in good stead.

Phillip Ross, Editor

cc@wfmedia.com.au

Calendar

March

Bapco Conference and Exhibition
08–09 March 2022
Ricoh Arena, Coventry, UK
www.bapco-show.co.uk/

IWCE 2022
21–24 March 2022
Las Vegas Convention Center, USA
www.iwceexpo.com/

April

EENA Conference
27–29 April 2022
Palais des Congrès of Marseille Chanot, France
https://eena.org/

June

Fire and Climate Conference
06–10 June 2022
Pullman Melbourne, Albert Park
https://fireandclimateconference.com/melbourne

Comms Connect New Zealand 2022
22-23 June 2022
Te Pae Convention Centre, Christchurch
www.comms-connect.co.nz

July

Disaster & Emergency Management Conference
25–26 July 2022
Royal Pines Resort, Gold Coast
https://anzdmc.com.au

August

APCO 2022
7–10 August 2022
Anaheim Convention Centre
www.apco2022.org

October

Comms Connect Melbourne 2022
18–20 October 2022
Melbourne Convention & Exhibition Centre
melbourne.comms-connect.com.au

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

wfmedia connecting industry
40 CELEBRATING YEARS

Editor: Phillip Ross
cc@wfmedia.com.au

Publishing Director/MD: Geoff Hird

Art Director/Production Manager:
Julie Wright

Art/Production:
Colleen Sam, Krystyna Kappel

Circulation: Dianna Alberry
circulation@wfmedia.com.au

Copy Control: Mitchie Mullins
copy@wfmedia.com.au

Westwick-Farrow Media
A.B.N. 22 152 305 336
www.wfmedia.com.au

Advertising Sales

Tim Thompson Ph 0421 623 958
tthompson@wfmedia.com.au

Liz Wilson Ph 0403 528 558
lwilson@wfmedia.com.au

Caroline Oliveti Ph 0478 008 609
coliveti@wfmedia.com.au

Head Office
Unit 7, 6-8 Byfield Street, North Ryde
Locked Bag 2226, North Ryde BC NSW 1670
Ph: +61 2 9168 2500

Print Post Approved PP100007393
ISSN No. 2202-882X
Printed and bound by Blue Star Print

R&S®ESSENTIALS SPECIAL

TODAY'S SOLUTION FOR TOMORROW'S CHALLENGE

Save up to 55% on the T&M instruments
in most popular configurations.

UP TO **55 % OFF**
R&S ESSENTIALS

Order now through September 30, 2022 and visit
www.rohde-schwarz.com/complete-promotion

ROHDE&SCHWARZ
Make ideas real

YEAR OF 5G
MINISTER FOR COMMUNICATIONS DELIVERS HIS YEAR IN REVIEW

Hon. Paul Fletcher MP, Minister for Communications, Urban Infrastructure, Cities and the Arts

©stock.adobe.com/au/gorodenkoff

It is expected that policies introduced this year will benefit the country for years to come.

Having promised that 2021 would be the 'Year of 5G', I'm pleased our government has delivered on this commitment, setting Australia up to take full advantage of 5G and its many applications.

As the next generation of mobile technology, 5G is a significant advance on 4G networks, providing improvements in capacity, download speeds and latency performance.

The rollout of this technology is progressing rapidly. Coverage is expanding, with three of Australia's major telecommunications companies now operating 5G networks. However, this hasn't happened without a lot of work in the background, freeing up the required spectrum and improving the regulatory frameworks to support the deployment of these networks.

Spectrum is a critical enabler for 5G networks to reach their full potential. Which is why, over the course of last year, our government carried out two major spectrum auctions — the 26 GHz band and the 850/900 MHz band — to facilitate the growth of 5G and set the groundwork for the pace of 5G network rollouts to increase.

Also last year, we delivered the first tranche of reforms of the powers and immunities framework to support the deployment of telecommunications equipment. By improving the deployment framework, new services, including 5G, can be deployed more quickly to meet increased consumer and business demand, and realise the economic and social benefits of new communications technologies.

Telstra's 5G network now covers 75% of the population, with coverage in more than 100 cities and towns and plans to cover 95% of the population by the end of 2025. By June 2021, Optus had switched on more than 1200 5G sites covering over 830,000 households. By the end of last year, Vodafone (TPG Telecom) had rolled out its 5G network to more than 85% of the population in Australia's 10 largest cities.

This is a very promising sign and illustrates the breadth of opportunities the collective 5G rollout presents for economic growth and innovation. Just as previous generations of mobile technology have facilitated new and improved ways of doing things, 5G will be transformative in its own

> THE BUREAU OF COMMUNICATIONS, ARTS AND REGIONAL RESEARCH HAS ESTIMATED THAT 5G WILL ADD $1300 TO $2000 IN GROSS DOMESTIC PRODUCT PER PERSON AFTER THE FIRST DECADE OF THE ROLLOUT.

way, and generate significant advantages for productivity and our international competitiveness in a range of sectors.

To help demonstrate these productivity-boosting applications of 5G, our government established the Australian 5G Innovation Initiative — now with $40 million of funding across two grant rounds. The Initiative encourages the private sector to leverage the benefits of 5G to improve productivity and kickstart a successful 5G ecosystem in Australia.

As part of the first round, we allocated nearly $20 million to 19 recipients, in both metro and regional areas right across the country. The funded projects are new and exciting and demonstrate the capabilities of 5G in a range of industries. For example, Qube Holdings is working with Telstra to install 5G communications at the Moorebank Logistics Park intermodal rail terminal. This project involves linking automated vehicles to the existing control and safety systems, allowing faster travel speeds, lower fault rates and increased capacity.

In the agriculture sector, TPG Telecom is using 5G technology for high-quality 4K video streams to count sheep at the Bendigo Live Stock Exchange. With a manual human error rate of around 0.5% and each sheep worth $120, miscounts can cost over $13 million a year. A 5G camera can achieve higher accuracy than manual counting and sustain long periods of counting, while recorded video can be used to quickly verify results in disputes.

In construction, MAXART has developed a new smartphone application to create 3D digital twins of objects and environments. In this project, 5G supports the real-time streaming of these 3D scans, using 5G devices on 5G networks. This allows instant and accurate sharing of information between the builders onsite and the designers off site, reducing the time and costs associated with frequent site visits and improving the communication of complex construction problems.

Our government's 5G Innovation Initiative has also been able to support projects that demonstrate the capability of technologies using 5G in emergency services, resources and public safety. For example, Rheinmetall Defence Australia, in partnership with Telstra, is using its nearly $1.5 million in grant funding to develop an autonomous, remote-controlled 'Firefighting Tank' — a purpose-built vehicle, capable of traversing extremely dangerous terrains to support rescue, path-clearing and firefighting missions. Rheinmetall's Advanced Firefighting Concept program is using low-band 5G to support long-range remote control of these vehicles, ultimately improving fire safety.

In the resources sector, Aqura Technologies is using its nearly $2 million in grant funding to test 5G as a viable underground wireless broadband network, so underground operators can also reap the benefits that wireless communications can deliver. With over 50% of mining in Australia conducted underground, this project will help bridge the technology gap between surface and subsurface environments, generating greater efficiency and safety in the sector.

And in the public safety space, Transdev Sydney Ferries is using the grant funding it received through the Innovation Initiative to install equipment on a subset of ferries that will use 5G to support a variety of safety applications such as CCTV and HelpPoint. These will measure and compare performance metrics of ferries fitted with both 5G and non-5G technologies.

From agriculture, to mining, to construction, to transport and logistics, to emergency management and public safety, 5G has the potential to revolutionise industries and generate enormous benefits for businesses, consumers and the economy more broadly. The Bureau of Communications, Arts and Regional Research has estimated that 5G will add $1300 to $2000 in gross domestic product per person after the first decade of the rollout.

We want to capitalise on this, to see businesses taking advantage of digital technologies, and Australians realising the benefits of 5G sooner. The 'Year of 5G' may have officially come to an end at the close of the 2021 calendar year, but much was achieved. The rollout will continue, as will the innovation. In many ways, the applications of this fifth generation of mobile technology have only just begun to be discovered.

Hon. Paul Fletcher MP, Minister for Communications, Urban Infrastructure, Cities and the Arts, was born in Devizes, England, in 1965. He was elected to the House of Representatives for Bradfield, New South Wales, in 2009 and promoted to Minister for Communications in 2019.

Australian Government
www.infrastructure.gov.au/

MXP600
TETRA PORTABLE

BUILT FOR EXTREME CONDITIONS

THE MXP600 IS A RUGGED AND LIGHTWEIGHT YET FULLY CAPABLE TETRA PORTABLE THAT IS EASY TO CARRY AND EASY TO USE.

THIS UNIT USES INTELLIGENT MICROPHONE TECHNOLOGY TO SUPPRESS BACKGROUND NOISE, ALLOWING FOR IMPROVED CLARITY OF TRANSMITTED SPEECH.

THE RIGHT RADIO CAN MAKE ALL THE DIFFERENCE.

MOTOROLA SOLUTIONS
Value Added Distributor

Ace

1300 121 155
www.acecomms.com.au

News

© Stock.Adobe.com/au/Alexlekky

SURVEY RESULTS FROM FIRST RESPONDERS

The Usability Team of the American National Institute of Standards and Technology's (NIST) Public Safety Communications Research (PSCR) program works to identify issues faced by first responders surrounding the use of their existing and emerging public safety communication technology. The Usability Team conducted a series of in-depth interviews with approximately 200 first responders about their views on communication technology.

The results of these interviews informed a nationwide, large-scale survey completed by over 7000 first responders. This data is now public via the Survey Results Tool and the Survey Analyzer Tool.

For more information about the NIST PSCR Usability Team research https://publicsafety.nist.gov/index.html.

FIBERLINK INSTALLED AT GENERAL DYNAMICS ELECTRIC BOAT SHIPYARD

Artel Video Systems announced that General Dynamics Electric Boat has upgraded audio and data transport for the large-scale, 24/7 casualty control system at its Groton, Connecticut, shipyard with the installation of Artel's FiberLink 5200/5201 systems.

The Artel transmitter/receiver pairs are designed to provide performance with consistent signal quality and enable transport of multiple signal types to support the large-scale shipyard safety system.

The multi-mode fibre can provide capacity along with light weight, low loss and reliability over shorter distances; plus immunity to electrical interference. The FL5200 series from Artel handles bidirectional audio, RS-type data, ethernet and contact closure over a single fibre transmitter/receiver pair.

Outdoor communications hub

The Velocity product range provides organisations an edge computing platform that harnesses wired and wireless communications bringing always-on mission-critical communications to public safety, transportation, utilities, mining and government sectors. With access to an array of communication networks including LTE, Wi-Fi, Ethernet and LMR, Velocity has been built for demanding mission-critical requirements either out in the field, in vehicles or in harsh environments.

