

# CHAMPIONS RUN CHAMPION'S SYSTEM

As the market leader in **DMR Tier III Trunking** solution, Hytera has so far offered over 25,500 channels to institutions of different sizes and industries, and various departments of governments, who rely on the system for seamless and resilient communications. Hytera empowers professionals and organizations to work more efficiently, and gain edges to stay ahead of the competition.

## Hytera DMR Trunking Lite

- Alternative Topology
- Fast Deployment
- Lower Total Cost of Ownership



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**DMR**  
DIGITAL MOTORIST RADIO



PD79X Ex



PD78X



X1p



MD78X



DS-6210  
Hytera DMR Trunking Pro

DS-6211  
Hytera DMR Trunking Lite

# chapter 5

## Critical Communications

### Opportunities, challenges, and huge potential



Phil Kidner,  
CEO, TETRA +  
Critical  
Communications  
Association

Africa's adoption of critical communications is following the global trend of migration from analogue to digital narrowband technologies. Demand for data is also increasing, as more users expect more sophisticated high-bandwidth data applications on their networks. This is reflected in the limited but growing

amount of broadband introduction in the professional sector as part of a hybrid solution.

African countries are not however uniform in their approach, and there are significant differences in budget, reflected in the project choices. Public safety, and oil and gas are the main drivers for professional comms, but it must be remembered implementing new systems has to be balanced in some countries with the challenge of upgrading legacy infrastructure.

This is a critical communications market that is continuously developing, driven by a growing awareness of the need and value of reliable and secure wireless communications in key industries. Many African countries still rely on aged analogue radio systems, and there is a clear drive and intention to migrate these to a digital platform.

Greater government regulations regarding the safety and security of employees and business operations are also having an impact, and overall there is a growing awareness of the value of safe and secure wireless communications.

Economic diversity across African countries will see varied digital technologies being implemented in the drive to migrate from

analogue to digital – TCCA members note an increase in the number of TETRA-related enquiries for public safety and business critical environments. Of course, TETRA technology is not new to Africa – commissioned in 2001, the City of Cape Town system was the first public safety TETRA digital trunked radio system on the continent. It has been in successful operation for 15 years, with regular increases in resources and coverage. Dedicated commercial-grade microwave links were deployed in 2008, and last year the master switching office was also upgraded. Further investment is planned as the network has proved highly reliable in meeting users' needs.

TETRA continues to be deployed throughout Africa. During the past year, many new systems and upgrades have been installed, including those in Angola, Botswana, Namibia and South Africa in the mining, safety and security, and oil and gas sectors. Shifts in the economy obviously have an impact, but it seems that for critical communications, capital projects and expansion plans can be scaled down and/or extended over longer time scales rather than being cancelled or postponed.

TCCA members report significant TETRA opportunities in Northern Africa where the characteristics of the technology are particularly appreciated by users in the public safety, and oil and gas sectors. Southern Africa is also showing increasing interest in TETRA, with a tender being issued by the South African Police Service, and the potential use of TETRA in railways applications.

Security issues in the oil and gas industries have catalysed interest in TETRA from a number of countries including Côte d'Ivoire, Gabon, Guinea, Nigeria, and the Republic of Congo. Mozambique and Tanzania are also looking at TETRA to deliver secure communications, which are an important component in oil fields and plants protection.

Southern Africa is expected to experience a relatively good growth for 2016-17 in the trunked radio communications market. Various requests for information for digital wireless communications solutions have been issued since the beginning of 2016, and these cover transport, safety and security, and the mining sectors.

Added to this are growing demands in Southern Africa to include LTE for broadband critical data communication in conjunction with TETRA. But as with so many regions, the continent has a shortage of suitable and sufficient frequency bandwidth allocation for critical mobile broadband.

The TETRA industry remains robust in Africa. It is the premier voice and data technology installed by critical communications users around the world, and is also a mature standard with ongoing development and a clear evolution path. The combination of functionality, quality, spectrum efficiency, and lifetime costs and benefits have proven hard to beat.

Migration to a digital standard is a long term commitment for end-users which needs the full support from manufacturers. There is huge potential in Africa, and it is important that international regulatory bodies and standards-based associations such as the TCCA invest time and effort in the continent to ensure awareness of the available choices in open-standard technologies.

*The TCCA would like to thank Expert System Solutions, Finmeccanica and Sepura for their contributions to this article. The TCCA is the forum of users, operators, manufacturers and other stakeholders for critical communications, influencing the market as well as key decision makers on the need for and benefits of the coordination and standardisation of specialised mission critical communications. [www.tandcca.com](http://www.tandcca.com)*



## Seychelles Police call in Motorola

In October, the Seychelles Police announced that it had deployed a Motorola Solutions' *MOTOTRBO* system for critical communications and improved dispatch of officers across land and sea for rapid response to criminal activities.

