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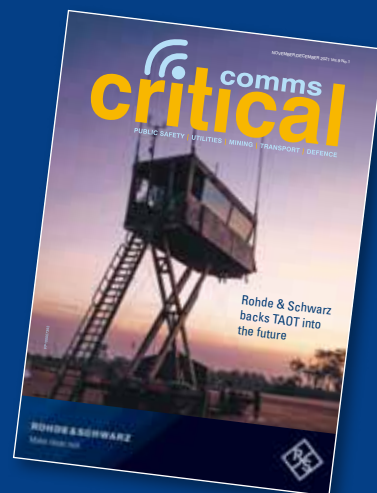
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## ON THE COVER



In 2008, the Royal Australian Air Force sought the acquisition of a forward deployed air traffic control capability. Rohde & Schwarz Australia answered the call as the prime and systems integrator, engaging with subcontractors and suppliers in Australia and Europe to provide a solid foundation for the successful delivery of capability and the provision of cost-effective sustainment through life.

Three Transportable Air Operations Towers (TAOTs) were delivered in 2012 and they are regularly deployed around the country to support RAAF operations from remote bases and to provide additional ATC support during a disaster response. For example, as part of Operation 'Bushfire Assist' in summer 2019–20 a TAOT was deployed to Bairnsdale airport to assist civilian and military aircraft conducting remote firefighting and humanitarian aid missions. More recently, a TAOT unit was deployed to RAAF Base Scherger in Far North Queensland during the biennial multinational exercise Talisman Sabre 2021.

In 2019, Rohde & Schwarz Australia commenced a mid-life upgrade to assure the capability and extend its service life to 2030 and beyond. This will serve to not only remediate obsolescence, but also to incorporate new technologies, enhance operational capability, and increase security.

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Here at WF Media headquarters the emails are flowing freely discussing how to reintegrate the employees back into the office environment. Lots of anticipation, trepidation and reflection.

Many businesses suffered and many have hung on, and there has been a renewed understanding and respect for those professions not normally seen as deserving sainthood; besides the obvious workers that should be pedestalled, such as nurses and teachers, we can also add retail counter staff, work-from-home parents juggling work, home and child education, public transport workers and council workers. All were expected to keep working and providing their services to those of us who had the benefit of not having to meet customer demands face to face and most usually on a low wage.

Another group that deserves recognition is volunteers. Especially charity workers who have stepped up at a time when most sorely needed to provide goods and services to others that do not have the ability to do it themselves.

Alongside this group I reckon we could add people who volunteer for associations. I also give a sweeping tip o' the hat to the two main associations that this magazine is affiliated with: ARCIA and RFUANZ.

The Radio Frequency Users Association of New Zealand managed to pull off the amazing feat of putting on a Comms Connect during this year in Wellington. An amazing effort from a small bunch of unpaid volunteers. Kudos.

The second shout-out goes to the good people at the Australian Radio Communications Industry Association. Again they stepped up to the mark and set up all manner of online learning webinars as well as their continued advocacy for our industry in discussions with the

political leaders. Difficult work when it is not your paid profession.

If you are not a member of these organisations I humbly suggest you take a serious look at joining.



**Phillip Ross, Editor**  
cc@wfmedia.com.au

## November

### Critical Communications World 2021

3-5 November 2021

IFEMA, Spain

[critical-communications-world.com](http://critical-communications-world.com)

## March

### Comms Connect Melbourne 2022

8-10 March 2022

Melbourne Convention & Exhibition Centre

[melbourne.comms-connect.com.au](http://melbourne.comms-connect.com.au)

## May

### Comms Connect New Zealand 2022

11-12 May 2022

Te Pae Convention Centre, Christchurch

[www.comms-connect.co.nz](http://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](http://www.apco2022.org)

*For a full list of industry events,  
see [criticalcomms.com.au/events](http://criticalcomms.com.au/events)*





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# 5G



WHAT ROLE  
WILL 5G PLAY IN  
DELIVERING CRITICAL  
COMMUNICATIONS?  
WHAT THE FUTURE OF 5G COULD  
BRING FOR FIRST RESPONDERS

*Jason Johur\**



5G networks promise greater capabilities to critical users but further specification work is needed to ensure their unique requirements are met.

**A** new white paper from TCCA, the global organisation for the advancement of standardised critical communications technologies, says that ultimately, 5G will enable cooperation between critical users to become more efficient and effective. As a result, the safety of first responders and the communities they protect will be enhanced.

5G opens up the potential for a range of services, most notably driven by 5G's reliable low-latency communications and support for massive machine-type device deployments. For first responders, this means control rooms will have a far more accurate view of a situation and can better allocate people and resources. Information can be shared between agencies seamlessly, via cloud-based application platforms.

### 5G capabilities relevant to critical comms

3GPP Releases 15 and 16 have specified functionality and interfaces required to offer 5G networks supporting enhanced mobile broadband (eMBB) and voice-over-new-radio (VoNR) services. They also laid the foundation for advanced critical communications services such as massive IoT, critical IoT and MCX over NR.

Release 17 (expected June 2022) is targeting the initial functionality to provide MCX over a 5G SA network. MC functionality comparable to LTE is expected to be finalised in Release 17 for unicast services and Release 18 for multicast/broadcast services; the latter expected to be completed in 1H 2023.

It may be recalled that MCX over 4G LTE have already been specified by 3GPP, thus allowing the delivery of these services over an LTE network. Although 5G (3GPP Releases 15-18) contains a myriad of new functional capabilities that could be considered relevant to critical communication users, a summary of the ones with greatest impact are as follows:

- MC Services over 5G: principally the porting of all MCX services to 5G NR
- 5G multicast and broadcast services (5MBS): enabling more efficient and effective usage of spectral resources for group-based communications consisting of mission-critical voice, data and video services and support for high concentrations of public safety

users operating in large groups within a small incident area.

- Device-to-device communications using Sidelink: enabling the capability for proximity services (5G ProSe) and vehicle-to-X (V2X) services, addressing device-to-device (D2D) short-range communication use cases in environments with limited or non-existent network coverage.
- Network slicing: providing the ability to slice a single physical network into many virtual 'private' networks with widely differing network service characteristics.
- Enhanced network security: further mechanisms to protect the integrity, confidentiality and availability of the network services and user data.
- Isolated operation for public safety (IOPS): originally introduced in 3GPP Release 13, IOPS over 5G systems is being defined in Release 17.
- Advanced congestion management: improvements to support differentiation of mission-critical users and services during times of peak congestion.
- Enhancements for railway communications: driven by the future rail mobile communications system (FRMCS) initiative, it will enable interworking and future migration of existing rail mobile communications from GSM-R and TETRA, and the provision of new broadband-enabled services.
- 5G non-terrestrial networks (NTN): expanding coverage solutions to places with no terrestrial coverage and involving use of satellites as well as networks, or segments of networks, using an airborne or spaceborne vehicle for transmission, such as high-altitude platforms (HAPs) and unmanned aerial systems (UAS).

### What role will 5G play for critical communications users?

The evolution from mission-critical, voice-centric narrowband technologies to mission-critical, information-centric mobile broadband services started with functionality introduced in 3GPP Release 12 ('4G LTE'). The use cases addressed by 4G LTE have initially been focused on the use of mission-critical data and video and received favourable feedback in addressing the initial needs of critical communication users.

With the introduction of 5G, the boundary of mobile broadband networking will be pushed to new levels, with the obvious potential to increase user operational efficiencies further. New 5G capabilities include not only a further development of mission-critical services but also new ways of performance monitoring and service assurance, as well as new 'hybrid' network deployment models that optimise users' experience and adapt to available spectrum, regulation and agencies operational requirements. In summary, these capabilities will deliver improvements in two distinct ways:

- Enhancing use cases currently enabled by 4G LTE.
- Creating new and emerging use cases, previously not viable with earlier generations.

### Use cases enabled by 4G LTE and further enhanced with 5G

With mission-critical 4G LTE, many use cases can already be addressed and deployed (or are being deployed). Common examples are listed here and have been widely discussed amongst TCCA stakeholders and the wider community.

#### Situational awareness

Being aware of events related to an incident, in time and space, is a key area where the introduction of broadband will play a pivotal role. Combining enhanced X, Y and Z positioning capability together with 10 to 100 times more connected devices per square kilometre will enable the collection and processing of a large amount of data from a wide variety of mobile-connected sources for real-time pattern matching using big data technologies.

In practice, this means, for example, connecting body-worn cameras and cameras in police cars to command centres to identify what is happening at an incident and to gain an overview of the situation as it unfolds. This will ultimately enhance user operations and planning for future emergency response, collecting data and sharing the required processed information to agencies and users in service, while boosting cooperation and enabling more efficient resource management.

#### Video surveillance and analytics

In addition to cameras hosted in and around emergency services vehicles, cameras can also operate on remotely controlled



THE INTRODUCTION OF MOBILE BROADBAND WITH LOW LATENCY COMBINED WITH EDGE COMPUTING OPENS NEW POSSIBILITIES FOR DEPLOYING COMMAND AND CONTROL CAPABILITIES.

drones or unmanned vehicles for a better awareness of urgent situations occurring in areas that human beings cannot easily access. Because 5G focuses on massive broadband, it will allow the number of cameras in specific hotspots to be increased where capacity is currently limited by 4G LTE. In addition, higher resolution 4K, 360° cameras or thermal imaging cameras can be used for more precise visual insights.

### Remote control and monitoring

5G NR will bring a number of benefits such as ultra-reliable and low-latency communications, which can be used by applications and pave the way to assisted driving and unmanned automated vehicles. This capability will also be important for instance in automating a fleet of high-speed drones with real-time centralised coordination that uses sensors, geo-fencing and/or video analytics to avoid collisions.

### Immersive applications for first responders

The introduction of mobile broadband with low latency combined with edge computing opens new possibilities for deploying command and control capabilities. Usage of augmented reality (AR) and virtual reality (VR) will reduce the amount of desk space used by multiple display screens and allow emergency organisations to equip workers with wearable solutions like smart glasses to access data at the scene of an event.

### User-friendly operations

Network resource prioritisation and geofencing combined with enhanced parameters for

positioning are examples of 5G techniques which can be used by the application layer to automatically connect users in the same area in order to provide more user-friendly operation. This enables more focus on the task at hand and less on the device.