Velocity has been designed to operate in vehicles and fixed harsh environments to support an operating temperature range from -30 to 70°C and a flexible power input voltage range of 9–36 VDC. Velocity has been designed with MILSTD components to meet harsh environments with its extruded aluminium rugged design. A telemetry and telematics data interface allows the collection of vehicle diagnostic and performance data to monitor vehicle health, assess driver behaviour and much more. Added Bluetooth functionality allows the integration of proximity tags, wireless installation of GPIOs and Bluetooth audio. Support for GPS/GLONASS/Beidou is designed to provide reliable and precise vehicle location even in challenging environments.

Velocity harnesses multiple bearer technologies in order to provide mission-critical voice and data. It has been designed so organisations can maximise high-speed mobile broadband for bandwidth-rich internet applications and also utilise voice and audio applications in order to keep workers safe and connected.

Simoco Wireless Solutions Pty Ltd
www.simocowirelesssolutions.com

Step-down buck converter

Analog Devices has introduced the MAX77540 step-down buck converter, which provides single-stage power conversion in multi-cell battery applications, such as augmented reality/virtual reality headsets, land mobile radios and digital single-lens reflex cameras.

The buck converter features peak efficiency and wafer level packaging smaller than traditional quad flat no-lead packages.

Multi-cell battery applications require two-stage power conversion and long battery life in the smallest package possible. With the MAX77540 the design engineer can create either dual 3 A or a single 6 A output(s).

Default power on configuration only requires two external resistors and an I²C interface allows further control for advanced power management techniques. External frequency tracking and spread spectrum modulation provide low electromagnetic interference power conversions for data sensing and processing equipment.

Features include: wide 4–16 V input voltage range and two 3 A switching phases provide single step conversions to core voltages from USB-C rails and 2S and 3S multi-cell batteries.

Analog Devices Pty Ltd
www.analog.com

Don't be a bunny. Just contact the crack team at CRS.

QUALITY 2WAY ACCESSORIES TO SUIT

KENWOOD
MOTOROLA
ICOM
sepura
tait communications
GME
TOOOAir
Hytera
KIRISUN
HYT
Vertex Standard
simoco
Uniden
CASSIDIAN
RELM WIRELESS

Wishing you a Happy Easter

When you want the best
***insist* on CRS**

AUSTRALIAN OWNED AND OPERATED

Phone 1300 307 334
www.crsaccessories.com.au

CRS ACCESSORIES

News

COMMS CONNECT NZ SEEKING PAPERS FOR CHRISTCHURCH IN JUNE

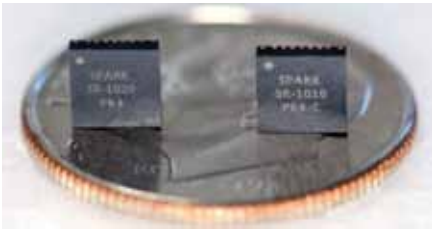
Following an excellent conference and expo in Wellington last year, the Comms Connect team and RFUANZ are seeking conference paper submissions for the upcoming event in Christchurch at the all-new Te Pae Conference venue on 22-23 June.

Organisers are now calling for papers for the two-stream conference programme, to run over two days. Preference will be given to case study and end-user stories.

Please send submissions initially to Geoff Hird: ghird@wfmedia.com.au with CCNZpaper as the subject line, and please include topic/abstract/speaker/job title/company in the message body.

Event partner RFUANZ looks forward to joining everyone at the annual Gala Dinner and Awards night.

For further information: https://www.comms-connect.co.nz/



DIGI-KEY DISTRIBUTION AGREEMENT WITH SPARK MICROSYSTEMS

Digi-Key Electronics has secured global distribution with Spark Microsystems to offer its low power wireless communications for performance personal area networks and IoT-connected devices.

With its patented technologies, Spark Microsystems is bringing to market an ultra-wideband wireless transceiver. The Spark SR1000 UWB IC family of products are designed to enable: data rate of up to 10 Mbps at 1.5 nJ/bit; power consumption of 2 mW while transmitting and receiving at 1 Mbps and scaling to 6 µW at 1 Kbps; short wireless latency, 50 µs for 1 Kb and time-of-flight positioning at 30 cm accuracy.

Radio communication tester

Rohde & Schwarz has added ultra-wideband (UWB) test capabilities to its R&S CMP200 radio communication tester. Because of its ranging, power consumption and security capabilities, UWB may feature on a range of IoT peripherals and industry 4.0 applications in the future; plus may be a standard technology of most smartphones.

Testing the performance of UWB devices is important in the lab and on the production line to ensure regulatory aspects, correct functioning and the accuracy of the positioning application. The tester provides a range of UWB test solutions for research and development, certification, and chipset characterisation and production, and measures parameters such as: time of flight and angle of arrival. Rohde & Schwarz supports global cross-industry standards for UWB interoperability by joining the FiRa and Car Connectivity Consortium.

UWB, based on the IEEE 802.15.4a and 802.15.4z standards, enables centimetre-accurate location measurements at short distances, most effectively up to 70 m. The technology includes secure data communication at rates up to 27 Mbps, with low power requirements. The wide bandwidth of 500 MHz and more, combined with low power spectrum density, make it possible for UWB signals to share spectrum with other technologies without causing interference.

The radio communication tester is able to provide R&D and production radio frequency tests for both 5G mmWave/FR2 and UWB functions. The tester combines the capabilities of a signal analyser and a signal generator in a single instrument.

Rohde & Schwarz (Australia) Pty Ltd

www.rohde-schwarz.com.au

Tetra portable radio

The MXP600 is a rugged and lightweight, yet fully capable, tetra portable radio that is easy to carry and easy to use. It has innovative audio technology so users can hear and be heard in the noisiest of conditions. This unit uses intelligent microphone technology to suppress background noise, allowing for improved clarity of transmitted speech.

In some areas, such as rural environments or inside buildings, the range of a portable radio can be limited. The MXP600 delivers best-in-class coverage so vital messages get through, even in marginal coverage areas. Its rugged design copes with extreme environments; with an IP68 rating, the MXP600 can handle dust, dirt, heavy rain, jets of water and submersion in up to 2 m of water for 2 h.

This device is designed to work reliably in all kinds of environments and weather to keep the communications lifeline intact.

Ace Communication Distributors Pty Ltd

www.acecomms.com.au

simoco
wireless solutions

Revolutionise your mission critical network with Simoco's converged ecosystem

DMR
The complete end-to-end DMR turnkey solution with new coverage extender feature.

LTE & Wi-Fi Connectivity

P25 Phase 2
Simoco is excited to be unveiling soon its P25 Phase 2 portfolio.

MORF
A ground breaking solution that allows rapid deployment of a radio network on wheels.

velocity

The next generation of smart solutions that provides reliable mission critical applications available to use in all markets.

- All in one intelligent communications platform
- Combines your technologies into a single platform
- Unifies your mission critical communications
- Converges devices
- Invest in the future with a partner you can trust

Contact Simoco Wireless Solutions today to understand how we can help your organisation.

inquiry.aus@simocowireless.com

+61 1300 363 607

Offices: VIC, WA, NSW, QLD, SA

www.simocowirelesssolutions.com

NIST STUDIES EFFECT OF TREES ON TRANSMISSION

JUST HOW MUCH IS 5G BANDWIDTH AFFECTED BY TREES SURROUNDING TRANSMISSION TOWERS?

Study conducted to gauge effect trees have on next-generation 5G mmWave transmissions.

As 5G technology gets fully implemented over the next several years, mobile phones and other wireless technology will grow more powerful with increased data flow and lower latency. But along with these benefits comes a question: will your next-generation mobile phone be unable to see the forest for the trees?

That is one way to describe the problem confronting cell network designers, who have to embrace both the benefits and shortcomings of a new class of signals that 5G will use: millimetre waves. Not only can these waves carry more information than conventional transmissions do, but they also usefully occupy a portion of the broadcast spectrum that communication technologies seldom use; a major concern in an age when broadcasters vie for portions of spectrum like prospectors staking out territory.

However, millimetre waves also have drawbacks, including their limited ability to penetrate obstacles. These obstacles include buildings, but also the trees that dot the landscape. Until recently little was known about how trees affected millimetre wave propagation. Just as few of us would want to imagine a landscape without greenery, few designers would be able to plan networks around it without such a crucial fundamental detail.

The National Institute of Standards and Technology (NIST) has set out to solve this problem by measuring trees' effect on millimetre waves. The effort could make a profound difference in our next-generation devices' ability to see the 5G antennae that may soon sprout.

The 5G era will feature wireless communication not only between people but also between devices connected to the Internet of Things. The increased demand for larger downloads by cell customers and lag-free network response by gamers has spurred the wireless industry to pursue speedier, more effective communication. Not only could our current devices and services work more effectively, but we could realise new ones: autonomous vehicles will depend on such quick network response to function.

"We will be able to do new things if our machines can exchange and process information quickly and effectively," said Nada Golmie, head of NIST's Wireless Networks Division in the Communications Technology Laboratory. "But you need a good communication infrastructure. The idea is to connect, process data in one place and do things with it elsewhere."

Millimetre waves, which are new turf for the wireless industry, could be part of the solution. Their wave crests are just a few millimetres apart — a very short distance compared with radio waves that can be several metres long. The frequencies are very high, somewhere between 30 and 300 gigahertz, or a billion wave crests per second.

Compared with conventional radio transmissions, which are in the kilohertz (for AM) and megahertz (for FM) ranges, new 5G signals will be very high frequency indeed — something like a bird tweeting at the upper range

of human hearing compared with radio's deep, low bass.

It is millimetre waves' high frequency that makes them both tantalising as data carriers but also hard to harness. On the one hand, more wave crests per second means the waves can carry more information, and our data-hungry era craves that capability to provide those faster downloads and network responses. On the other, high-frequency waves have trouble travelling through obstructions. Anyone who has passed near a house or car whose occupants are playing loud dance music knows that the throbbing bass frequencies are most of what reaches the outdoors, not the treble of a lilting soprano.

For 5G networks, the obstructing wall can be no more than an oak leaf. For that reason, NIST scientists embarked on a somewhat unusual task in September 2019: they set up measurement equipment near trees and shrubs of different sizes around the agency's Gaithersburg, Maryland, campus. The study continued for months, in part because they needed seasonal perspective.

"The tree study is one of the few out there that looks at the same tree's effect on a particular signal frequency through different seasons," Golmie said. "We couldn't only do the survey in the winter, because things would have changed by summer. It turns out that even the shape of leaves affects whether a signal will reflect or get through."

The team worked with the wireless community to develop the mobile equipment that was needed to take the measurements. The researchers focused it on single trees and aimed millimetre-wave signals at them from a range of angles and positions, to simulate waves coming from different directions. They measured the loss, or attenuation, in decibels. (Each 10 dB of loss is a reduction by a power of 10; a 30 dB attenuation would mean the signal is reduced by a factor of 1000.)