The Indian Ocean region is home to 115 islands in the Seychelles and faces the constant threat of pirates hijacking local fishing boats, and organised crime gangs using the many isolated beaches to traffic illegal drugs. Patrolling the area has been an ongoing challenge for the police where mountainous island terrain severely disrupts analogue radio and cellular coverage.

Designed and installed by UK-based Communication Specialists (Comm Spec), the *MOTOTRBO* radio system connects more than 800 police officers with dispatch at headquarters in Victoria, the Seychelles' capital. Comm Spec extended the reach of the network using *DR 3000* repeaters which provide more than 30,000km<sup>2</sup> of radio coverage, blanketing the islands and surrounding ocean for the first time.

Officers were equipped with *DP3601* portable two-way radios which Motorola said offer reliable integrated data communications and enhanced voice capability, while police vehicles had *DM4401* mobiles installed.

Comm-Spec also introduced the VHF version of the *MOTOTRBO DP4801* to the force's radio fleet. This integrates GPS and is also claimed to deliver best-in-class audio. According to Motorola, all the radios deliver advanced location-based services including geo-fencing, enabling the control centre to track, monitor and – should an officer's status unexpectedly change – respond quickly throughout the islands.

## Hytera delivers nationwide TETRA system in Nigeria

In January, Briscoe Technologies replaced and expanded its TETRA network in Nigeria with the help of PMR specialist Hytera Communications.



Hytera worked with Briscoe Technologies which owns and operates Nigeria's biggest TETRA network and has more than 10,000 users.

Lagos-based Briscoe is the owner and operator of Nigeria's biggest TETRA network. With more than 10,000 users from multiple industries, it covers Lagos, Abuja and Port Harcourt, and is claimed to be the first network in Africa to be based on all-IP TETRA technology.

With the need for broader coverage in areas such as Port Harcourt and Rivers State, plus increasing demands for higher security and stability, Briscoe needed a new exclusive communication system based on a customised design. But the company faced a challenge in replacing its existing systems without causing disruption to customers. It also had to ensure that any new infrastructure offered compatibility and flexible network topology to satisfy different industry requirements.

Hytera's complete TETRA solution for Briscoe included 30 base stations and 2,500 of its *PCS* terminals with system control, dispatch, and PABX service.

As part of the first phase, 15 base stations were delivered in order to replace the existing network and extend coverage to parts of the Niger Delta where the oil and gas industry is located. During phase two, coverage was then extended to most of the Niger Delta region as well as in the Abuja Federal Capital Territory.

Hytera also provided Briscoe professional services including network topology design, site selection, commissioning of network, training, and local technical support.

## Emcom delivers DMR at the speed of sound

In February, South African-based PMR specialist Emcom Wireless announced a deployment to the Bloodhound Supersonic Car project.

In October 2016, the Bloodhound team will attempt to break the world land speed record on the Hakskeenpan in South Africa. As he tries to topple the record of 763.035mph, driver Andy Green will be able to communicate instantly with the control centre at the press of a button thanks to a DMR system supplied by Emcom.

Sipho Tony Sibanda, Emcom Wireless' executive director in charge of business development, said: "Our DMR solution will provide real-time voice and data communications and allow the command centre to not only talk to the driver but monitor his vital statistics such as heart and breathing rates, as well as offer capability to transmit real-time vehicle performance criteria throughout the attempt."

The network will use Tait Communications' Tier 3 *TAITNET* DMR platform which will directly link all operations to the control centre on the Hakskeenpan. All support teams, engineers, emergency crews and airborne assets (such as aircraft filming the event) will benefit from having coordinated group radio communications without interfering with each other.

The system was specifically configured at Emcom Durban Radio workshops and even has the capability to integrate with the LTE network supplied by MTN.



At the push of a button, driver Andy Green will be able to instantly talk and relay or receive information from the command centre.

### JANUARY – JUNE 2015

Altech Fleetcall is upgrading its analogue radio trunking network in South Africa using DMR systems from Hytera Communications. According to Hytera, it is arguably the largest operational MPT1327 network in the world with more than 170 sites. Using the vendor's ETSI standard DMR Tier 3 trunking solution, Fleetcall said its network will offer higher data speeds, GPS tracking, flexible dispatching, multi-level monitoring, larger subscriber capacity, and "crystal clear" voice quality.

Hermes Datacomms is using O3b satellite capacity to deliver critical comms for a global oil company's operations in West Africa. Under the deal, Hermes is also providing the unnamed firm with a connection back to its regional HQ in Europe. Hermes was acquired by Speedcast earlier this year, and said this latest announcement represents its strategic partnership with O3b in the energy business. The two have been working closely with the satellite operator since 2012, and said they now have a number of fully trained O3b installation engineers.