### E-health

The new level of performance provided by 5G networks will be an important enabler for major e-health and telemedicine applications. Examples include future healthcare and its transformation in terms of preventative, routine and post-operative care. Furthermore, 5G will empower moving ambulances to transmit life-critical data to hospitals, including high-definition video and the outputs of sophisticated medical equipment.

These capabilities, combined with real-time video communication with remote doctors, will make it possible for doctors to diagnose and address problems before patients even arrive at the hospital.

### Expected benefits of 5G to user operations

The introduction of 5G will impact network deployment, given the density of cell sites required for high-band 5G and operations. The adoption of a new 3GPP-defined service-based architecture with network functions built to exploit the advantages of cloud technology platform will enable end-to-end resource flexibility, robustness, security and stability of operations.

5G technologies will provide first responders fast and robust communications. It will give the dispatchers an accurate view

of a situation and therefore enable them to better allocate resources. The information between agencies can be more easily shared, complemented by cloud-based applications. The sharing of information between police, fire and rescue services and ambulance service is of vital importance and has had weaknesses in previous approaches.

This all means that the cooperation between first responders can be more effective, improve the safety of users and save others' lives.

*The Critical Communications Association (TCCA)*  
<https://tcca.info/>



*\*Jason Johur, TCCA Board member, Chair of TCCA's Broadband Industry Group and Head of Strategy & Market Development for Ericsson's Mission Critical Networks.*



# B310 5G



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## PANDEMIC ACCELERATES TECHNOLOGY DEMAND FOR PUBLIC SAFETY

Motorola Solutions, in partnership with a leading academic and independent research team directed by Dr Chris Brauer at Goldsmiths University of London, has conducted a global study that uncovers how expectations for safety and security are changing while fuelling public safety and enterprise innovation.

The 'Consensus for Change' report surveyed 12,000 citizens and interviewed 50 public safety agencies, commercial organisations and industry experts across 10 geographic markets: Australia, Germany, Italy, Malaysia, Nordics, Singapore, Spain, Taiwan, United Kingdom, United States. It analyses how the global COVID-19 pandemic heightened awareness of the need for technology to enhance public safety while accelerating innovation and technology adoption for emergency services and enterprises around the world.

The study finds that an overwhelming 88% of citizens globally want to see public safety transformed through the use of advanced technology. Other major findings include: 71% say technologies, such as video cameras, data analytics, cybersecurity and the cloud, are needed to address challenges of the modern world.

Other findings include: 70% say emergency services should be able to predict risk, a task that can be supported by advanced technologies; 75% say that they are willing to trust the organisations that hold their information so long as they use it appropriately.

Consensus for Change highlights how the pandemic sparked high-velocity innovation for public safety agencies and businesses, especially in the areas of cloud adoption, video security and interoperability between disparate organisations and systems, while reconfirming the need for reliable and resilient mission-critical communications.

The report is a resource for public safety agencies and enterprises to understand and apply lessons from the pandemic. The pandemic has highlighted the need to look at things and respond differently: from assessing risks and better predicting areas of operational disruption, to evaluating and integrating the right technologies to support business continuity.

It has also reinforced the need for better communication and collaboration with communities and among stakeholders to secure support for the expanded use of advanced technologies.

## UHF handheld radio

The CP50 is an Australian designed and manufactured professional 5 W UHF radio.

Encompassing digital signal processing circuitry, the radio delivers a platform with advanced features and value-added software functionality.

The CP50's selectable 5 W, 1 W and 100 mW low power transmit mode coupled with the 2600 mAh lithium-ion battery pack offers extended operational hours. It provides a range of features including MDC1200 compatibility, RSSI and 'busy voting' and 'man down' and 'lone worker' alerts to meet the needs of work sites.

Encased in a compact and rugged design, which meets both IP67 and MIL-STD-810G ratings, the CP50 is designed for durability and, coupled with loud and clear 1500 mW of audio output, it provides communication even under harsh conditions.

**GME Pty Ltd**

[www.gme.net.au/au-pro/](http://www.gme.net.au/au-pro/)



## Rugged server

The Crystal Group custom RS1304L23 combines features of its Force RS1104 and the legacy RS13L24 product updating the existing system with a motherboard providing two PCIe slots in a 1U chassis with two processors. The server drive bays have been upgraded also from 8.89 cm to the 6.35 cm version.

The resulting solution is a modified 1U RS1304L23 server that accepts two CPUs, three expansion cards and up to four drive carriers. Using a customised X11DDW-NT motherboard from Supermicro, the design kept the server less than 58.42 cm in depth. The RS1304L23 combines the features of an enterprise-class server designed to meet a variety of MIL-STD tests to survive challenging military environments.

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## KEYSIGHT STRENGTHENS AUSTRALIAN NETWORK

Keysight Technologies announced that it has signed test and measurement companies Rapid-Tech Equipment and Leda Electronics as authorised distribution partners in Australia.

The two distributors, which are owned by a single company, cover the entire country of Australia, helping to improve access to Keysight's range of test and measurement products, coupled with local support and service.

Rapid-Tech Equipment, headquartered in Melbourne, was started in 1996. The company has offices in Sydney, Brisbane, Perth and Adelaide, providing advice and test and measurement equipment to customers across eastern Australia.

Leda Electronics is an importer, distributor, wholesaler and retailer of test and measuring instruments in Western Australia for over 30 years. The company has a competent network of sub-distributors throughout Western Australia with technically qualified staff who provide service and calibration support to customers.

## TCCA ANNOUNCES NEW CEO

The Board of TCCA has announced the appointment of Kevin Graham as the association's new CEO. Kevin will join TCCA for a three-month transition period commencing 1 October and work together with current Chief Executive Tony Gray to ensure a thorough and seamless handover.

Gray is due to retire at the end of the year, and Graham will assume full responsibility for TCCA's management from 1 January 2022.

Based in Melbourne, Australia, Graham is founding chair and has remained a director of TCCA's Australasian Critical Communications Forum since 2001. He has extensive experience in the critical communications sector, and in his career to date has worked for and with many TCCA member organisations.

With more than 40 years' experience in the communications industry, his skills encompass engineering, sales and marketing, executive management, and through his global consultancy and advisory services, he has accumulated a thorough understanding of standards organisations, regulators, industry associations and academia.

"Kevin will be joining us at an inflection point in our sector, as the potential of 5G begins to crystallise, as the rollout of critical broadband networks advances around the world, and as the importance of TETRA and other narrowband networks is reinforced

as the continuing foundation for critical communications services," said Mladen Vratonjic, Chair of TCCA's Board.

"We look forward to Kevin building on Tony's many significant achievements during his tenure as Chief Executive, providing continued commitment to our members, and taking TCCA forward into its next phase of development."



## Hybrid LTE/digital transceiver

Icom has introduced a hybrid LTE/digital transceiver that integrates wide-area licence-free LTE communications with traditional digital/analog wireless communication in a single handheld device.

Users choose which system to communicate with by simply pressing the Main or Sub PTT button. Or, push both at once to address two groups at the same time.

LTE mode provides secure, private push-to-talk communication over 3G/4G networks. This system provides coverage where conventional radio systems may not reach, limited only by the user's cellular networks. Speak and listen at the same time with TalkListen functionality for a more 'telephone' like call. An integrated GPS receiver provides position data over LTE mode, which can be monitored with GPS mapping software.

Conventional VHF/UHF digital radio mode offers all the benefits of IDAS NXDN digital radio: individual, group and all calls, digital voice scrambler, over-the-air programming.

To keep users safe, an emergency button transmits emergency signals over both LTE and IDAS modes. Man Down,

Lone Worker and Motion/Stationary Detection emergency modes are included.

The UHF IP740D can also be programmed with CB channels to enable simple, local communications in the same device as the user's LTE network and private commercial channels.

The VE-PG4 RoIP gateway enables further expansion and integration with existing equipment such as Satellite PTT, WLAN Radios, IP Phones and other radio networks.

Built to Icom quality standards, both the IP730D and IP740D have a waterproof and dust-tight rating of IP67 and meet MIL-STD-810 specifications.

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## Radio range

The Entel group designs and manufactures business-critical radio communications equipment.



Entel radios cover a broad range of solutions including DMR, CB, Marine, Atex, MED Atex and Marine GMDSS MED Certified radios. The whole range of Entel radios are also fully submersible with an IP68 rating.

ACE Communication Distributors hold stock of a wide selection of the Entel radio range and are the exclusive Australian distributors for the brand.

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# Industry Talking

As I write this article, NSW and Victoria are coming out of recent COVID lockdowns. We are all hoping that the next couple of months are more routine and that people can return to work safely.

In October ARCIA kicked off Lunch Time Learning sessions that are intended to provide quick bytes of industry information on a broad range of subjects. The response from members online has been terrific and we will keep doing this into the future.

I would like to thank all the ARCIA members who have contributed to the content for these snapshots and also delivered them online. Our honorary Treasurer Andrew Wyborn has put a huge effort into this program and he has done a fantastic job presenting online.

One interesting piece of feedback we received was that many members attending Lunch Time Learning are new to the industry or are involved in administration roles and do not have any real understanding of all the industry jargon. Andrew stepped in and created the first ever industry index of terms and we think this will be useful for many people.

As we ramp up our online training courses ARCIA has contracted with an online e-learning provider, <https://etrainu.com/>, to provide these services to our members. ARCIA will be putting all our professional development courses and other material onto this site for the benefit of members. There will be a mix of free and paid courses available as we load up new content and we see what demand occurs.

For some time, ARCIA wanted some method to provide professional development or micro-learning skill sets that are not available through traditional facilities. This follows on from the face-to-face courses that ARCIA ran in conjunction with Comms Connect; this online platform will make administration much easier.

The online service will also make this information more available to people who cannot get to a major centre or event. Competency-based training is becoming commonplace with staff using online services for work health and safety or inductions and many other services.

There is huge scope for a variety of courses; ARCIA wishes to create a system that enables a broad range of people engaged in our industry to upskill and document their progress. If our industry wants to create a vocational path for people coming into the industry this system will provide industry-specific skill sets that will complement TAFE or other formal education opportunities.

During October ARCIA had the opportunity to respond to the Australian Competition and Consumer Commission that was assessing the market for mid-band LTE spectrum in regional and remote Australia. ARCIA continues to argue that spectrum policy needs to include a methodology that allows for many types of users to access new technology options such as private LTE.