For one type of leafy tree, the European nettle, the average attenuation in summer was 27.1 dB, but it relaxed to 22.2 dB in winter when the tree was bare. Evergreens blocked more of the signal. Their average attenuation was 35.3 dB, a number that did not change with the season. As a measure of comparison, the team also looked at different types of building materials: wooden doors, plasterboard walls and interior glass showed losses of up to 40.5 dB, 31.6 dB and 18.1 dB, respectively, while exterior building materials exhibited even larger losses, up to 66.5 dB.

While NIST's contributions to 5G network development effort could end up as ubiquitous as trees themselves, for most of us they will be considerably less visible. The measurements the team made are intended mainly for companies that create models of how different objects affect millimetre waves. Part of the effort was a collaboration with Ansys Inc. — the company used the measurement data NIST shared with it to tune the tree simulation models, which cell companies use to plan out their networks of antennas in detail.

"Most models don't include measurement-based information about trees," said NIST's David Lai, one of the scientists who conducted the study. "They might simply say that for a given tree-like shape, we should expect a certain amount of signal loss. We want to improve their models by providing accurate measurement-based propagation data."

"Our goal is to get these measurements in front of the entire wireless community," Golmie said. "We hope this effort will help the entire marketplace."

National Institute of Standards and Technology
www.nist.gov

Industry Talking

Welcome to the next edition from your ARCIA president. To begin with I went back and reviewed what we discussed 12 months ago. It seemed that the COVID situation was improving and we were looking forward to having a Comms Connect in October 2021, and yet here we are in 2022 — just like Groundhog Day we are hoping that October 2022 will be the first annual gala dinner for two years.

We hope that all of our industry members are surviving these very stressful times and that you are finding new ways to succeed in business. As I write this supply chain issues are really affecting the industry with across-the-board price rises and shortages of common equipment required for projects around the country. Surely by the end of 2022 we will have seen the worst of COVID over and we can begin to return to normal life.

ARCIA now has a learning management system online with the beginnings of material and courses being posted for the benefit of our membership and the industry in general. Members will be kept up to date and encouraged to interact with the learning management system as we feel it is ready for operations. The initial courses will be simple professional development and industry overview material suitable for a wide audience, including those less technical than others. ARCIA will continue to invest in more technical courses with a deeper technical skills base required as we add value to the system. The intention of the learning management system is to enable a wide range of people within the industry to access micro learning skills that they can use every day out in the field. With the help of ARCIA partners, mentors and associates, the intent is to have a range of material online to add value for all of our members and hopefully to grow our membership over time.

In addition to the learning management system, ARCIA is looking to invest in a membership database system to help better organise and manage the membership system while minimising the amount of time that people need to spend manually. The aim here is to allow our members to interact with the membership system directly including payment of fees and access to other benefits as we expand the capabilities of the system.

Although we put the Lunchtime Learning program on hold earlier in the year, we are keen to continue to offer the simple form of education and knowledge to our members. We had great feedback from many people, and it was pleasing to hear that many industry personnel appreciate the opportunity to learn more. If you have a topic you would like us to cover, please let us know.

Now that we have locked in the annual gala dinner for October, planning can begin on making this the biggest and best event we have ever done. We know that people really enjoy the night, the industry networking and the peer recognition through awards.

One of the items that the committee has been considering is the scope of the awards that we present each year. Currently they are all focused on recognising people within our industry. One of the things that we constantly come across is the amazing level of local innovation and manufacturing that often goes unrecognised.

ARCIA has been considering whether we should add a new category to recognise companies manufacturing wireless-related products in Australia. Given the current turmoil in the supply chain and the discussions around local manufacturing, it seems timely that we should do everything we can to promote our industry. The committee would be happy to hear from any members on their thoughts about the awards and their relevance to our industry overall.

By the time you read this article, the committee will have had the virtual planning day sessions to map out the way ahead for the association. We are always looking at new and different ways to meet our primary aims of protecting our spectrum, lifting the skills and image of our industry and providing networking opportunities to foster the sharing of knowledge between peers. If you have any suggestions on how we might be able to meet some of those goals, please contact us and let us know.

Hamish Duff, President
Australian Radio Communications Industry Association

Mobile and desktop processors

congatec introduces the 12th generation Intel Core mobile and desktop processors, formerly code named Alder Lake, on 10 COM-HPC and COM Express computer-on-modules.

Featuring the latest high-performance cores from Intel, the new modules in COM-HPC Size A and C as well as COM Express Type 6 form factors offer major performance gains and improvements for the world of embedded and edge computing systems. Engineers can now leverage Intel's innovative performance hybrid architecture.

Offering of up to 14 cores/20 threads on BGA and 16 cores/24 threads on desktop variants (LGA mounted), 12th Gen Intel Core processors provide a quantum leap in multitasking and scalability levels. Next-gen IoT and edge applications benefit from up to 6 or 8 (BGA/LGA) optimised Performance-cores (P-cores) plus up to 8 low power Efficient-cores (E-cores) and DDR5 memory support to accelerate multithreaded applications and execute background tasks more efficiently.

Since this embedded processor generation is a derivate from standard business IT processors, workstation-class industrial-grade equipment is the first application area to benefit. Such equipment is required in a variety of different vertical markets, from medical backend systems for image processing in ultrasound devices to professional broadcasting and entertainment equipment for video and sound processing.

Similar ruggedness and performance demands come from stationary smart video surveillance systems for public safety in cities, railway stations and on motor highways. Or from equipment used in control room systems where workloads are typically high and various heterogeneous tasks must run in parallel. Some of these tasks have to be executed on performance cores but many others can run on the low power E-cores, which increases overall system efficiency.

congatec Australia Pty Ltd
www.congatec.com

powerbox
Powering Progress

Reliable backup power

For hybrid, off-grid and grid-connected telecommunications networks.

POLARIUM SMART LITHIUM-ION BATTERIES

Key Features

- Smart batteries specifically designed for the telecom environment
- Available in both NMC and LFP chemistries.
- Up to 300AH in 4RU footprint
- Variety of form factors to fit most standard enclosures
- Intelligent features to allow easy replacement of VRLA batteries without complicated settings or adaptions
- Ease of use – plug 'n' play
- Each battery has a battery manager which can interface with remote site management system or rectifier platforms (Enatel, Eltek, CET, etc.)
- Polarium Charge Control makes batteries independent of current control from power system

OFFICIAL SUPPLIERS OF
Polarium

Sustainable
The lifetime is extremely long. It's small, light, maintenance free and can be remotely controlled

Safe
All our products are designed with your safety in mind - throughly verified and certified for safe operation

Simple
Advanced technology made super easy to use, easy to install, maintenance free, charge control

Secure
Our unique, patented Anti-Theft Device disables function of batteries if removed from site (GPS tracker optional)

Smart
Automatic balancing, automatic reconnect, remote monitoring options and much more

Strong
Works in all conditions and environments with extra protection against dust and moisture for prolonged life

Powerbox Australia Pty Ltd

Sydney Head Office
4 Beaumont Road,
Mt Kuring-Gai, NSW 2080
Australia

p: +61 (0)2 9457 2200
f: +61 (0)2 9457 2255
e: sales@powerbox.com.au
powerbox.com.au

Powerbox Pacific Ltd

New Zealand Sales Office
1a Henry Rose Place,
Albany, Auckland
New Zealand 0632

p: +64 (0)9 4158 320
f: +62 (0)9 4159 780
e: sales@powerbox.co.nz
powerbox.co.nz

SELECTING CABLING FOR SAFETY

HALOGEN-FREE WIRES AND CABLES ARE PROVING THEIR WORTH IN INDUSTRY

Scott Ziegler, Product Manager, LAPP Group

How to choose low-smoke, halogen-free cabling to protect life, technology and vital private and public infrastructure.

While halogen-free wires and cables have been widely used in Europe for some time, they are now starting to gain relevance further afield in places such as the United States and Australia.

Products containing halogen, such as wires and cables, conduits, routing ducts and more, are receiving attention domestically due to the negative effects they impose on both industrial workers and machinery. Plus the push to reduce halogen usage is now reflected in UL and other domestic safety standards.

In the event of a fire, halogenated wires and cables give off toxic fumes that can cause serious health concerns if inhaled, not to mention they also destroy expensive electronic equipment. As industrial companies become more conscious of these problems, they have begun taking a closer look at the benefits of halogen-free cables.

Here is a guide to some places where it makes sense to use halogen-free cables and why you might want to consider them over halogenated cables in many applications.

Safety first with halogen-free cables

Halogen-free wires and cables are used in various petrochemical, transportation, utility, electronic and semiconductor applications. Since halogen-free wires and cables do not produce toxic corrosive gases in fires, they help minimise damage to electronic equipment and are not threatening to workers in surrounding areas. On the other hand, proponents of halogenated cables believe that there would not be any safety issue as long as the installed cables met the required smoke and flame resistance requirements.

Adding halogens to compounds gives wire and cable the ability to perform well during flame testing mandated by the National Fire Protection Agency (NIFPA) of the United States. Also, halogens provide a cost-effective, efficient flame retardant component mechanism to compounds.

However, keep in mind that while it sometimes makes sense to use halogenated cables, ingesting their fumes can be harmful to human life.

Hazardous fumes from halogenated elements

In the wire and cable industry, there are three main halogenated elements: fluorine, chlorine and bromine, which are found in various types of cable insulation and jacketing compounds (see Table 1).

Fluorine is present in varying amounts of certain high temperature compounds, such as fluorinated ethylene propylene (FEP Teflon) and polyvinylidene fluoride (Kynar). Chlorine is a component part of polyvinyl chloride (PVC). And bromine is often used as part of the flame retardant package used in thermoplastic cable insulating compounds.

In addition to the carbon monoxide they release while burning, these three material categories also release additional toxic gases that are dangerous for humans to ingest. Carbon monoxide itself can be lethal, but if you add either hydrofluoric or hydrochloric acid to these fumes, you get an even more dangerous combination. Your digital circuitry can also be irreversibly damaged.

During a fire, components containing halogen wires and cables emit both smoke and toxic fumes that, when combined with moisture, become hazardous. Up to 80 per cent of all deaths from fire come from inhaling toxic fumes and smoke (see Table 2).

These fumes are acid gases — such as hydrobromic, hydrochloric and hydrofluoric — that can cause severe damage to body parts. They are also known to cause confusion and disorientation, which can prevent victims from finding safe escape routes.