There is a growing chorus in the industrial and agricultural sectors that seek to use wireless technology to improve productivity. While spectrum policy is very complicated and subject to international harmonisation agreements we are seeing other countries use spectrum policy to encourage innovation in new markets.

As this will be the last post for 2021, we wish you a happy and safe Christmas and cannot wait for 2022 and in-person events to return.



**Hamish Duff, President**  
Australian Radio Communications  
Industry Association



## Multi-channel mezzanine board

Metromatics now supplies the Alta Data Technologies mini, embedded mezzanine board for MIL-STD-1553 networks, the MEZ-E1553.

The product provides 1-2 dual redundant 1553A/B/C channels with an ethernet backplane interface on a small 3.6 x 5.6 cm PCB, available in dual (BC/BM or mRT/BM) or full function (BC/mRT/BM) models.

For current customers, the board can be integrated into an existing system, using the same AltaAPI SDK software, often without even recompiling their application. For new customers, the Berkeley socket layer means the MEZ-E1553 will work with almost any operating system. It complements the Mini PCI Express embedded cards (MPC12-1553) for systems like Com Express.

The MEZ-E1553 is suitable for any rugged, custom requirement. The product also includes signal capture (o-scope) capability for troubleshooting 1553 cable issues and cybersecurity signal modelling.

These products provide all the controls of traditional 1553 interfaces and can simultaneously auto bridge time-stamped 1553-UDP packets without any programming. There is a fast auto-boot feature and data structures can be controlled through standard socket communications as implemented in almost every OS, even DO-178 compliant systems.

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# Formula 1 flying cars need secure comms



*Airspeeder flying car in race mode*

What Formula 1 brings to track-based racing cars Airspeeder intends to bring to the ultimate performance flying car.

It is hard not to read that sentence twice, but Airspeeder is the latest, exciting sport to hit the skies and it involves flying cars. Its comms requirements are taken care of by sports industry comms specialists, D2N using Hytera equipment. D2N MD, Jason Owen, explained, "Airspeeder and the engineering team at sister-company Alauda Aeronautics reached out to us as they knew of our reputation in the sports industry and were looking for a comms solution for their new race program. They were developing a flying racing car series and were in the test and development stage. This in turn called for a communication system between the pilot, who flies the aircraft remotely, the engineers and the flight test director." Alauda's engineers initially wanted a comms system to cover two applications for the forthcoming EXA remotely piloted racing series and the Airspeeder crewed electric flying cars races. These were, firstly the R&D of the vehicles





*Race engineer working on an Airspeeder event*



*Race engineers working on an Airspeeder flying car*

with a pilot and secondly a number of engineers who all communicate as a group.

The second application was also required to take care of a race management team that would ultimately manage the actual running of the races. The comms solution proposed and supplied by D2N, consists of Hytera PD662 radios and Raytalk noise-cancelling headsets.

Hytera's PD662 are slim and light digital two-way radios, delivering excellent voice clarity and enhanced encryption with an LCD screen and programmable keys. Due to its size and weight and battery length this radio was a popular choice for the long days of racing and testing.

The Raytalk RAN-1000A double sided noise cancelling headsets are suitable for a range of radio brands and fitted with the Hytera radios easily.

"Race Management need the ability to communicate with each team as a group to dynamically respond to racing condition changes," said Owen. "To meet all of their requirements we suggested they invest in a high-end radio system as this would take care of the teams' needs and form the foundation of the race management solution."

Looking to the future Airspeeder and Alauda will also require future communications post testing for racing, much like an F1 team has comms with their driver, as their prototype aircraft in turn develop into manned aircraft.

Owen said, "This second, comms post testing, stage is a longer-term solution but needs to be implemented in the near future for testing. The maximum distance for this part of the solution at this stage would be one to two kilometres and this would grow to over 5km in time."

Considering Airspeeder is a relatively new sport with incredibly unique and specific requirements, the technology partnership with D2N and Hytera has been seamless.

"We tried to deliver over and above as we not only solved their initial comms challenge," says Owen, "but also put them on a path where systems can be repeated and scaled to suit their operation as more teams come on board and the governance of race management requirements grow."

As Airspeeder grows in stature and popularity the awareness around the sport has also been growing at an astonishing pace, as has its technical and comms requirements.

"For most of this year, it has all been about R&D and test flights of the actual vehicles. D2N is already an integral part of this amazing sport as we have supplied them with super reliable communications and a solution built to suit and futureproof their operations. Airspeeder and Alauda have the advantage of our many years' experience providing comms to motorsport and they appreciate that this is a big plus for them. Also, many comms suppliers get wedded to one comms manufacturer brand, whereas the D2N approach is to think about the application before any brand is discussed. As a result, we have always delivered on every requirement and every promise for this amazing new flying motorsport."

To find out more about the Hytera radio used in this amazing Airspeeder race series, go to: <https://hytera.com.au/>



**Hytera Communications Co. Ltd**  
[www.hytera.com.au](http://www.hytera.com.au)

# TRANSFORMING SAFETY THROUGH TECHNOLOGY

## GLOBAL DANGERS CREATE CONSENSUS FOR CHANGE

Motorola Solutions, in partnership with independent researchers at Goldsmiths, University of London, has conducted a global research study that discovers how the pandemic has changed our expectations for safety while fuelling technology adoption and innovation.

**T**he extraordinary conditions of the global health crisis have made two things clear: safety is now seen as a collective responsibility across public safety agencies, industry and society; plus, technology can play a far greater role in keeping us safe.

The Consensus for Change citizen survey found that 88% of citizens globally want to see public safety transformed through the use of advanced technology.

The research also discovers how the pandemic sparked “high-velocity innovation for public safety agencies and businesses, especially in the areas of cloud adoption, video usage and interoperability between disparate organisations and systems, while reconfirming the need for reliable and resilient communications”.

In uncertain times, citizens place higher expectations on their public safety agencies to keep them safe. Prior to the pandemic, many organisations were looking to technology as part of their plans to modernise through digital transformation.

As the research revealed, those plans and the deployment of new technologies have been accelerated by the constantly evolving public health crisis.

Citizen Survey highlights:

- 74% agree using technology increases the productivity and efficiency of emergency services.
- 68% say the pandemic increased the need for safety technology.
- 71% of citizens say advanced technologies, such as video cameras, data analytics, cybersecurity and the cloud,

are needed to address challenges of the modern world.

### Adapting technology to respond to new threats

Police Scotland has been relying on technology for some time to improve the way they capture and store evidence and have saved many thousands of hours for their officers. It initially deployed smart mobile applications to enable officers to use their mobile devices instead of paper-based methods of filing reports and incident details.

But it was not until the pandemic that they realised the same technology could enable social distancing in the field.

San Diego County Sheriff's Department benefited from a vast and interoperable



Image credit: ©stock.adobe.com/au/vectorfusionart

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THE GLOBAL PANDEMIC IS A SHARED EXPERIENCE THAT HAS CAUSED SEISMIC CHANGES TO PUBLIC HEALTH AND NEW EXPECTATIONS AND RESPONSIBILITIES FOR SAFETY.

mobile radio network to communicate with other agencies before the pandemic. As the health crisis unfolded, public safety agencies across the county were able to stay informed and work more efficiently together by listening to one another's radio traffic.

Therefore, it is natural to expect our public safety agencies to have access to similar (or better) tools to deliver their services. The reality is that those agencies cannot adopt technology as quickly or as flexibly as citizens can.

Emergency services and government agencies need to think more fundamentally about how to acquire, adopt and implement technology and the consequences of change. For them, the transition needs to be weighed against sizable risks, including the need to maintain the integrity of the criminal justice

system and protect citizens' personal data.

Despite this, the research found many examples where the global pandemic actually spurred long planned technology deployments into action.

### Increase in use of cloud security options

Norway's emergency health service's operating organisation for Nødnett HF, Helsetjenestens Driftsorganisasjon for Nødnett HF (HDO), provides control room management and emergency communications between citizens and health services. When the pandemic hit and emergency calls spiked, it decided to upgrade its control room with a cloud-based software in its own data centres to support virtual control rooms.

HDO's new solution will unify data, streamline incident management workflows and enable better communication and emergency response across the nation. By centralising its control room operations onto one technology platform, HDO will increase collaboration between medical centres, regional health authorities and emergency communication centres, making vital information easily accessible for broader emergency and healthcare organisations.

A common challenge described by many public safety agencies interviewed is having a lack of interoperable technology — in other words, technology that does not allow them to communicate with other agencies, as well as disparate and incompatible systems within their organisations which do not communicate with each other.



Agencies want more interoperable solutions and greater integration across their technology systems to streamline their workflows and data, increase their situational awareness as emergencies unfold and to deliver better safety outcomes overall.

Although solutions are available to increase interoperability for both mission-critical communication and software systems, a number of agencies say they continue to face hurdles. Authorities cite technical, economic and governance challenges that need to be resolved before more interoperable solutions can be extended across the wider public safety community. Public safety agencies also need to act judiciously on interoperability, weighing the benefits and risks of sharing more communications and data with others.

Once again, the global pandemic created unique conditions that caused many emergency services to re-evaluate their interoperability strategies. Norway's HDO said having interoperable technology enabled it to cope better with the major spike in emergency calls caused by the pandemic. Its integrated communications system enables paramedics, doctors on duty and hospitals to exchange essential updates and maintain high levels of communication and situational awareness as crises unfold.

### Continuing reliance on resilient communications

In interviews, the researchers discovered how emergency services and enterprises globally are continuing to depend on mission-critical voice communication as the foundation for their operation-wide collaboration and resilience. Unlike cellular networks, these networks feature hardened infrastructure for increased reliability. Organisations have control of their networks and can scale them to provide additional capacity for secure, uninterrupted team-based communication.

At the same time, communication systems are evolving through integration with other technologies including mobile broadband.

### Growing need for interoperability

Boston Police Department extended the reach of its land mobile radio system within 72 hours of the first COVID-19 lockdown by integrating broadband push-to-talk services. This enabled secure voice and data communication for its distributed and remote workforce, connecting radio users on the frontline with employees using smartphones and other devices within their homes.

To comply with government COVID-19 work safety regulations, New Zealand City Forests adapted its new digital radio communications to replace the need for drivers to exchange paper job dockets with a digital docketing system.

Radio communication technology has been adapted to meet pandemic conditions in other ways too. For example, radio accessories have enabled touch-free operation and social distancing in high-risk settings such as hospitals.

The global pandemic is a shared experience that has caused seismic changes to public health and new expectations and responsibilities for safety. It has accelerated changes in our personal perspectives and catalysed the adoption of new technologies.

A major global movement is now underway that supports making safety a shared responsibility among service providers, industry and society. Its success depends on citizens, public safety agencies and commercial organisations all being able to trust each other and to share more information to further improve the way public safety services are delivered.

*Motorola Solutions Australia Pty Ltd*  
[www.motorolasolutions.com.au](http://www.motorolasolutions.com.au)



### Server modules

Adlink Technology has released the COM-HPC Ampere Altra 80-core COM-HPC server-type module for edge platforms that process compute-intensive workloads, eliminating bottlenecks and restrictions typically caused by memory caches and system memory limits on edge devices.

The unit is an Ampere Altra system on a chip using the Arm Neoverse N1 architecture, providing performance within a modest thermal envelope, lower TCO than x86 designs and lower power consumption, the company says. It offers three PCIe Gen4 x16 lanes with a homogenous architecture for workloads such as real-time/near real-time applications including test and measurement.

**ADLINK Technology Inc**  
[www.adlinktech.com](http://www.adlinktech.com)





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## Dynamic regrouping functionality

Omnitrone omnicoe Enterprise Dispatch consoles support dynamic regrouping directly from the console via AIS for Tait DMR T3. Dynamic regrouping allows teams of people to be allocated dynamically from the dispatch operations centre as new incidents occur, rather than requiring specific talkgroups to be preprogrammed in the user terminals.

The omnicoe Enterprise radio dispatch system now offers an integrated dynamic regrouping capability for Tait DMR T3 networks, including full control over radio user talkgroups allocated to terminals directly from either the dispatch console, from the server or both. In events requiring fast decision-making and workforce mobilisation, the Dynamic Regrouping function gives the dispatch operator full control over radios and the talkgroup allocation. Each radio's talkgroup can be changed by the dispatch operator by adding them to one or multiple talkgroups; up to 15 groups per terminal are supported with Tait DMR T3.

Applications are wide and varied: from on-the-fly regrouping by an operator in mission-critical public safety and emergency management situations to urban transport managing daily operations.

The functionality is an integrated feature of the standard omnicoe system with omniAGS and is included with system purchases. Users of DMR Tier 3 can benefit from cost savings compared to other digital trunked standards, including Tetra and P25.

Dynamic regrouping will debut in mid-2021 when it is released as part of two urban transport radio dispatch upgrades: the first for an Australian city council and the other a Canadian City Council, which will utilise omnicoe Enterprise Dispatch with Dynamic Regrouping as part of the bus and ferry and bus communications respectively.

**Omnitrone Pty Ltd**

[www.omnitrone.com](http://www.omnitrone.com)

## Open and closed headsets

The H6Pro Closed and H6Pro Open acoustic gaming headsets from EPOS are built to deliver natural and expansive, high fidelity audio.

The H6Pro Closed delivers audio with passive noise reduction to let users zone in and focus. Available in Sebring Black, Racing Green and Ghost White. Closed-back ear cups eliminate environmental distractions, with a lightweight build, padded headband, two-axis adjustable ear cups and memory foam ear pads for extended comfortable wear.

The H6Pro Open delivers fine audio across the full frequency spectrum, with minimal listening fatigue. Designed for use in quiet environments, its transducers offer natural high fidelity audio, while still aware of surroundings.

**EPOS Audio Australia Pty Ltd**

[www.eposaudio.com/en/au](http://www.eposaudio.com/en/au)



## Antenna for small devices

Antenova has launched Lutosa, a compact, high-performing antenna for all 5G bands, including LTE band 74 1420–1520 MHz and 617–698 MHz.

Lutosa is a flexible antenna measuring 95 x 15 x 0.15 mm, making it suitable for small designs as it can be curved or folded and inserted into a device. The antenna is linear polarised and showed high efficiency in tests.

Designed for integration into a device, the antenna does not require a ground plane or a matching network and is simply fixed in place using its own self-adhesive strip. It is suited to M2M and IoT applications using high data rates on the 5G networks and video streaming.

The antenna will be suitable for network devices, cellular routers, Pico base stations, drones, remote monitoring devices and CCTV over cellular networks. Lutosa is sold in packs of 100, which offers the flexibility to manufacture smaller volumes of devices and prototypes.

**Antenova Limited**

[www.antenova.com](http://www.antenova.com)



# Rohde & Schwarz Australia: 40 years strong

## One man's story



This year Rohde & Schwarz Australia is celebrating its 40th year since incorporation in Australia in 1981. Since that time the company has played a key role in transforming the country's communications and security landscape with equipment and systems solutions used in applications from media and broadcast, aerospace, defence and law enforcement to wireless and mobile telecommunication networks. To provide some insight into our journey one of the company's longest-serving employees Joe Stiller OAM tells of some of his experiences since first joining as a technician in the late eighties.



In 1977 a young Joe Stiller left the farm he'd grown up on near Gladstone to join the Royal Australian Air Force as an instrument fitter servicing the famous Mirage III fighter. His first experience with Rohde & Schwarz was in 1985 during his time at the Test Equipment Calibration and Trainer centre at RAAF Richmond.

"I remember they were providing attenuator test equipment which was very accurate and somewhat better than what we had been using," said Joe. At this time, nearing the end of its first decade in Australia, R&S was already heavily involved in the broadcast transmission space, providing the critical broadcast infrastructure for TV transmitters and supporting broadcast assurance testing.

"In addition, R&S were supplying radios, test and measurement equipment and local sustainment (repair and calibration) support to Defence," said Joe.

One of the first projects Joe worked on after joining R&S in 1990 was to provide a HF SELCAL (selective calling radio system) solution for the Tasmanian Water Police.

"That was a pretty good experience because our fully integrated solution worked well but it was stressful because I'd never done much programming before that," said Joe. "I basically had to learn to program and configure and adapt the solution at the same time."

Towards the end of the nineties Joe was working on special purpose Radio Frequency signal

detection and interference monitoring equipment for various agencies in law enforcement and Defence. He played an instrumental part in training personnel responsible for the security of the Sydney 2000 Olympics.

"Some years later there was the Bali bombing, and as many of the people I had trained were in Afghanistan, the Australian Federal Police asked if I could assist them in conducting specialist Radio Frequency detection analytics in support of investigations related to this terrorist act." Despite being familiar with the equipment through training others, at that point Joe hadn't had the opportunity to use the detection system in a "real world" scenario.

"There were some unique technical challenges that we worked in close collaboration with the AFP to overcome to support this very unique and evolving requirement," said Joe who was recognised for his services during the joint police operation with an Order of Australia Medal. Another highlight during Joe's tenure with R&S was being sent to East Timor in 2004 to repair radios in the airport's air traffic control tower which had been damaged by a lightning strike. Since starting with R&S Joe has performed just about every role in the business and has seen it grow from a mere 10 staff to more than 70 now. "I've worked in repairs, calibration, sales support and training and I was also the first IT manager responsible for installation of the company server — I even did stalls at tradeshow!"

Joe has also been instrumental in one of the

company's greatest achievements since its establishment in Australia — the delivery and sustainment of a deployable remote area operations tower capability for the RAAF. First delivered by R&S as the prime systems integrator in 2008, the Transportable Air Operations Towers (TAOTs) are now undergoing a mid-life upgrade (see front cover).

"The TAOT is a great product which the customer is very happy with," said Joe. "It's so much more than a deployable air traffic control tower — it's got analog, digital and sat phone connections, it can even connect into a big base PABX so they can ring anywhere in the world."

"On top of that it's completely autonomous and can be set up very quickly," he added.

Joe is grateful for his farm upbringing — "it gives you a different perspective on things" — and given his breadth of experience as a technician (among other things) he's a valued sounding board for the company's project managers and chief engineers.

"I'm a technical and an engineering type so I can bridge the gap pretty well — that can cause a headache sometimes because I'll tell them when they're wrong. They don't like it but it's all about delivering a better product, not upsetting the apple cart."

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## Cell tower test unit

Viavi has released OneAdvisor-800, an all-in-one cell site tool that can be upgraded with the O-DU Emulation application to verify field deployment of O-RAN radios.

OneAdvisor-800 now provides capabilities for cell site deployment, including fibre inspection and characterisation, cable and antenna analysis and O-RAN radio verification.

It is a single, modular instrument to assist cell site technicians test fibre, radio frequency and common public radio interface, eliminating the need for multiple independent tools. The addition of the open distributed unit (O-DU) Emulation application further streamlines site verification and guards against future truck rolls by enabling functional testing of the open radio unit upon installation, rather than waiting until the O-DU is in place.

The technician's work is simplified with guided workflows using job manager programming, the service provider's test criteria and automatically uploading results to the StrataSync cloud.

**VIavi Solutions Inc**

[www.viavisolutions.com.au](http://www.viavisolutions.com.au)



## EMC cable glands

The Lapp Skintop Brush range provides electromagnetic compatibility (EMC) interference-free cable glands and accessories. Interference can be harmful to data transmission and can inhibit Industry 4.0 and factory automation processes seeking to provide quick transfer of information.

The series of cable glands has been designed to provide a Faraday cage environment, which can be installed safely, quickly and easily to offer EMC protection. Thousands of ring-shaped brush hairs protect data streams from induced interference signals from outside. A large, variable clamping range makes assembly and disassembly quick and easy.

The cable is centred, fixed, strain-relieved and hermetically sealed in one step.

**LAPP Australia Pty Ltd**

[lappaustralia.com.au](http://lappaustralia.com.au)

## 3GPP mission-critical solutions

The TASSTA 3GPP mission-critical communication platform, for first responders and business, delivers mission-critical communication services over LTE and conventional networks. It is designed to provide secure, reliable and resilient communications for government and public security services, as well as for general commercial applications.

The MCX solution covers a full range of services fully compliant with 3GPP specifications: mission-critical push-to-talk (MCPTT), mission-critical video (MCVideo) and mission critical data (MCData). The compliance and interoperability are validated through the MCX plugtests program, which TASSTA regularly attends.

TASSTA also extends core communication functionality with features beyond 3GPP specifications: to enhance collaboration capabilities, increase productivity and simplify system administration.