From the viewpoint of expensive electronic and electrical equipment, these corrosive fumes also attack and degrade sensitive components. The damage from these fumes

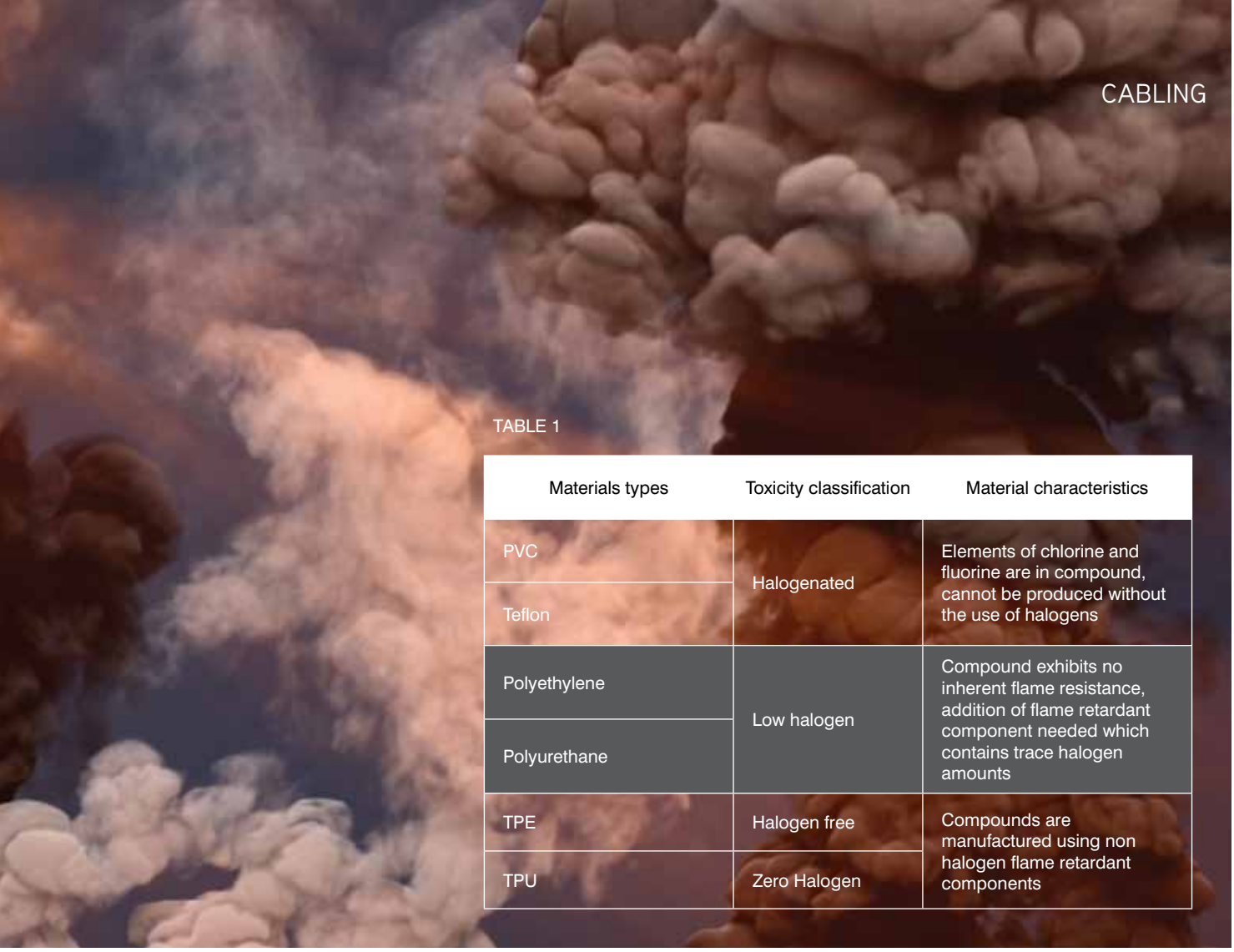


TABLE 1

Materials types	Toxicity classification	Material characteristics
PVC	Halogenated	Elements of chlorine and fluorine are in compound, cannot be produced without the use of halogens
Teflon		
Polyethylene	Low halogen	Compound exhibits no inherent flame resistance, addition of flame retardant component needed which contains trace halogen amounts
Polyurethane		
TPE	Halogen free	Compounds are manufactured using non halogen flame retardant components
TPU	Zero Halogen	

can cause component malfunction and make the equipment inoperable.

Smoke testing

When looking at the differences between halogenated and halogen-free cables, another factor to consider is smoke, which can also cause fatalities and extensive damages to property and expensive electronic equipment. The UL 1685 smoke test performance chart shows the results of smoke release testing done per UL Standard 1685 during FT4 cable burns with different insulation and jacket combinations (see Figure 1).

While the results in Type 2 show a significant improvement when compared to Type 1, the peak Type 3 indicates full compliance with these requirements. The resulting data confirms that using a halogen-free insulation and jacket results in less smoke release during a fire than a halogen insulated wire and cable.

Halogen components cost less

With all this in mind, there are still some times where halogenated components are the right choice. Using these components is a cheaper way to give thermoplastic cables the properties to guarantee performance characteristics of the insulating compound.

TABLE 2

Insulation material	% halogen contents	Fume by-products
Teflon	70–76	Hydrofluoric acid + carbon monoxide
PVC	22–29	Hydrochloric acid + carbon monoxide
Flame retardant cross linked polyethylene (FRXPLE)	11–17	Hydrogen chloride + carbon monoxide
Non-halogen	None	Carbon monoxide + steam

Take polyvinyl chloride (PVC), for example; containing chlorine and produced at a low cost, PVC provides the electrical, mechanical and physical characteristics necessary to fulfil industry performance requirements. The source of chlorine in the PVC comes from two inexpensive commodities: water and salt. Since these raw materials are available in abundance and achieve the desired properties, it is not hard to understand why PVC is the primary insulation choice in today's wire and cable industries.

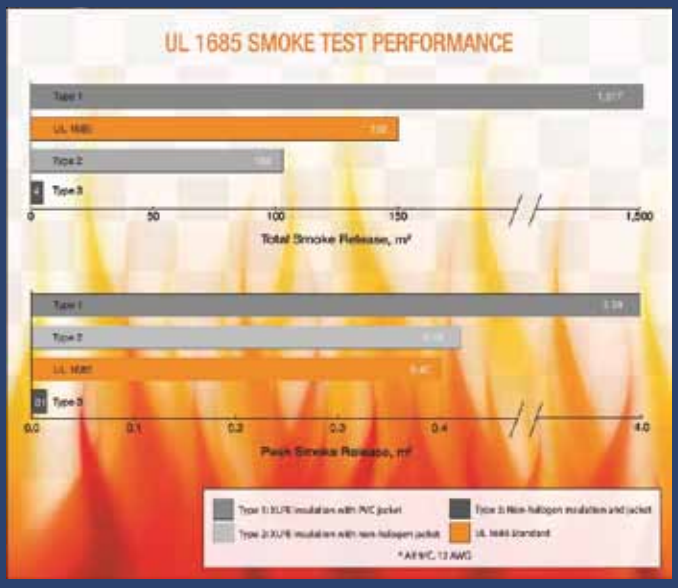
In short, PVC provides product performance required by UL, CSA and Intertek at a much lower cost than halogen-free insulations and jackets.

Industry standards

A number of industry standards evaluate the cable fume toxicity produced during a fire. Each standard is unique because they approach the subject of determining cable fume toxicity through different evaluation parameters. They are used to quantify smoke levels, light transmittance, levels of acid gas, concentration levels of toxic gases and halogen content.

While these standards are all different, and may vary in detail from local standards,

"HOWEVER, KEEP IN MIND THAT WHILE IT SOMETIMES MAKES SENSE TO USE HALOGENATED CABLES, BE AWARE THAT INGESTING THEIR FUMES CAN BE HARMFUL TO HUMAN LIFE."



they are used to provide some determination concerning halogen-free or low smoke zero halogen cable requirements:

IEC 60754-1 details the amount of halogen acid gas measured from a specified amount of raw material. This test is not performed in the finished product wire or cable form and compliance comes from not exceeding the mg/g that is specified within the standard.

IEC 60754-2 shows the pH levels to determine the poisonousness of the gases during a fire. This standard approaches acidic levels that arise when halogenated components are burned and react with the moisture in the air.

IEC 61034-2 concerns the amount of light you can transmit while testing, to determine the smoke density generated during a fire. High numbers show the effectiveness that a lighted pathway creates in a smoke-filled area.

NES 713 Part 3 determines the toxicity index of materials through complete combustion methods and analysis of the emitted gases. Measured in parts per million, the gases must follow the highest values indicated, while concentration levels should not exceed the amounts for the 14 specified gases.

UL 1685 involves both the flame spread and fire resistance of cables, as well as methods for measuring smoke release. It establishes some pass/fail criteria, especially in the areas of peak and total smoke release. Lower numbers are desirable here, signifying the amount of smoke released.

MIL-DTL-24643 approaches the cumulative total contents of halogens in a cable by using X-ray fluorescence to determine amounts, giving an overall amount of concentration of halogen levels in a cable. Levels should not exceed the critical point of 0.2% under this standard specification for shipboard use.

Toxic fumes cause fatalities and ruin equipment

The following three examples are times when corrosion and toxic fumes emitted by halogenated materials during a fire have contributed to human fatalities and the destruction of equipment.

A subway station fire took place in 2003 in Daegu, South Korea with intense toxic fumes and heavy black smoke preventing firefighters from quickly rescuing the people who were trapped. Almost 200 people were killed at this event and another 150 injured. While it was deemed that inadequate emergency equipment did not help lessen the disaster, the use of PVC cables in the trains and subway station didn't help the situation either.

In 1996, a fire at the Dusseldorf Airport in Germany led to 17 deaths and 72 injuries when toxic fumes rapidly spread from smouldered PVC-covered cables in a cable ventilation shaft, emitting cyanide, chloride, dioxin and carbon monoxide into the air.

The Illinois Bell office in Hinsdale, Illinois, experienced a fire in 1988 that remains the worst disaster in telecommunications history. Corrosion and toxic fumes caused equipment destruction and loss of human life. The recovery costs were estimated to be several million dollars and about 35,000 Chicago customers were without service.

There is zero visibility in this flame chamber because it's filled with smoke.

Since it's filled with low smoke, this flame chamber has full visibility.

Summary

Choosing between halogenated and halogen-free cables can be confusing. But just remember that if your application requires a high efficiency cable that performs well in NFPA flame testing, halogenated cables are a suitable choice. If you are looking for a cable that is safer for your workers and machinery, you will want to go with a halogen-free cable.

LAPP Australia Pty Ltd
lappaustralia.com.au

cradlepoint

Connect everything vital to Australian emergency services

- Any type of vehicle
- Ambulance services and fire stations
- Connected gear and equipment
- Telemedicine
- Mobile command centres
- Medical equipment
- Dispatch and 000 facilities
- Emergency communication kits
- Drones and robots

Purpose built for Branch, Mobile, and IoT

Learn more at **cradlepoint.com/au**

Telecom rectifier system

The Helios S-RA48 system provides uninterruptible DC power to a wide variety of devices that require high-quality DC source. With its high efficiency and compact size, the S-RA48 rectifier system saves energy and space for system installers, which means more flexibility and less OPEX.

Multiple rectifiers can be configured by central control unit CE-R1, which makes sure identical parameter setting and load sharing is achieved. Meanwhile, the charging parameters, monitoring and setting are controlled by the CE-R1, to make sure battery charging condition is optimised.