**TASSTA GmbH**

[www.tassta.com](http://www.tassta.com)

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# SAT COMMS CAN OVERCOME CHALLENGES TO INDUSTRY

Hytera, together with its subsidiary Norsat, highlights the importance of radio over satellite solutions on a global scale.



**A**s communication requirements evolve rapidly, it has become imperative to enhance connectivity between organisations, worldwide teams and employees out in the field. Radio communications play an essential role in this regard, especially in public safety, emergency rescue, firefighting, fleet operations and mining applications.

Most radio networks use line-of-sight propagation or have fixed repeater stations. When there is no radio network signal coverage onsite, a command centre is not able to reach the personnel onsite. In this case, the use of communications satellites as a communications repeater can provide a remote cross-territory transmission route for on-site radio network communications. Sat comms can achieve voice, data and image transmission; and improve the capacities of emergency handling, decision-making, command and control, emergency linkage, resource allocation — all the while ensuring full-time, all-area and all-weather communications.

## Benefits of radio-over-satellite communication

Remote radio networks can be unified with fixed landlines, cellular systems or push-to-talk (PTT) radios, facilitating encrypted, real-time direct voice and data communications to headquarters, control centres or operations rooms. With the right systems engineering and technology partner, radio-over-satellite solutions are easy to manage and deploy. They can be operated remotely and unattended after installation, making them excellent solutions for communication in uncertain environments.

Proper engineering is required to ensure audio quality, latency, jitter and bandwidth of digital radio systems over satellite. Congestion and management of remote networks can be mitigated with careful planning, QOS, SLAs, TCP acceleration and bandwidth compression.

Testing has also confirmed that there is no discernible degradation in audio quality using radio over satellite systems. Thorough planning and designing of the network, to maximise limited bandwidth usage and link budget, are required for projects involving these applications.

## Potential uses

During an emergency rescue scenario, when there is no cellular network, working with a satcom solution the video and voice information can be transmitted back to the command centre, which could assist in planning accurate strategy.

In mobile backhaul, PMR and public mobile network leverage satcom systems to support high-speed backhaul traffic. Portable terminals and mobile vehicles provide bandwidth when and where needed on a temporary basis, such as a major event, a sport event or for unexpected purposes such as disaster recovery.

A satcom system covers a wide geographic area with no compromise on quality of service or cost-effectiveness, which makes a system suitable to connect nationwide offices. For remote monitoring, broadband satcom makes it possible to connect and provide real-time monitoring, such as via a maritime antenna mounted on a drilling platform and for ships at sea.

Hytera Communications Co. Ltd  
[www.hytera.com.au](http://www.hytera.com.au)



# Using existing technology to enhance staff safety



Sepura SC20 TETRA radio at an iron ore mine.

Already trusted to provide mission critical voice communications, the latest generation of Sepura's TETRA radios use multiple triggers to ensure communication is constant and team leaders' situational awareness is improved.

“Always on” communication is the bedrock of a mission critical network, with users permanently connected on a highly resilient network. The radios used on site and in the field will be tough, proven devices, capable of providing clear, loud audio to users. This is crucial to staff safety and no more so when working in a mine or similarly dangerous environment. Mining organisations can now add dynamic control features to their existing radio solution, enabling greater staff safety and improved situational awareness. AutoMate is an intelligent application which automates radio activity and workflow based



Large mining need a comprehensive communications solution, including voice but also including data functionality.



on a user's location. It works on existing TETRA networks, with no upgrade to infrastructure required. Once triggered, the app executes routine and safety critical tasks to deliver fast results, reducing the risk of user error and safeguarding operational teams, who are then free to focus on their critical tasks. Doug Bowden, Business Development Manager at Sepura, has extensive experience of developing solutions for mining companies. He outlines one of the key advantages of using a TETRA system over a standard cellular solution: "Because single site networks are owned and controlled by user organisations, additional functions can be added to the platform based around operational requirements.

These can encompass more data services and applications than are usually considered part of the critical communications capability."

Using existing geofences as triggers, network managers can use these or other location based devices to automate radio actions, ensuring smooth seamless operations.

Examples of automated actions might be:

- Switch user's talkgroup, for example when entering a blast zone, ensuring the team leader is aware of another person in the area
- Switch to direct mode, for example when entering an underground store facility with no TETRA signal, ensuring communication is maintained



- Vehicle speed warning on site, causing an emergency alert to be sent to the site controller, improving site safety
- Safety warning sent to users in a specific location, warning to ensure doors are correctly sealed, maintaining efficient, safe operations
- Unlocking of secure gates or doorways due to the presence of a nearby authorised radio, improving site efficiency and maintaining security

The Sepura team highlights that customers were asking them for solutions to enhance their situational awareness across site. "It is vital for control rooms to understand the location and status of their operational teams," Bowden says. "By utilising automated alerts from within the application and sent over an existing TETRA network, situational awareness across the site is massively improved, without the need to invest in further communication infrastructure."

Alerts and notifications are fully configurable to match and enhance an organisation's workflows. A flexible set of triggers and radio actions can support operations, and automations can be linked and combined according to logic or priority. Further, radios can be readily updated with new configurations to match changes in workflows or operational environment and automations can be overridden or suspended by radio users in exceptional, emergency circumstances.

AutoMate is available to users of Sepura SC Series TETRA radios as a software upgrade to their existing solutions.

# sepura

Going further in critical communications

**Sepura**  
**www.sepura.com**



# ENABLING COLLABORATION IN PUBLIC SAFETY SERVICES

In an incident, diverse information input needs to be collated and filtered according to the receiver.

**T**he handling of public safety situations to greatest effect requires a coordinated approach between different agencies and the local population. This is challenging when each agency operates with different priorities and uses different technologies. Coordination suffers when responders and connected things cannot easily communicate with each other.

For example, a road traffic incident might trigger an alert from a traffic flow sensor. There may be other alerts from closed circuit television (CCTV) monitors, from in-vehicle emergency call systems or via social media reports from eyewitnesses. Each reporting channel belongs to a different service provider, whether it is a road transport agency, vehicle telematics service provider, emergency service or social media platform. Standardisation of communications and interactions between Internet of Things (IoT) applications represents a pathway to closer coordination.

## Standard for distributed IoT systems

In 2012, a group of national standardisation bodies launched the oneM2M initiative to establish a standard for end-to-end and interoperable IoT systems. The standard

addresses situations where one or more IoT applications consume data from devices and sensors that are potentially sourced from different vendors.

Communications might involve a gateway, or edge-processing device, operating over a local network. Another possibility involves communications between devices and applications, going through an intermediary IoT platform.

Systems built on oneM2M technical specifications include policy controls for data sharing. These benefit data suppliers and data consumers collaborating across service provider silos and mixed vendor solutions.

## Collaborative tools for emergency communications

The oneM2M standard builds on a distributed architecture and an ever-expanding toolkit of middleware services. Systems can be deployed quickly at the site of an emergency, hosted on a local device such as an emergency services vehicle to communicate with other devices at the scene and back to the command centre.

OneM2M's various access control mechanisms grant authorised entities (eg, police, fire and rescue teams) access to devices and data based on profile information. One

tool, Communications Management, supports prioritisation and store-and-forward handling of messages. System operators can specify policies so that lower priority messages are buffered and scheduled around higher priority messages while dealing with congestion issues on the underlying communications networks.

With the Group Management tool, oneM2M supports the capability to manage communications across groups of devices and individuals such as emergency responders (eg, the formation, disbandment and fanout of messages to groups).

Among other uses, the Location tool supports the monitoring and location tracking of individuals equipped with clothing sensors. It also allows devices to report when they enter/exit a particular area.

The Subscription and Notification tool enables applications to subscribe to events of interest. This may be based on specified criteria and push notifications if/when these events occur (eg, "let me know when the power to a particular house has been restored"). It also ensures that applications are not overwhelmed with data and only react to trigger events relevant to their public service or emergency function.

oneM2M  
<https://www.onem2m.org/>



# Radio Matters



*John Laughton, Chairman Radio Frequency Users Association of New Zealand*

Change is definitely coming in 2022. 2021 has been an interesting year to say the least — starting off with a hiss and a roar with COVID seemingly on the way out but back it came. I didn't think I would be having such a change in careers but as it turned out my time at CRS Communications had come to an end. I thank Murray and the team for all the good times and wish them well for the future.

As always, when one door closes others open. My time on the RFUANZ committee had been a learning experience up until then and I would like to again thank the outgoing RFUANZ Chairman Corey Weir, who stepped aside at our AGM in May. Corey remains as a valuable member of the RFUANZ committee. Corey you will be missed as Chairman but not forgotten. Retiring from this position at only 35 does seem a bit young, but as a business owner the committee fully understand and appreciate that priorities have to be in place for all.

Also, thank you to the committee for showing confidence in my commitment to the organisation and the thirst to move forward. I would also like to thank Downer for enabling me the freedom I need to put behind this role.

News from the Southern end of NZ: Jackson and Wills Communications, a radio institution and technology stalwart in the Southland area since the end of World War 2, will be closing down as we know it. They have provided consumer electronics and radio communications for well over 70 years.

I was first introduced to the commercial radio industry by Lindsay and the team over a decade ago after leaving the RNZN. Good luck to you on your endeavours.

We are well on the way for a fantastic new look Comms Connect Conference/Exhibition at Te Pae in Christchurch in 2022. As usual, our subcommittee is driving forward to provide the RFUANZ Gala Dinner at the usual high standard. Thank you to those who have already reserved a partnership for the 2021/2022 season.

The following partners have already been reserved: Platinum: AC-WB Technologies; Gold: Go Wireless; Silver: Logic Wireless. With Bronze partnerships filling fast, be in quick to secure your place and please contact [events@rfuanz.org.nz](mailto:events@rfuanz.org.nz) (Desire) or [admin@rfuanz.org.nz](mailto:admin@rfuanz.org.nz) (Debby) for more information.

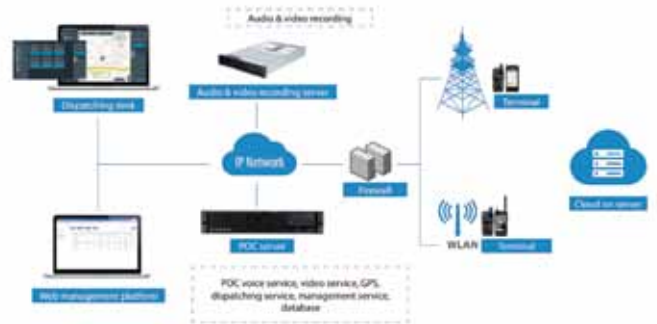
Of further note, the RFUANZ website is in the final throws of a full teardown and rebuild by our partner Pie Design and we are happy to announce a launch early 2022.

As for the year gone, the committee has made it one of the many goals to clearly and openly engage with RSM on a more frequent basis and we have achieved this and would like to thank RSM for the continued engagement we are receiving with regards to spectrum matters.

David Johnston has put in a lot of time around our training portfolio and we are confident that the new Level 4 Radio Course will add plenty of extra value to the hard work our people have been doing to pass its predecessor the Level 3 Radio Installers course.

So please, keep an eye on our social media platforms and the new website, and feel free to engage with the committee members and the 2022 new initiative.

Stay frosty.



## Push-to-talk over cellular

Hytera has released its instant push-to-talk over cellular (PoC) communication platform, HyTalk. In a wide coverage of 3G/4G/WLAN network, users can interconnect anywhere with a public network signal.

The HyTalk platform can provide push-to-talk (PTT) voice communication, duplex audio and video communication, instant message communication; plus it can dispatch its services through a variety of devices such as computer, mobile phone, law enforcement recorder, or public network intercom, in order to meet the customer needs for voice; operating in different locations and working environments.

The radios are encrypted, require authentication and can be disabled by the management in case of security. The service is based on 3G, 4G, LTE and WLAN; call connection rate is high and delay is low. Dispatching features include combining voice, video and map dispatching; plus it can remotely instruct the terminal to implement functions such as monitoring, positioning, broadcasting, video pull-up and push-down, and remote stun/kill.

**Hytera Communications Co. Ltd**

[www.hytera.com.au](http://www.hytera.com.au)

## 5G/LTE antenna

RFI's mesh parabolic antenna has been designed to maximise throughput for modern LTE/5G repeater systems.

Featuring low PIM performance, RFI's engineering team has focused on a high gain. Built by RFI's local manufacturing team, the GM06-0738 minimises noise, maximising SINR, to deliver an improved level of reliability and predictability via an improved link to donor sites.

With no tuning or optimisation required, this antenna is lightweight and fuss-free to install, reducing the overall time spent onsite.

**RFI Technology Solutions**

[www.rfi.com.au](http://www.rfi.com.au)

## CASE STUDY

# Otago forest workers update radios to keep safe in 7-million-tree forest



A digital radio system from Motorola Solutions and communications partner Central Radio Services (CRS) is helping New Zealand's City Forests to work more safely and efficiently while complying with COVID-19 work requirements. The solution incorporates MOTOTRBO SLR5500 digital two-way radio repeaters across four sites with TRBOnet radio dispatch software providing both data and safety features, plus helping to locate workers wherever they are in the forest.

Initially deployed to replace an outdated analog radio network, the system delivers additional benefits. Among them are contact-free communication and social distancing in the field, replacing the need for drivers to exchange paper job dockets with a digital docketing system.

The system also provides a touch-free method for workers to exchange other essential job details including truck numbers, log quantities and crew ID numbers. All of these solutions are integrated and connected to a digital network radio core provided by the Orion Network.

City Forests manages more than 23,730 hectares of forest in the Otago region, growing more than seven million trees while maintaining high standards and certifications for sustainability. Ensuring safety and security for workers and recreational forest users throughout such an expansive area requires instant, dependable and secure communication.

Forest Production Manager for City Forests Guy Bonner said his organisation has experienced many benefits by migrating to an advanced digital communication system, "upgrading our network to digital not only enabled clearer voice communication, but provided us with other useful features like text messaging and GPS capability".

"Moving to a digital platform also gives us the option to plug in further capabilities to improve safety in the future," Bonner said.

Motorola Solutions Channel General Manager for Australia and New Zealand Rhys Clare said the evolution of digital radio technology is helping enterprises to increase collaboration and performance across their entire operations. "Enterprises have always depended on radio systems for clear and reliable voice communication, but now they are getting many more safety and productivity enhancing features.

"Digital radio solutions are also extremely flexible, enabling organisations to adapt to rapidly changing situations. Even throughout a global pandemic, these solutions are helping organisations keep their operations running and their people safe," Clare said.

*Motorola Solutions Australia Pty Ltd*  
[www.motorolasolutions.com.au](http://www.motorolasolutions.com.au)

## CASE STUDY

# Rescue unlikely if not for VHF and EPIRB

A quick-thinking father and his two young sons were rescued after their vessel capsized while fishing off Dawesville, Western Australia on 14 August 2021.

Joint Rescue Coordination Centre (JRCC) Australia detected the activation of an emergency beacon registered to a 5.3-metre vessel, 10 nautical miles offshore from Mandurah, WA. JRCC transferred co-ordination to the Fremantle Water Police, who were already responding to a radio distress call from a vessel in the area that had been swamped by a large wave and was rapidly taking on water.

It turned out it was the same vessel as the father later explained he had grabbed a GME handheld VHF radio as it floated free from the vessel and made an emergency distress call around 5 pm. He then dived under the capsized vessel to retrieve and activate the GME emergency positioning indicating radio beacon (EPIRB), which enabled rescue crews to locate the trio quickly and accurately.

Fremantle Water Police tasked a rescue vessel and helicopter to the scene to locate the stricken vessel before light faded, with

assistance from Mandurah Marine Rescue. They discovered the father and his young boys clinging to the upturned vessel's bow, successfully recovered them and transported them to Peel Health Campus for treatment of hypothermia and jellyfish stings.

This serves to remind how important marine safety is and to carry VHF radios, personal locator beacons and EPIRBs, ensuring the registration details are up to date, before heading out on any boating adventure.

*GME Pty Ltd*  
[www.gme.net.au/au-pro/](http://www.gme.net.au/au-pro/)



# Innovative connectivity for emergency services from Powertec



**P**owertec Wireless Technology offers state of the art warning systems such as The Giant Voice Deployable high-power voice and siren system, which is a flexible alternative for temporary warning system installation designed to meet your emergency services requirements even in harsh environments. This Deployable Unit provides a 360° superior coverage. The GV-DPU is easy to handle and the solid supporting legs make it possible to extend the six metre lockable pneumatic telescopic mast on rough ground. The deployable unit is equipped with 2 x 100 watt solar panels as well as a universal AC charger for recharging the batteries. This is a flexible solution that allows you to charge your deployable unit whenever it is needed. The deployable unit is equipped with a 25W radio (VHF or UHF) and can be activated remotely from any Giant Voice Control Centre equipment. The GV-DPU has the option of Visu-Alert: cluster of 6 LED light heads for a complete 360° highly effective warning; Twstl31R: top mounted LED strobe light and GV-Floodlight: upgrade your deployable unit with a cluster of LED floodlights for a combined mobile warning and light tower.

## Fire detection systems — Insight FD 3

Combining advanced Electro-Optical (EO) and Infrared (IR) sensors with enhanced smoke detection algorithms and automatic hot spots detection, a new generation of Wildfire



Detection System Insight FD 3 is the leading dual solution for early forest fire detection in the world.

Equipped with dual EO/IR sensors and sophisticated algorithm, Insight FD 3 proactively monitors 24/7 and identifies when there is a fire/smoke. Visual and thermal images of the affected area are analysed and displayed on the GIS software platform. Forestry authorities are alerted so they can take immediate action to suppress the fire.

## Insight FD 3 features

- Excellent Accuracy — Pinpoint fire location as small as 6 sq. meters within 8km radius and detect relatively larger fires at greater distances.
- Fast Detection — Spot over 95% of small fires within 10 minutes of ignition.
- Large Coverage — Thermal detection: able to detect fires at very early stages up to 8km and larger fires up to 15km; smoke detection: up to 15km.
- Reliable System — 24/7 monitoring with real-time fire alert and able to work under tough and harsh outdoor environment (e.g. smoke, fog, haze, etc.)
- Fully Effective Dual EO/IR Solution — Fully automated thermal detection algorithm.
- Cost Savings — Deployment and maintenance cost reduced due to low weight, low power consumption and modular design of the robot.



**Powertec Wireless Technology Pty Ltd**  
[www.powertec.com.au](http://www.powertec.com.au)



# Sending the right message at the right time is vital during a critical event

Communication coordination is key

The focus of critical event management is on managing what happens when a critical asset is impacted by an event.

**N**avigating a critical event requires effective coordination and communication with myriad stakeholders.

During a bushfire or flood, emergency services, government agencies, businesses and private citizens need to be informed. That's not only about what is happening at a given moment in time, but also what they should be doing and what they should prepare to do next.

Business critical events can include a cyberattack, key applications going offline or the failure of a piece of critical infrastructure. They all require rapid detection and notification to ensure the problem is managed, that affected people know what's going on and the issue is remediated as

efficiently and effectively as possible.

The focus of Critical Event Management (CEM) is on managing what happens when a critical asset is impacted by an event. For a business, this could be events that impact people, such as employees, contractors, visitors and customers. Or they may impact physical assets including buildings, data centers or IT systems. Even your business operations, your digital applications, supply chain routes and operations need to be considered. And then there's your reputation and your company's share price.

For public safety, there are some obvious events such as bushfires and floods that different parts of the country face seasonally. But, increasingly, we are seeing storm damage and sometimes crime events that can impact many people.

## **CEM is more than sending messages**

Mass notification is just one important part of CEM. If we think about a bushfire, there are many different emergency services to consider. There are also wildlife rescue organisations and there is the need to inform the public of the current risk to their lives and property as well as keeping them in the loop as conditions change. This means delivering the right information to the right people at the right time.

When Everbridge was founded in the aftermath of the 9-11 bombings in the United States of America, its focus was on keeping people safe during critical events. It's that experience that has been refined over the past two decades and enabled the company to create a mature platform that now enables emergency alerting in Australia as part of



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the enhanced EAP4 platform that was activated in September 2021.

During a critical event, there are four key challenges to meet. You must assess the risks and determine which are relevant to your assets and people. Once that assessment is complete, you need to locate all the assets and people that are impacted or at risk.

This can be more challenging than it initially seems. For example, in the case of a bushfire or flood, there may be people that are impacted that are not local residents. Or, in a workplace, there may be staff working remotely that don't need to be informed of a localised event. It's critical that information is sent to the right people at the right time.