In the DC power system, protection mechanisms, such as input voltage protection and temperature protection, are included. Hardware protection such as circuit breaker, surge protection (SPD — available with M system or above) and low voltage disconnect (LVDS) with battery can protect the system further when necessary.

S-RA48 main features include: wide input range (100–240 VAC, max 3 KW per module); power factor >0.99 sinusoidal input current; meeting industrial safety/EMC standards; 2.1 kg per module; active or passive load sharing; controllable and monitorable system; up to four load breakers.

Helios Power Solutions

www.heliosps.com.au

Wireless microphone

The Saramonic dual channel wireless microphone is built with dual channel technology. The Blink900 delivers clear sound with 6 ms ultra-low latency at distances of up to 200 m.

Built with dual channel, it offers users more recording solutions: they can use single or dual transmitters and can choose mono or stereo mode to record each channel separately for ultimate flexibility in post-production.

The system comes with a colour LCD screen with a light sensor, so the screen brightness can automatically react to the changes in the environment so the user always has a clear viewing experience, or they can manually change the brightness between 1–10 levels.

It comes with accessories for different kinds of use case scenarios, such as vlogging, streaming, podcasting, interview, online teaching and security. The mics can connect to cameras, smartphones, tablets, computers and more.

It has a rechargeable lithium-ion battery with up to 6 h of battery life for transmitter and receiver and the charging box can provide three full charges for 18 hours' use. A flexible gain control with 0–6 levels lets the user tailor the output to their devices. Or it can help the user to normalise the output of the captured signal with the 'auto gain' function.

Saramonic

www.saramonic.com/

5G device test platform

Rohde & Schwarz has released its CMX500 one-box tester, a 5G test platform for simplified device testing.

The one-box tester approach radio communication tester enables complex test set-ups for all 5G NR deployments, supporting a large variety of the present and future 3GPP band combinations. The simplified set-up, in a single platform, results in a small laboratory footprint.

The tester provides support for all 5G NR deployments covering LTE, 5G NR FR1 and FR2 in non-standalone and standalone mode, for both FDD and TDD. Manufacturers of 5G NR capable chipsets and devices, as well as certification providers, can cover an entire product lifecycle with the one tester; from all early R&D design phases to end-to-end application testing, including device certification.

In combination with the remote radio heads, which now cover mmWave frequencies up to 50 GHz in FR2, the one-box tester can simulate challenging 5G NR band combinations. For example, higher order carrier aggregation with up to 8CC combinations of FR1 and FR2 in downlink is possible, which can achieve data rates of 10 Gbps and beyond on the IP layer.

The tester complements its modular hardware design with CMsquares. This web-based graphical user interface lets users manage 5G testing tasks with the help of intuitive measurement squares, from RF callbox measurements to protocol verification to higher layer application tests. The test portfolio includes related peripheral solutions like shielded chambers for over-the-air measurements in FR2, all from a single source, which users can integrate into their test set-ups.

Rohde & Schwarz (Australia) Pty Ltd

www.rohde-schwarz.com.au

CASE STUDY

On the air at Avalon Air Show

The Australian International Aerospace and Defence Exposition and Air Show held every two years at Avalon Airport in Melbourne, Victoria, is the largest civil and military air show in the Australian calendar. First held in 1988 to mark the Australian Bicentenary, it moved to Avalon Airport in 1992.

It is organised by the not-for-profit organisation Aerospace Australia Limited and has grown rapidly over recent years. It now features a strong international military presence including aircraft from the Royal Australian Air Force, United States Navy and the United States Air Force. Representatives from other air arms have also appeared at the air show on many occasions, including aircraft from the Royal Air Force, Japan Air Self-Defence Force, Republic of Singapore Air Force and many others.

It is attended by up to 200,000 people, with over three full days of industry and military attendance only, followed by three days of public attendance. Simoco Wireless Solutions has been providing the communications infrastructure for the Avalon Air Show since 2013, having initially won the work through a public tender process.

Robust and secure radio communications

Public safety has to be paramount at large events like the Avalon Air Show and a strong communications system is key to being able to provide a safe environment. Though there is a very strong military security presence at the air show, who are responsible for the security of their equipment, planes and other vehicles, the organisers must keep the safety of their attendees in the front of their minds at all times. Reliable voice communications also play a vital part in ensuring all operations and logistics associated with the event run smoothly.

One of the great challenges of providing a communications system for the Avalon Air Show is the breadth of users that the network must cover. Event organisers are not the only ones who use the supplied radio network. Members of the emergency services must also be furnished with communications devices and the network covers a major command and control centre, staffed with police, ambulance services, firefighters and military and federal police. All international military delegations must also be given radio devices incorporated into the network, allowing full ease of communication between everyone involved.

The organisers of the air show provide a shuttle bus service, consisting of 40 to 50 buses, travelling to distances of up to 20 kilometres outside of the air show site. The ideal radio network would be strong and scalable enough to provide coverage to those shuttle buses even at a distance of 20 km from the site.

A scalable user network

Simoco Wireless Solutions provided Aerospace Australia Ltd with the company's Simoco Xd network: a DMR Tier III trunked system that provides resilience, scalability and secure communications across the campus-style geography of the show. The network consisted of the following devices:

- 425 x SDP660 portable radios
- 5 x SDM630 desktop bases
- 12 x SDB680 repeaters

In addition, the Simoco team also provided a range of air band radios to complement the private DMR network. Air band radio is a group of frequencies on the VHF spectrum, designated specifically for civil aviation. The following equipment was also supplied to aid ground control teams when coordinating plane movements:

©stock.adobe.com/au/Wirestock

- 2 x VHF airband desktop bases
- 8 x VHF airband vehicle radios
- 20 x VHF airband portable radios and scanners

The Simoco network simultaneously runs 25 independent and disparate radio talkgroups, with volunteers and staff members using the network from 5 am until 2 am the next morning. During this time the network will facilitate between 500 and 600 conversations every hour. Over the nine main days of the 2017 event, in excess of 37,000 calls were made.

The network operates over a frequency specifically licensed by Simoco for the Avalon Air Show; this, coupled with the inherent encryption of the DMR network, ensures all voice communication remains private and secure.

For eleven days, covering the set-up and the running of the event, Simoco Wireless Solutions provides a managed service for the network, monitoring each device for faults or misuse. From the network's command centre engineers can block specific devices if needed, preventing the network becoming locked up. The radio management desk was manned by three operatives from 7am to 10pm every day, anticipating and solving potential problems before they became an issue.

Advanced functionality with feature-rich radio

Simoco Wireless Solutions have provided a network to Aerospace Australia Ltd that is secure, private, scalable and resilient. This has allowed them to run a world-class event, bringing together international groups from both the military and civil industries, without having to be concerned about the resilience of their voice communications infrastructure.

After the tendered period of three air shows over six years, Aerospace Australia Limited has extended the contract with Simoco for a further four events. Upcoming events are set to see Simoco explore ways of further improving the network by taking advantage of the feature-rich nature of digital mobile radio technology. This will include exploring the use of advanced applications such as GPS tracking and geotagging functionality, which could be used by managers to track the locations of key mobile assets, such as vehicles, without needing to speak regularly to drivers to determine their locations.

Simoco Wireless Solutions Pty Ltd

www.simocowirelesssolutions.com

CASE STUDY

D2N provides comms for Southern Launch rocket launch facilities

Southern Launch is a rocket launch service provider, headquartered in Adelaide, South Australia. Their Whalers Way Orbital Launch Complex and the Koonibba Test Range is a suborbital testing facility. Their team of leading engineers, project managers, specialists and space regulation experts have developed a full-service continuum catering to the key needs of rocket manufacturers and their payload customers.

Recently they were in the market for a reliable and secure communications system for their launch facilities and ranges, which cover a large, undulating and geographically challenging landscape and for that they turned to D2N – Technology Solutions.

The Southern Launch team in front of the Hapith Rocket at Whalers Way in September 2021.

Southern Launch required a fully encrypted and mission-critical communications system that would also provide blue force GPS tracking, recording of all conversations and dispatch covering a huge site. On top of this communications system, Southern Launch had a requirement for high-speed, 4K video streaming capabilities that could be reliably transmitted across the launch range networks in real time.

The Kiloview encoders provided the mission control team with clear real-time footage of remote camera systems and enabled a robust stream that could be rapidly replayed and appropriately backed up and secured. According to Southern Launch's Mission Control Manager, Shane Bennett, the D2N system went together quickly and got Southern Launch the coverage they required immediately.

For Bennett the real 'wow' factor with the D2N comms solution is value for money, as he explained: "We went back and forward for months discussing the radio network and when it came down to it the Hytera kit stood head and shoulders over the competition in terms of price and feature set with no sacrifice in performance."

To Bennett's point Southern Launch and D2N spent a lot of time discussing the requirements for the project, and to ensure the equipment met Southern Launch's needs D2N was able to provide initial rental equipment so they could trial the technology and ensure it would suit their needs.

For more on Southern Launch go to: https://www.southernlaunch.space

Hytera Communications Co. Ltd
www.hytera.com.au

GPU server

Equipped with up to four, long-life GPUs, the 2U GPU server brings scalable computing power for high-density graphics, virtual displays, situational awareness and artificial intelligence in the field. It is designed specifically to handle challenging, yet critical inference obstacles, with low latency even in volatile, mission-critical conditions.

The server's rugged design and durability delivers tensor core performance, allowing the capture and analysis of data at the tactical edge.

The integrated system combines two 3rd generation Intel Xeon Scalable processors and GPUs that tackle workloads at 260 teraflops. A dedicated air plenum prevents thermal throttling from the high GPU workload. It weighs just under 12.7 kg.

The platform can be configured for temporary or permanent data storage applications, with up to six NVMe drives. InfiniBand I/O connectivity provides rapid data transfer for backhaul applications.

Suitable for the ever-changing landscape of battlespace management, command and control, intelligence gathering and dissemination and sensor fusion across complex networks for pinpoint situational awareness, the server takes compute-intensive workloads out of the data centre and into the field to provide seamless operation in time-sensitive, unpredictable situations.

Metromatics Pty Ltd
www.metromatics.com.au

CASTING A WIDE NET FOR COMMERCIAL FISHING VESSELS

KEEPING TRACK OF A FISHING FLEET MAKES SENSE

Tracking a commercial car fleet has been an obvious and easy task; for ocean-going fishing boats you need global satellite connectivity.

If the COVID-19 pandemic has taught us anything, it is the importance of technology in keeping us connected. In our hyper-connected world, there are few places that are off the grid, with no access to cellular.

But ask a commercial fisherman, who can spend months at a time at sea, and they will tell you that connectivity can be hard to come by on open waters — yet remaining connected is critical. A lack of connectivity can limit a fishing vessel's operations in a number of ways, from hindering navigation, maintenance and reporting systems, to decreased seafarer satisfaction as crew are disconnected from their onshore lives for long periods of time.