Then you need to take action. Where possible and practicable, you should automate standard

operating procedures to launch and manage incident response.

Next, during a critical event, there will be an understandable level of stress. By automating where it makes sense you can mitigate the risk of mistakes caused by human error or inexperience. Finally, you must learn from the event. Analyse your performance during the event so you identify bottlenecks and improve your response for subsequent events.

A CEM platform is much more than a mass notification system. It is a powerful suite of tools that work together to help assess the situation, locate all the at-risk people and assets, automate your actions and then analyse them so you can learn and improve your response for the future. It breaks down the silos between these activities so you can respond more effectively today and tomorrow.

### Managing events is more than just data

WIRES, the Wildlife Information Rescue and Education Service in New South Wales, receives as many as 400 calls per day during spring and summer to rescue sick, injured, or orphaned native animals. The organisation's team of around 2,500 volunteers help over 100,000 animals each year.

Before implementing Everbridge's CEM platform, each time WIRES received a rescue call a team member had to find an available volunteer with the right skills, training and experience. The situation may require someone who is trained to handle venomous snakes or someone trained and vaccinated to handle flying-foxes. And they had to be close enough to the distressed animal to be able to help quickly. WIRES used to match the rescue to the volunteer manually using a spreadsheet to contact appropriate volunteers, calling them one by one until they found a rescuer. Response times varied considerably due to the volume of rescue calls, the location and the availability of volunteers.

Through partnership with Everbridge, WIRES has been able to manage all the information centrally and link it directly to the communications platform. WIRES is able to now allocate volunteers to rescue situations in minutes. When a call comes in, the specific needs are entered into the CEM platform and it automatically finds the most suitable rescuers and sends them a message in a matter of seconds. That message can be a text message, a recorded voice message to a phone number or even a

message using social media platforms such as WhatsApp. Those messages are prepared ahead of time using templates and custom messages are sent for specific situations.

WIRES was able to leverage the speed and accuracy of technology to manage the entire life of a critical event.

### CEM must scale and adapt

In Australia tens of millions of hectares burn each year, floods occur regularly and the Australian Cyber Security Centre responded to over 1600 cyber security incidents during the 2020–2021 financial year. Having a reliable and scalable system in place that allows governments and other organisations to strategically manage the entire lifespan of critical events is essential. For organisations with employees, that means connecting your CEM platform with your HR systems so that you have up-to-date information on hand and don't need to manually update data. In government, an incident may span multiple departments and agencies such as police, SES, CFA and relevant departments and staff may move around. Systems need to support horizontal integrations across all agencies and the ability to geo-locate people — an especially important function as more people work remotely as we emerge from the pandemic. As a CEM system is contextually aware, people don't receive notifications that aren't relevant to them. For example, sending everyone an alert for a bushfire that is localised to a specific region may mean they ignore more relevant alerts later. Ensuring your CEM only informs people at the right time and place mitigates the risk of messaging fatigue.

Ensuring the delivery of critical communications is a vital element of CEM. That means using a platform, such as Everbridge, that supports sending messages to the right people at the right time over communications platforms that make sense for those people.

CEM management is important for almost every organisation. Where there is an overlap of risk events with people, physical and virtual assets, you need a system for managing that event that covers the entire lifespan from assessment to action and analysis.



**Everbridge Australia**  
**www.everbridge.com**

## Hytera safeguards Tajikistan heads of state with TETRA solution



The 21st meeting of the Council of Heads of State of the Shanghai Cooperation Organisation (SCO) and the joint summit of the leaders of the SCO and the Collective Security Treaty Organisation (CSTO) member states were held on 16–17 September in Dushanbe, the capital city of Tajikistan. The local security department of the hosting country adopted high-level security coverage to ensure the smooth running of the event, including the cutting-edge TETRA communication solutions from Hytera.

As a global provider of professional mobile radio (PMR) solutions, Hytera is involved in a number of world conferences and events, such as the Tajikistan CICA Summit, G20 Hangzhou Summit, Rio Olympics and APEC Papua New Guinea.

Hytera supported a TETRA solution for SCO 2021 to guarantee the security of this event. Hytera's Major Event Security System provided pre-event scheme, route planning and security scenes to prevent emergencies.

Vehicle-mounted base stations can be deployed flexibly and quickly to set up a temporary network for emergency group communication and dispatch services in areas without signal. Visual Command System provided dispatchers a comprehensive view of incident status and available resources. The Professional Unified Communication platform supported interconnection and unified voice dispatch across TETRA network and local CCTV.

Moreover, Hytera also provided a series of terminal devices for stable communication including PT580H Plus, MT680 Plus and PTC760 for real-time positioning, voice video group calling between terminals and dispatching, and end-to-end visual dispatching. With the TETRA solution, Hytera provided security support for SCO 2021 improving Dushanbe's security operation overall.

Hytera Communications Co. Ltd  
[www.hytera.com.au](http://www.hytera.com.au)

### LMR, PMR and LTE radio tester

Viavi Solutions has released the CX300 ComXpert, a communications test and alignment solution in easy-to-use, ruggedised form. The CX300 is an LTE radio test set equipped to test both radio and broadband network infrastructure.

Offering a frequency range up to 6 GHz, the CX300 is designed with frequency, power and modulation analysis instruments to support all analog and digital land mobile radio and professional mobile radio protocols, as well as private LTE networks.

The unit incorporates the suite of Viavi automated test applications and enables full vector s-parameter measurements. It directly connects to the device under test without the need to carry extra accessories.

**VIavi Solutions Inc**  
[www.analog.com](http://www.analog.com)



### IoT power management charger

The Max77659 single-inductor multiple output (SIMO) power management IC (PMIC) with integrated switch-mode buck-boost charger from Analog Devices charges wearables, hearables and other Internet of Things (IoT) devices quickly. It delivers over four hours of play time after a short, 10-minute charge, but uses a single inductor to power multiple rails, potentially reducing the bill of materials by 60%.

The unit integrates a switch-mode buck-boost charger and three independently programmable buck-boost regulators, all sharing a single inductor to minimise total solution size. The regulators extend battery life by operating at 91% efficiency during moderate to heavy load conditions while consuming only 5  $\mu$ A during light load conditions.

The unit measures just 2.55 x 2.37 mm.

**Analog Devices Pty Ltd**  
[www.analog.com](http://www.analog.com)



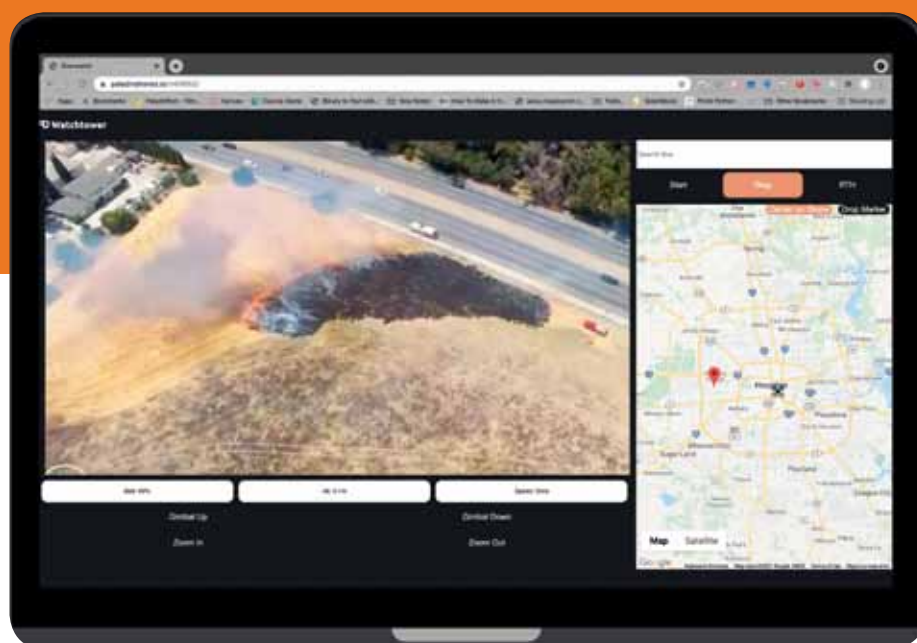


# DRONE DEPLOYMENT TO PREPARE FIRST RESPONDERS

Flying a drone to an emergency scene gives first responders an opportunity to preplan before arrival.

**E**mergency response is a time-sensitive business. When fires burn or a driver crashes their car, seconds can mean the difference between saving lives and watching a situation spiral rapidly out of control. For fire and police departments, getting teams onsite can be challenging, what with the vagaries of traffic and bad routing. Houston-headquartered Paladin is a start-up business building a custom drone hardware and software solution for cities to be able to respond to emergencies faster and with better data for first responders. After years of development, the company has publicly unveiled its Knighthawk and Watchtower products.

The Knighthawk is a custom-made drone designed for the specific needs of emergency response personnel. It comes complete with two cameras: one 10x zoom optical and one thermal; they provide live video feeds on a developing situation, both day and night, with only a half second latency.



*Responders can assess the situation before arrival using the Watchtower app.*

The drone has a time range of 55 minutes and can travel multiple miles away to reach a site, according to the company. Launch time can be as short as a few seconds from when a 911 call comes in.

To manage the drones and watch the video feeds, operators use the company's proprietary Watchtower software to digitally place a pin on a map to direct the drone to the likely site of an emergency. Once there, uploaded video feeds will display in the app as well as in a 911 centre's existing computer-aided dispatch systems.

Since the company's founding in 2018, it has responded to about 1600 emergencies, according to its own internal data.

Installation is relatively simple, the drones can be placed anywhere in readiness for deployment, often stationed at a police department or firehouse. No special hardware or sensors or guidelines need to be installed in the city for the drones

to process the terrain or understand their surroundings.

When a 911 call is received, the Knighthawk is autonomously dispatched to the location of the emergency. Upon arriving at the scene, the drone live streams its view of an emergency to first responders on the way, so they start planning immediately even before arriving on scene. There is a pilot on duty with full control of the UAV at all times through Watchtower. This pilot is certified by both the department and the FAA, and uses Watchtower to help control the drone, be aware of the airspace and, in general, conduct safe missions.

Each UAV may be limited according to local rules and regulations; unless another department or locale is requesting aid, whereby a commanding officer may approve the mission and override the protocols.