The benefits of satellite connectivity are clear: connected vessels are able to track their onshore deliveries in real time, conduct remote diagnostics, assess the latest weather data to calculate the best route, optimise fuel consumption and improve product traceability.

Connected vessels also improve crew member health, safety and happiness by enabling them to remain connected with friends, family and social applications, while ensuring the application of safety regulatory measures and a reliable connection for emergency communications. In an industry known for above-average turnover rates, with 24% of fishers leaving a job after one year and 59% in four years or less, broadband connectivity could be used to support crew welfare and increase employee retention.

Adoption of vessel monitoring systems

A ubiquitous, scalable connectivity solution at sea is increasingly becoming a necessity as more countries require vessel monitoring systems (VMS). These systems require 'always on' connectivity to provide fishery authorities with accurate reporting of the position, date, time and course of vessels.

The demands on the fishing industry are also clear: the Food and Agriculture Organisation (FAO) estimates that of the approximately 179 million tons of fish caught globally each year, 20% is unreported and unregulated fishing, representing an annual cost of $23 billion. VMS are increasingly being required both for safety and to combat this illegal fishing, yet today only a small percentage of vessels have such systems enabled.

In addition to compliance, connectivity empowers vessel owners and crew through accurate information about ports, weather, markets and more. Seamless access to this information lets fishers know exactly where the catch is, helping crew optimise their voyage, cutting down time at sea.

In this highly price-sensitive industry, access to real-time pricing of fish stocks in nearby ports allows crew to prioritise a catch by predicting nearby market demand.

To stay competitive in an increasingly digitised and global industry, fishing vessel owners and operators are looking to incorporate dependable connectivity solutions. According to Harbor Research, there are over 84,000 large fishing vessels (24 metres or larger) globally. However, today only the largest vessels in this segment have adopted very small aperture terminals (VSAT) communications, as these solutions have traditionally been expensive and rather large: typically one metre in size and often weighing hundreds of kilograms.

For smaller to mid-size boats, even down to a size of 12 metres, finding a satellite communications system that provides the right balance of affordable equipment, service performance and coverage has been a major barrier for fishing operators.

Intelsat
www.intelsat.com

Radio Matters

This far into the year it seems strange that I'm commenting on the December 2021 Business Update from Radio Spectrum Management. Several topics were raised that RFUANZ have taken a keen interest in, the first of which is a rather good step into the future with the RRF project coming to an end.

The new online system will provide a good modern interactive portal for spectrum users to manage their licences. The existing SMART system has come to the end of its life and the replacement will be announced by RSM soon. It may well have been before this article makes it to print.

RSM requested consultation on a five-year spectrum outlook, which members have been keen to become involved with as a prominent topic that needs much discussion. The RFUANZ committee met face to face for some and via zoom for those unable to travel in February.

Heated discussion around the table saw us dissect these topics to the core, ensuring all parts of our industry will not be left wanting. Justin Wonderlick, our in-house ARE, was invaluable to discussions taking the lead as we raised a number of spectrum questions.

An interesting question raised by RSM: "Did the document cover everything needed by the industry?" Simple answer: "No"! Members have already raised with RFUANZ what was missing.

As the elected representatives from the radio community we engage with RSM on a regular basis and have submitted a response.

As we have said time and time again LMR is here to stay as it continues to become more reliable in emergency and critical communication events. My team at Downer proved this six years ago with the disaster response for the Kaikoura earthquake.

Critical communications in its very nature is required communications for critical business and emergency situations. This falls short where all but the most rugged, reliable and hardened infrastructure is not capable of withstanding the violent and rapid requirements of a natural disaster. I have this discussion all the time as an active member of NZDF and having friends and customers in CD, FENZ and land/sea SAR.

Satellite phones are all very well if you have one! Cell phones are the first thing to drop out.

Coverage can be very sketchy in a large amount of the NZ wilderness. PLBs? Yes, for emergency but not good for disaster.

Recently, we lost contact with Tonga; however, communications were quickly re-established with sat linking.

LMR networks can be rugged and off grid, they require minimal infrastructure and are built for purpose. Radio communication is the granddaddy of all the technology we have today; when all is said and done it is still the most reliable way to communicate over distance and it is not going anywhere.

The RFUANZ committee aim to make ours and our members' words heard and protect what we know is important.

In closing I would like to remind you all that next month the Annual Industry Awards and Gala Dinner will be held. This year we have travelled to the South Island and will be hosting at Te Pae, Christchurch's brand-new Convention Centre.

Te Pae Maunga is Mountain Views, Te Pae whenua is the vast plains we inhabit and Te Pae Tangata is a place to meet and converse — it is a gathering place where we can network as a radio communications industry and acknowledge and celebrate what we do best in this industry.

There is still time to join and be a part of the Gala Dinner and the conversations that will be had. Register now and we will see you there.

For further information: https://rfuanz.org.nz/gala-dinner/.

John Laughton
Chairman
Radio Frequency Users Association New Zealand

Rugged rack server

The Crystal Group RS41110L2 is a server with computing performance in a 4U chassis with a depth of 52.6 cm that fits most rack spaces. The servers are built rugged in an all-aluminium package able to withstand rough terrains and applications.

Providing a broad range of military and industrial programs with integrated solutions for everything from communications and networking to weapons control, sensor and surveillance and unmanned aircraft systems. The server provides service in DSP, SIGINT, C4ISR and radar applications.

Features include: construction weight of 26.3 to 29.9 kg; up to 4 TB of DDR4 memory; 1200 W AC power supply; versatility with 10 modular SSD bays for up to 20 SSDs; designed for two high-powered GPGPUs operating at 50°C; expandable with 11 PCIe slots with Intel Xeon scalable processors.

Metromatics Pty Ltd
www.metromatics.com.au

Laminate adhesive

DuPont Interconnect Solutions released the Pyralux HP laminate adhesive system at the 2022 Institute for Printed Circuits (IPC) APEX Exposition in San Diego.

High-speed signal transfer across networks creates numerous environments where signal integrity is often diminished, resulting in costly issues for end users. To improve the performance of these devices, DuPont developed the epoxy-based Pyralux HP laminate adhesive system for original equipment manufacturers and printed circuit board (PCB) manufacturers to address the needs in high-performance and high-reliability applications in the telecommunications, networking, medical, industrial, military and aerospace markets.

The laminate adhesive maintains electrical performance in demanding and extreme environment PCB applications. This IPC-certified product is available as a sheet adhesive or as a coverlay, suitable for a wide variety of multi-layer flex and rigid-flex applications. The system enables processing at lower temperatures.

DuPont Australia Pty Ltd
www.dupont.com.au

MELBOURNE CONVENTION & EXHIBITION CENTRE

FREE EXPO ENTRY

COMMS CONNECT

Events for critical communications users and industry

NEW DATES ANNOUNCED OCTOBER 18-20, 2022

MELBOURNE

Featured speakers:

Shane Fitzsimmons AFSM
Commissioner
Resilience NSW

Lynn McDonald
Azure Space Lead
for Australia

Mats Henrikson
Group Leader
CSIRO Data61

Ed Parkinson
CEO
FirstNet USA

Jackie Dujmovic
Founder and CEO
Hover UAV

Neal Richardson
Technical Director
NZ Police
NGCC Lead Agency

What's on:

- Industry-focused case studies and technical presentations
- Panel sessions on public safety, state of the industry and satellite evolution
- Extensive exhibition and networking opportunities
- ARCIA Industry Gala Dinner

Half-day workshops – 18 October

- Power supply options for communications systems, including solar and battery options
- Latest initiatives and innovations in critical LMR, critical broadband 4G/5G and control centres
- Private LTE/5G – the fundamentals of technology and system design
- ACCF Public safety communications 'town hall' meeting

BE INVOLVED

EVENT PARTNER NOKIA

Contact Narelle Granger ngranger@wfmedia.com.au for sponsorship and exhibition enquiries

Platinum Sponsors: hypha by Wireless Innovation, Hytera Respond & Achieve, simoco wireless solutions

Gold Sponsors: ZETRON, powerbox, BENELEC Innovative Radio Technology, L3HARRIS FAST. FORWARD., GME, DAMM, ROHDE&SCHWARZ Make ideas real, BT

Silver Sponsors: challenge NETWORKS, NEC, Private LTE, Ace

Media Partner: comms critical

Association Partners: ARCIA, TCCA

Visit www.melbourne.comms-connect.com.au for more information

Field service diagnostics

SOTI XSight is a diagnostic solution for field services workers that enables the resolution of app and mobile device issues. By leveraging advanced diagnostics and analytics, organisations with remote field services teams can improve their worker performance and reduce operating costs of business-critical mobile operations.

Core functions include the ability to automatically pull critical data, including current and historical metrics, to analyse battery health, app and data usage, cellular connectivity and device utilisation; advanced troubleshooting diagnostics either in the field or remotely; automated monitoring with notifications when devices experience low memory, high data consumption, frequent drops, high battery discharge rates or excessive power consumption and incident management tools that allow businesses to quickly and efficiently support customers anywhere in the world to solve issues on the first call by remote controlling and troubleshooting from within a ticket.

Concise documentation of complex problems is made easier, and developers get the detailed information they need to quickly resolve issues.

SOTI Inc. Australia

www.soti.net

LTE 410/450 MHz antenna

Antenova has released Atta for LTE and smart wireless deployments in the 410 and 450 MHz bands.

The Atta antenna is a flexible printed circuit form and measures 101 x 20 x 0.15 mm. It is supplied with an I-PEX mating connector for direct integration to a circuit board and a self-adhesive pad to fix it easily in position. It is therefore easy to integrate into a design.

The LTE 450 spectrum is relatively new, with 65 deployments in North America, South America, Europe, Africa and Asia, and LTE 450 is available in 25 of these. This is expected to grow, as spectrum is allocated in more regions.

The Atta antenna provides connectivity for devices such as meters, rugged smartphones and handheld mobile devices using Cat 4 modules.

Antenova Limited

www.antenova.com

Wireless mobile transmitter

Dejero has launched its EnGo 263 mobile transmitter for police and fire departments that require resilient wireless connectivity in the field to transmit real-time video from any location.

The transmitter uses 'Smart Blending Technology' to combine diverse connections from multiple providers. This patented technology manages fluctuating bandwidth, packet loss and latency differences of individual connections in real time to enhance bandwidth and reliability, while expanding areas users can operate in. Smart Blending Technology circumvents the vulnerability of relying on a single connectivity path.

The mobile transmitter features antennas and RF design to provide high-quality cellular reception in poor coverage and crowded areas and where infrastructure has been damaged, enabling police and fire departments to transmit real-time tactical video to incident commanders.

A capacitive touch screen provides a live view, status information and in-field control of the transmitter. Built-in automation and a wired remote make it easier for personnel to control the transmitter and monitor status if wearing the transmitter in a backpack.

To meet the uncompromising security and privacy demands of the public safety and government sector, Dejero has taken steps to further protect real-time video transmissions from the field. Featuring a cryptoprocessor to authenticate the hardware and a security-hardened Linux OS, EnGo 263 also uses AES256 encryption for enhanced security.

It is built with aircraft-grade aluminium in a monocoque construction that is lightweight and strong, while polycarbonate ABS bumpers protect the transmitter from shocks and drops. An optional vehicle antenna dock enables the transmitter to be securely mounted in vehicles and attached to external antennas to boost reception.

Dejero

https://www.dejero.com/

Solving the cellular signal propagation challenge for 5G connectivity

Nathan McGregor, Senior Vice President, Asia Pacific, Cradlepoint

There is no doubt of the numerous benefits that enterprise-grade 5G connectivity brings to emergency services. From live video streaming between disaster sites and control rooms, to transmitting data on times and locations where police remove their weapon from its holster, to transmitting patient health records from an ambulance vehicle straight to the hospital to ensure immediate, efficient and accurate patient care. However, all these use cases are for remote and in-vehicle applications. Additionally, 5G is an excellent solution for police, fire and ambulance organisations to wirelessly connect to head offices and permanent locations but, when it comes to connectivity, not all 5G solutions are created equal. Rolling out 5G solutions to connect all people, places and things within an organisation enables simplified management, better user experience and agile solutions to deliver connectivity when and where you need it.

The challenge of modern technology in traditional settings

The challenge is that, in Australia, a lot of emergency services office locations are in older buildings with walls that 5G frequencies may have difficulty penetrating. While the mid-band or Sub 6 GHz frequencies available through carriers enable 5G to work well indoors or for in-vehicle connectivity, the spectrum has issues penetrating these older buildings.

Bringing the benefits of 5G to connect people, places and things

The Cradlepoint W2005 5G Wireless Adapter is designed to be placed outdoors for optimal signal acquisition. With an IP67 rating, the hardened metal casing of the W2005 is designed to withstand extreme temperatures, water and high winds.

Designed for work environments that require the higher performance of 5G, the Cradlepoint W2005 Series is an enterprise-class 5G wideband adapter that is at the leading edge of wireless WAN networking. It can be paired with a Cradlepoint router in 'captive modem mode' to provide virtual single-endpoint deployment, monitoring and control. The adapters can also connect to a third-party router via an Ethernet connection.

Last year, Telstra announced that it has partnered with Cradlepoint to deliver Enhanced Enterprise Wireless, offering customers the Cradlepoint W2005 series Outdoor 5G Wideband Adaptor to facilitate the network connection.

Telstra's Enhanced Enterprise Wireless (EEW) Solution guarantees customers 99.9% wireless network availability at eligible sites. The Australian first solution provides customers with reliable and consistent connectivity for running business critical applications with wireless services now delivering the same or better performance as fixed. As part of the Enhanced Enterprise Wireless solution, Telstra performs a site assessment to ensure the most reliable 5G network connectivity possible for customers. Even with the site assessment, the EEW solution, coupled with Telstra's Managed Services, offers organisations much greater flexibility of deployment with set up times dramatically reduced.

What does a 5G future look like?

5G is changing the perception of wireless connectivity in the emergency services sector. When IT managers consider 5G, it is increasingly no longer a wired versus wireless assessment because 5G has made wireless the new wired. In fact, when it comes to speed, reliability and agility, 5G surpasses any wired WAN options available.

As 5G adoption rates continue to rise, IDC predicts that globally by 2024, 'wireless first' will be mainstream for wide area connectivity, accelerating 65% of enterprise, industrial and public sector organisation investments to 'untether' their operations.

With Cradlepoint, Emergency Services organisations have access to increasingly more advanced connectivity solutions not only in vehicles, but also for static locations like head offices. The future of connectivity is wireless and 5G is the next area for emergency services to explore.

cradlepoint

Cradlepoint Australia Pty Ltd
www.cradlepoint.com/au

AUTOMATING PUSH-TO-TALK FOR BETTER, SAFER FRONTLINE COLLABORATION: THE FUTURE IS NOW

HOW IS THE TRADITIONAL TWO-WAY RADIO EVOLVING WITH THE ONSET OF DIGITAL TECHNOLOGY?

Q&A with the CEO of Instant Connect Software regarding the future of PTT.

Traditional two-way push-to-talk for deskless/frontline workers is entering a new era of performance and innovation for organisations worldwide. Mining, energy, utilities, first responders, sports/event management, logistics, aviation, rail, military/defence: whatever the operation, decision-makers are empowering their frontline teams with a new wave of 'dynamic frontline communications' that combine the best of traditional push-to-talk with new automated capabilities.

Automation is changing how frontline teams collaborate and stay safe. Forrest Claypool, CEO of Instant Connect Software LLC, recently sat down to discuss the upside for today's fast-moving enterprises.

Why so much buzz about these new automated push-to-talk capabilities?

FC: It's about the new level of teamwork and worker safety now available. Frontline workers tend to work in teams sharing common tasks, missions and deliverables, whether it's to execute a scheduled task or respond to an emergency. Dynamic frontline communications software intuitively understands this and automatically creates "dynamic talk groups" connecting the workers essential to the mission. Traditional push-to-talk is congested with chatter as people vie for attention and communications are blasted to everyone. Dynamic frontline communications, on the other hand, tailors talk channels to specific teams based on their roles and tasks, excluding anyone who isn't needed. No clutter or distraction that can lead to mistakes or delays. The improvements in productivity and accelerated situational awareness are quantifiable. And these dynamic talk groups can instantly connect teams across any device or network — radio, mobile, IP and even telephony — so workers can freely share voice and data without technology or terrain getting in the way. No frontline workers left behind by gaps in communication. Everyone who needs to be is connected and collaborating.

How do you define a dynamic talk group?

A dynamic talk group is a team of frontline workers automatically assembled in a voice channel pursuant to the business rules set by the enterprise. The software automatically

assembles these dynamic talk groups oriented around the people and workflows required to complete the mission, then disassembles them when the job is done. To assemble these voice channels, the software self-discovers and authenticates users, transparently adding them to the talk group based on role, task, mission, workflow, and other business rules that you set. There's no need to manually configure teams or worry someone is left out. Conversely, there's no worry that non-essential workers are needlessly tied up on the same channel, creating unnecessary distraction.

The software does it transparently?

Yes. By eliminating manual steps, the software takes the guesswork out of managing push-to-talk. It transparently orchestrates the talk groups. Even better, workers can be connected in multiple talk groups simultaneously so there are no gaps when an employee needs to communicate across multiple teams. A worker can jump between multiple voice channels with the push of a button. This increases situational awareness, improves incident response and contributes to worker safety.

The software supports both voice and data. By data, do you mean IoT?

The duties of a frontline team — whether they're responding to an equipment issue on an oil pipeline or executing an unscheduled event in a mine — are increasingly triggered by IoT systems and sensors that send alerts saying, "something needs attention here!" Dynamic frontline communications software automatically assembles dynamic talk groups based on those IoT triggers, instantly connecting teams of frontline workers to go address the issue. The delays and errors associated with manual steps are eliminated, maximising situational awareness and incident response. The software instantly connects the right workers based on the IoT alert, gives them the voice channels and data they need to respond expediently, and sends them on their way.

IoT-triggered workflows — what's an example?

Let's say an IoT sensor in a utility plant identifies a possible security breach — a door is opened that shouldn't have been. The IoT sensor alerts the dynamic frontline communications software, automatically triggering the creation of a dynamic talk group linking key security and operations personnel, and giving them the information and location they need to instantly address the situation. Team members are instantly connected in a dedicated voice channel with supporting data and even instructions as to next steps. The issue is resolved rapidly with everyone working on the same page and with the same level of information. And they don't have to get off their existing channels to respond to the incoming call, a limitation of conventional push-to-talk. Instead, they can collaborate in the new talk group while staying on multiple existing channels at the same time. This multi-channel support is the natural evolution of frontline communications, adaptable to virtually any industry, any use case.

There's a lot of talk about geofencing. Can you explain?

A geofence is a virtual boundary that can be configured to trigger voice communications between personnel entering or leaving the virtual geo-boundary. It can be a seaport, a sports stadium, a mining operation, a warehouse, or any mission-critical geographical area with defined boundaries set by the enterprise. Dynamic frontline communications can automatically trigger dynamic talk groups based on users entering or exiting the virtual geo-boundary.

Example of a geofence using dynamic frontline communications?

Here's one — aircraft turnarounds at an airport. An arriving airplane approaches a gate and enters a virtual geofence, triggering the software to automatically assemble a dynamic talk group. The talk group connects maintenance, fuel, cleaning, and other ground crews working in concert to service the aircraft. Doesn't matter if these are different vendors or legal entities — everyone is connected to execute the common mission. Aircraft turnaround is accelerated. When the aircraft pulls away from the gate, the team is disconnected and the ground crews are free to continue their individual routines. This assumes the dynamic frontline communications software is integrated into the airline's scheduling system. Other examples might be using geofences to automate the assembly of warehouse teams responsible for unloading trucks that arrive at distribution centres. Or using geofences to automate the inclusion of third-party vendors hired to scrub a mining facility or oil refinery. This is push-to-talk elevated by workflow automation.

Everyone can be connected regardless of device?

Virtually any and all handheld devices and computers can be connected within the push-to-talk environment — smart phones, tablets, radios, laptops, desktop systems, IP phones, office phones, handheld computers with barcode readers, etc. All traffic is flowed onto the IP network, allowing any subscriber to use any device he/she wants. Whether a device is company-owned or BYOD, it doesn't matter. The software can scale to support thousands of users without disrupting the way they like to work. LTE, radio, Wi-Fi, IP, MANET, PSTN, and 5G are all supported. Next-gen push-to-talk helps modernise and extend radio infrastructure — protecting and enhancing the enterprise's radio investment.

So what stage of adoption are we in? What are you seeing?

Enterprises worldwide are actively embracing dynamic talk groups, workflow automation, geofencing and other interoperable communications capabilities. Executives are putting resources into dynamic frontline communications because it's a nice balance between the proven benefits of push-to-talk and the inevitable need to embrace the future. Gartner Research predicts that up to 70% of mobile investments in the next five years will be for frontline workers. We agree.

Instant Connect is a 2021 Gartner Cool Vendor in Frontline Worker Technologies. For further information: www.instantconnect.io

Instant Connect Software LLC
www.instantconnectnow.com

Two-way radio

Motorola Solutions launched the Mototrbo R7, a digital two-way radio with a slim, rugged design to connect teams even in loud, rough and dynamic environments.

The Mototrbo R7 voice communicators work on the digital mobile radio (DMR) standard and deliver sharp, clear speech with noise cancellation, automatic feedback suppression and automatic volume adjustment based on background noise. Critical and detailed information is displayed on the home screen, alleviating the need for workers to scroll through multiple screens to access alerts or text messages. The device can be programmed and updated over the air via Wi-Fi to reduce downtime and is powered by a battery that lasts up to 28 hours.