Paladin  
<https://paladindrone.io/>

# New Zealand Police take a Tornado upgrade

With 10,000 officers to connect in the field, fast and resilient communications systems are mission critical for New Zealand Police.

A recent communications expansion and upgrade project saw the deployment of Mimomax Tornado radios to support police communications at sites spread across the country.

"We were at a point where we needed to expand our multi-channel linking equipment and also replace aging and unsupported analog backhaul equipment in our network," said Richard Hutchinson, New Zealand Police Radio Engineer.



The Tornado radios operate within the current UHF linking band with 400 MHz offering greater tolerance to path obstruction and fading. New Zealand Police is one of the first customers in New Zealand to deploy the 50 kHz variant of Tornado radios in their analog land mobile radio network.

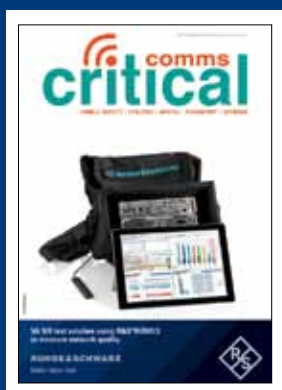
With some links as long as 45 km, hilly terrain and some non-line-of-sight paths to manage, the project required careful path planning prior to deployment to ensure high availability for the network.

"The combination of low audio latency and high spectral efficiency, even running at QPSK, were key requirements for our system," Mr Hutchinson said. "Furthermore, the fact the radios offer a wider power supply voltage range meant we had less complexity at the sites where they were being installed and a reduction in the number of spare radios we needed to stock."

In addition to supplying the radios and antennas, Mimomax also provided in-depth training for the New Zealand Police communications team prior to deployment. The first phase of the Mimomax links is now installed with the next phases of deployment underway.

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to industry and business professionals



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# SECURELY OUTSOURCING SAFETY INFORMATION

## HOW CAN AN ORGANISATION CHOOSE THE RIGHT CLOUD PROVIDER FOR THEM?

**T**he report provides a pathway for an organisation to select the business that will protect its data. In 2019, the United States National Institute of Standards and Technology (NIST), through its National Cybersecurity Center of Excellence and Public Safety Communications Research Division, hosted an invitation-only workshop with subject matter experts and decision-makers from public safety organisations (PSO) to address cybersecurity challenges. Workshop participants made recommendations on a vision for data sharing in PSOs and agreed on this vision statement: getting the correct data to the correct people at the correct time with the correct protections and only if it is for the proper reason and in an efficient manner.

Specifically, PSOs have asked for technical guidance on how cloud solutions can be integrated into existing and new information technology (IT) architectures. The NIST released a document intended as a first step in establishing that guidance by examining the topic of identity as a service known as 'IDaaS'.

On-demand access to public safety data is critical to ensuring that public safety

and first responder (PSFR) personnel can protect life and property during an emergency. The increasing use of cloud technologies can improve data access, but also causes authentication challenges. The objective of the report is to inform PSOs about IDaaS and how they can benefit from using it.

Today, IDaaS providers offer identity, credential and access management (ICAM) services, such as authentication, to customers through a software-as-a-service (SaaS) cloud-service model. PSOs could acquire IDaaS to provide authentication services for their own applications. This would allow the PSOs to offload some of their authentication responsibilities to the IDaaS provider.

The report highlighted common capabilities of cloud services that market themselves as IDaaS providers and documented considerations for PSOs. In summary, while some IDaaS providers offer a mature suite of ICAM services (national coverage for example), others offer supplemental authentication services for existing identity solutions. Thus, PSOs, especially those of smaller size without ICAM expertise that are moving towards

enhancing their authentication capabilities, face a difficult task of procuring a satisfactory IDaaS provider.

The following are key recommendations from the report:

- Depending on the nature of a public safety application, such as the sensitivity of the data it uses and the types of devices and locations it is accessed from, stronger forms of authentication may be needed.
- PSOs should perform a risk assessment for all of their applications that might use IDaaS authentication services before selecting an IDaaS provider. This allows PSOs to ask IDaaS providers specific questions about the forms of authentication that they need the provider to support.
- Most PSOs are unlikely to want to shift all authentication to the cloud immediately, so they should consider taking a hybrid IT approach: a mix of on-premises/data centre and cloud-based authentication services. IDaaS providers typically support this type of deployment with software tools that can synchronise credentials, eg, password hashes and/or associated attributes. This allows PSOs to take advantage of IDaaS as they gradually transition from on-premises to cloud.





## The ever-changing future of wireless communications

In my role as the Executive Officer of ARCIA, I am exposed to many different aspects of the radio communications industry or, as many now prefer, the wireless communications industry. With my background going back to the time of valves and the introduction of transistors, I probably relate to change more than many.

Recently Hamish Duff, the President of ARCIA, gave a talk at an ARCIA Lunchtime Learning session about the changes in our industry and what the future might hold. As Hamish was preparing his information it struck both of us that almost as fast as you could try to define technology advances, they were already being updated. It is only around a decade ago that digital radio systems were being introduced into our commercial radio markets, yet in that time we have learned that, like the telephony markets, it is the applications that can be used over the digital platforms that open new opportunities.

In the modern world everyone wants to be connected as much as possible — it would be unusual to find a communications system today that does not have at least some form of location capability. Of course, historical two-way radio systems are now also having interfaces to the LTE services of our public carriers through many and varied 'apps', plus other devices are also interconnected with technologies like the Internet of Things (IoT).

Many years ago, Sir Angus Tait made the observation that two-way radio would be around for many years, that mobile phones and other technologies would not quickly replace the one-to-many calling features of two-way radio.

That foresight from Sir Angus has held true and, in fact, in the modern world the technologies often are not competing, they are complementing each other. While mobile phones can have applications to be able to talk directly into IP-connected two-way radio

systems and vice versa, it is perhaps the devices designed to work on both systems that are now the newer technology. In fact, Tait have recently released products that work as two-way radio devices yet, on losing communications with the radio network, simply switch to an LTE SIM and continue communicating — everything old is new again.

With the development of the Long Term Evolution (LTE) technology for wireless broadband, there have also been the pundits that have forecast the end of traditional radio communications systems and the following demise of the radio dealers who supply and support that sector. The opposite, however, is occurring where many industries are seeing the wireless broadband (WBB) offered by the public carriers does not meet their requirements and they need alternatives.

In a recent paper from the AgriTech Working Group from the Australian Broadband Advisory Council (ABAC) it was defined that because the public carriers coverage template is based on towns and major roads, there are many locations where coverage over the farmers' paddocks is so poor that they cannot get the benefits of WBB to increase productivity. This is seen as a serious issue for the agriculture sector and there needs to be a solution. From examples in the document, plus others as a result of my own enquiries, it would seem that some farmers are spending in excess of \$100,000 trying to find ways to get WBB coverage of their farms.

Of course, this is a potential application for private LTE systems, with the amount that farmers are paying unsuccessfully to get coverage putting such systems into the viable economical alternative category. The main problem with private LTE systems has been the lack of suitable spectrum; however, a recent enquiry by the ACCC to respond to the ACMA regarding allocation limits in remote areas gave ARCIA

the chance to point out that there is still potential demand for private LTE systems, maybe even on some of the large pastoral holdings in those remote areas.

For several years now ARCIA have been pressing the ACMA to recognise the need and make spectrum available in a suitable format for private LTE services, a long and hard battle so far and still with no positive outcome, although we are hopeful that the attitudes are changing. In this present financial year the ACMA are conducting some research into the private LTE market to help determine their future spectrum planning options.

The main issue to date had been that, as private LTE is an unknown market and most people just think that the public carriers will provide the services, there has not really been any lobbying power to press the spectrum case.

ARCIA has recognised that many of the potential users of private LTE services are already clients of the radio communications industry — we supply and maintain their existing communications systems. With that in mind, it has been our association and our members who have been trying to raise the flags to get the spectrum issues addressed. Over recent months ARCIA has responded to not only the ACCC enquiry, but also a couple of ACMA discussion papers that could potentially open up the spectrum availability for private systems.

So, for this grumpy old man, after having spent many years in the radio industry and having discovered just how much it is critical to daily life, it is comforting to see that our industry can survive for many years to come. To those young people just starting their careers in radio, you can be assured that you can have a lifetime career in this great industry.

Grasp the future, it is strong and our industry is essential.



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

# Talkpod

# N5 SMART SERIES



VIDEO  
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ANDROID 9.0  
EASE OF OPERATION  
LTE  
RESULTS  
MANAGEMENT  
DEVELOPMENT  
TEAM COMMUNICATIONS  
EMERGENCY MANAGEMENT  
RUGGED  
MESSAGING  
DURESS  
EVOLVE  
GPS  
N50  
ECONOMIC DESIGN  
SCALABLE  
ROBUST  
INTERACTION  
N56  
HANDHELD  
SMART  
INNOVATION  
OPERATIONS  
EFFICIENCY  
DURABILITY  
CAMERA  
TRANSFORMATION



The Talkpod N5 Smart series is exactly what the Australian PoC radio / Network market has been screaming out for: well-engineered, fast, great looking Android devices that look and feel like traditional two-way radios and function in a way that more than meets consumer expectation. Talkpod devices are extremely well engineered, deliver a great 'in hand' feel and provide a durability level that assures user confidence.

The Talkpod N5 Smart Series include Android 9.0, Open API, Google Play, Dual SIM, Man Down/Gyro, Vibration Feedback, Bluetooth 4.0/BLE, Wi-Fi 802.11 B/G/N, GPS, front & rear camera (N59 only), crystal

clear audio, all Australian 3G/4G bands including Band 28, and an IP66/67 waterproof rating.

One of the many qualities that separate Talkpod devices from their competitors is their ability to roam between different cellular sites, bands and technologies for the best signal with the greatest bandwidth to rapidly deliver an optimal level of service. The speed at which this roaming occurs leaves competitors in their wake setting new standards in the Australian PoC market.





**powerbox**  
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# Reliable backup power

For hybrid, off-grid and grid-connected telecommunications

## POLARIUM SMART LITHIUM-ION BATTERIES

### Key Features

- Smart batteries specifically designed for the telecom environment
- Available in both NMC and LFP chemistries.
- Up to 250AH 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 adaptations
- 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 - thoroughly 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

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