The radios are connected to a variety of sensors over DMR and Bluetooth and can be integrated with video security and access control systems. This allows security personnel to receive notifications on the device when there are unauthorised attempts to access secure areas or doors are propped open. Plant operators and field workers are able to receive critical alerts when high levels of hazardous gas are detected and rapidly react to help keep everyone safe.

Motorola Solutions Australia Pty Ltd

www.motorolasolutions.com.au

Smart managed switches

D-Link A/NZ has extended its 10 gigabit smart managed switch range with two models that boast a higher port count and 25GE support. The DXS-1210-28S and DXS-1210-28T offer options as potential enterprise aggregation points, access layer solutions or as SMB core switch network roles.

The DXS-1210-28T comes with 24 x 10GBASE-T and 4 x 25GE SFP28 ports. The 10GBASE-T ports provide an upgrade to 10 gigabit connectivity using existing CAT6/7 cabling, while the 25GE SFP28 ports offer high bandwidth connections to server farms or the network core. 25GE SFP28 ports are backwards compatible with 10 GB SFP+, offering network administrators deployment flexibility and an upgrade path to 25 or 100 GB uplinks.

The DXS-1210-28S is equipped with 24 x SFP+ ports and 4 x 10GBASE-T ports, allowing long-distance connectivity using fibre transceivers as well as the flexibility of additional copper ports.

Both switches offer high performance and low latency, suited to support virtualisation, cloud services and server-to-server applications, managing high-bandwidth demand.

The DXS-1210 Series Switches offer a robust line-up of L2 features to improve the manageability and performance of a network. These include port mirroring, Spanning Tree Protocol (STP) and Link Aggregation Control Protocol (LACP). They also offer lite layer 3 functions such as wire speed inter-VLAN static routing to further enhance network efficiency by reducing the pressure on routers and backbone networks.

Each of these switches offers a range of security features, including D-Link's Safeguard Engine, which works to protect against traffic flooding caused by malicious attacks. Additionally, the switches support 802.1X port-based and host-based authentication for network access control as well as ACL, ARP spoofing prevention and DHCP server screening to enhance network security and improve protection against threats.

The switches minimise power and cooling demands, powering down unused ports when possible to save resources and reduce carbon footprint. The series can be managed through its multilingual Web UI, a full command-line interface (CLI) via Telnet or console port, as well as with the D-View Network Management System.

D-Link Australia Pty Ltd

www.dlink.com.au

CASE STUDY

San Diego Police use Dejero at Comic-Con

At the recent Comic-Con Special Edition in San Diego, Dejero supported the San Diego Police Department's (SDPD) public safety operations by providing its GateWay network aggregation solution. Local network engineering experts AggreGateway installed a Dejero GateWay 211 device inside the SDPD's mobile command vehicle, ensuring uninterrupted wireless internet connectivity for effective situational awareness throughout the renowned comic book and pop culture convention.

Dejero GateWay served San Diego Police Department, providing critical communications during San Diego's Comic-Con Special Edition event.

The event took place last November 2021 as a scaled-down version of the regular show, owing to pandemic-related health concerns that saw the cancellation of the 2020 edition. This meant an even greater emphasis on public safety for the convention's return, with SDPD deploying a mobile command vehicle to support its situational awareness efforts for a crowd that was expected to reach 40,000.

Having previously partnered with SDPD for the 2021 US Open golf tournament, AggreGateway employed a similar set-up for the Comic-Con Special Edition in order to monitor live video and access mission-critical apps from the Joint Operations Center command post and the SDPD headquarters.

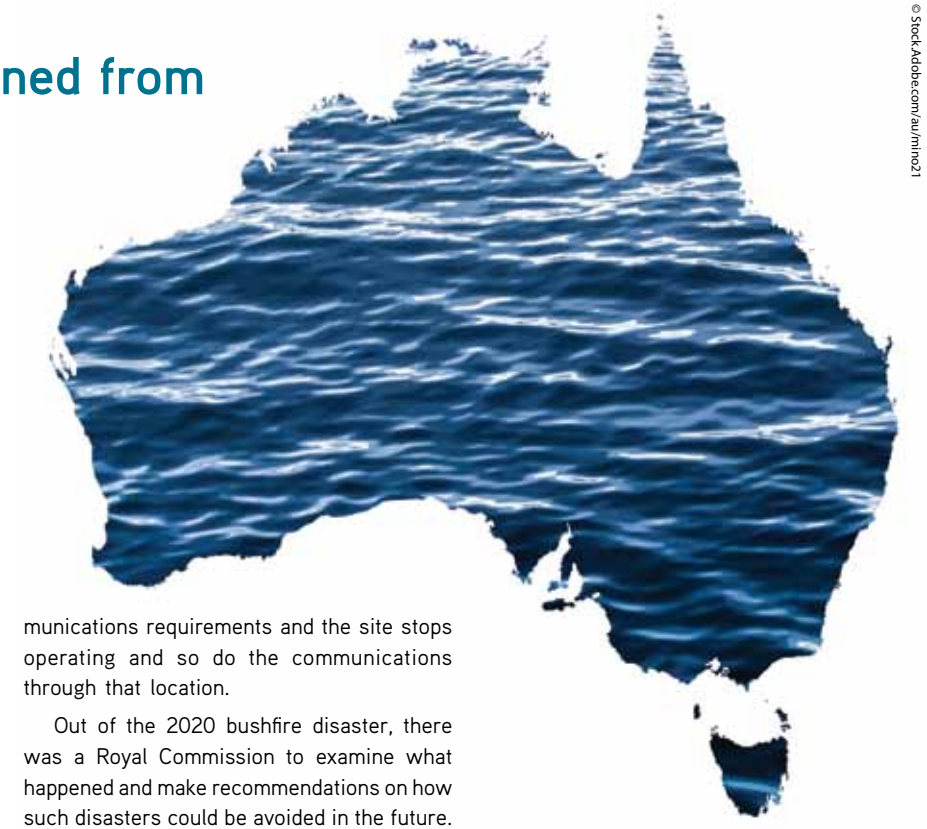
A Dejero GateWay 211 was stationed inside the mobile command vehicle for cellular connectivity, allowing officers inside the vehicle to use wireless internet as a secured path into the SDPD network. The event was monitored in real time and relayed back to the command post without latency or interference.

Using Dejero's Smart Blending Technology, the GateWay 211 simultaneously combined cellular connections from multiple providers to form a virtual 'network of networks' as a single service, delivering enhanced reliability, expanded coverage and greater bandwidth. Such robust connectivity is essential at an event like Comic-Con, where thousands of individuals are using the cellular networks.

Smart Blending Technology helps ensure stable, reliable connectivity in challenging conditions. Even if a connection is lost or becomes congested, the Dejero technology automatically re-routes packets in real time across the other connection paths to maintain a seamless connection. The kit came ready to use, thereby eliminating any lengthy set-up times and allowing the police officers to focus on the public safety of the convention's guests, staff and attendees.

Dejero
www.dejero.com

Have we really learned from past disasters?



As we reflect on the disasters of the summer of 2022, how can we not think back to the summer of 2020 and the disasters of that season? Then it was fire and now it is flood, but the same problems are still evident.

One of the more critical problems is the failure of our communications networks. During the floods of this year there have been innumerable reports from NBN Co of the national broadband network having service disruptions to tens of thousands of subscribers, yet there is very little reporting of this in the mainstream media.

So why would this level of failure be a cause for concern? Well, from recent reports, approaching half of our population no longer rely on traditional news sources like free-to-air television, broadcast radio or newspapers. Although there is recognition of this fact, it has not seeped into the collective thoughts of our bureaucrats and emergency agencies that getting the urgent messages out to the public at risk needs multiple avenues to be effective.

If we look at the recent blockades and disturbances in Ottawa in Canada, the government and, in particular, the Ottawa Police used social media very effectively to manage the situation, or more specifically to keep the public informed and able to go about their business and lives with as little disruption as possible. The use of social media relies very heavily on data systems like the NBN and wireless broadband. We are already seeing changes to information systems and heavier reliance on mobile devices for public education.

So how does this relate to the present problems with the NBN services interruptions? If you look closely at the NBN infrastructure, once you get past the devices at the premises and the shiny new blue and green optical fibre cables running down the streets, the actual infrastructure that provides the backhaul is an issue. In general, it has been cobbled together from multiple sources using facilities provided by the mobile phone carriers.

In most cases these facilities operate from the existing telecommunications towers to provide backhaul links and hubs for the NBN services, as well as the mobile carriers' wireless broadband services. If the power supply to these locations is cut off due to fire or flood, the stand-by power facilities are woefully inadequate for any critical communications requirements and the site stops operating and so do the communications through that location.

Out of the 2020 bushfire disaster, there was a Royal Commission to examine what happened and make recommendations on how such disasters could be avoided in the future. The commission tabled around 150 recommendations on how changes could/should be made to try to ensure that similar situations would be avoided in the future, or that risks be managed better. From a communications perspective very little has happened — basically none of the recommendations have been implemented.

It seems that most recommendations have been conveniently forgotten by the mainstream media who are more interested in photo opportunities and quick grabs from politicians, who in turn have studiously avoided allocating funds to ensure the recommendations are implemented. The major failure is that our public safety and emergency management agencies, as well as those in our industry and the general public, have allowed this to happen without comment.

For several years, Geoff Spring, a senior Industry advisor for the Melbourne University Centre for Disaster Management and Public Safety (he is also a Project Officer for ARCIA), has submitted papers to multiple government committees and tried to highlight the fact that our critical communications networks must be recognised as being part of the national essential services. This is important as that should then mean that attention would be given to ensuring the resilience and ongoing operational performance of these networks. That would mean that in a world where communications will be via multiple platforms, the wireless broadband networks, as well as the traditional news sources, will be examined and steps taken to ensure they keep operating during times of emergency.

One of the most frustrating outcomes from these submissions has been that although on occasions government select committees have agreed and recommended that changes should be made, changes of government or political personnel have meant that recommendations have not been acted on and, like the RC recommendations, have been lost in the passage of time. Too often we see situations where failure to heed the lessons of the past results in them being repeated in the present.

As an industry and as members of the public and first responder communities, we must again try to bring attention to the need for our critical communications networks of all types being recognised as part of our nation's essential infrastructure. Only then might we feel a bit more confident that we really are protecting the future of our communities, our children and their children as well.

Our radio and data communications systems are an integral part of our lives and safety — time to recognise that and act accordingly.

Ian Miller, Executive Officer, Australian Radio Communications Industry Association (ARCIA) Inc.

FREE

for industry and business professionals

The magazine you are reading is just **one of 11** published by Westwick-Farrow Media. To receive your **free subscription** (print or digital, plus eNewsletter), visit the link below.

wfmedia
connecting industry

www.WFMedia.com.au/subscribe

AutoMate

Keep staff safe and operations moving; AutoMate enables automated radio actions through situational triggers

sepura

Going further in critical communications

For more information visit:
www.sepura.com/applications