### JULY – DECEMBER

The City of Cape Town has upgraded its TETRA infrastructure using the latest system from Motorola Solutions. The city's TETRA network is said to be the largest in South Africa. It serves 11,000 public safety, security and utility services, and also provides communications for 2,500 external users from surrounding municipalities. Altech Alcom Matomo upgraded the infrastructure's master switching station using *Dimetra IP 8.2*. Motorola says efficiency, safety and incident

# MISSION CRITICAL CONVERGED PPDR, TRANSPORT AND UTILITY SMART GRID WIRELESS OR FIBRE BROADBAND VOICE & DATA SOLUTIONS ...



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**Zheng Yafei,**  
Deputy sales  
director for Africa  
& surrounding  
China region,  
Hytera

Founded in 1993 in China, Hytera has grown to be a key player in PMR and now has a large customer base in more than 120 countries and regions across the world.

The company claims to be rare in that it specialises in TETRA, DMR and PDT technologies, and produces a wide range of products and solutions using all these mainstream digital protocols.

Hytera adds that its acquisition of Rohde and Schwarz's TETRA business in 2011 further strengthened its edge in the TETRA market.

Africa is becoming an increasingly important market for the company, and in 2015 it achieved a lot of breakthroughs on the continent as Zheng Yafei, Hytera's deputy sales director for overseas sales in Africa, explains.

"Hytera was selected to help Ethiopia Police build their nationwide network. The implementation of phase 1, including a command and control centre, and a DMR trunking system to cover the whole of Addis Ababa, was recently finished in March 2016.

"In Uganda, we won the contract to provide the national police with a DMR trunking solution, and the first phase of the project has been completed, providing communication coverage for the capital Kampala."

Other work currently in progress includes a communication system expansion for a South African operator which has chosen DMR trunking, and a TETRA deployment for an operator in Nigeria. In addition, Yafei says Hytera has also offered some "significant" TETRA solutions for public safety clients in Francophone Africa.

So how has the company seen the continent's PMR market adapt and evolve in Africa in 2015? Yafei says analogue products are still widely used in Africa, which presents a great opportunity for future migrations

to digital. He also believes that, compared with TETRA, DMR is relatively more suitable for clients in Africa because of the technology's cost effectiveness, abundant functionality, larger coverage, etc.

"Most African countries are resource-based. The price drop of oil and major international commodities affects the continent's economies greatly. As a result, many governments cut their budgets this year, and so the lack of financing capability is the main challenge in 2016. The lack of infrastructure is the other challenge and always exists.

"But while many challenges remain, this continent still has great potential. Market demand is still there, and clients need to solve their problems with mission critical communication equipment. The budget limitation drives them to reconsider their suppliers and make the right choice."

Yafei says Hytera is committed to bringing leading-edge technology but at a "reasonable cost" to its clients.

"Actually, Hytera has put massive resources and investment into this continent to develop the market, and the company is dedicated to bringing the most suitable solution for African clients. In the past five year, Hytera's business in Africa has grown greatly, especially in East and West Africa."

In terms of the future, Yafei says the company is targeting bigger growth this year with the deepening of China-Africa relations. He also believes PMR will play a role in the broadband systems that will be deployed on the continent.

"Mission critical communication systems are going to apply to broadband technology in the future for sure, but we need to identify what the real broadband solution is and what our clients need.

"Since the narrowband is widely deployed, to save their previous investment clients need a merged broadband and narrowband solution which is interoperable with their legacy system.

"Moreover, in view of the capex, a mixed solution is also needed. A nationwide narrowband voice communication system is necessary while a broadband system can be deployed in some specific hotspots only."

"Clients in Africa need to solve their practical challenges with mature, approved technology. And to solve their voice communication challenge is always the higher priority – video transmission is good but remains supplementary."

However in reality, Yafei thinks it will take long time for Africa to enter the broadband era due to undefined standards, high investment and maintenance costs, lack of spectrum and infrastructure, etc.



**Allan Detlefsen,**  
Sales &  
marketing  
director,  
DAMM

DAMM is currently developing and expanding its presence in Africa. In the past, the Denmark-based company's focus was on the sub-Saharan region and so it now wants expand into the remaining parts of the continent, as Allan Detlefsen explains.

"DAMM's primary focus is on private market deployment of high-end professional communication in the sectors of mining, transportation (seaports, airports as well as public transportation), oil and gas, and utilities. In the public sector, the main focus is city/regional networks and the radio network operator business. Due to these expansion plans, we are interested in getting in touch with potential partners within the African continent."

Like Hytera above, Detlefsen says Africa still has a large installed base of analogue equipment, and so DAMM is seeing an increasing interest from organisations to migrate to digital trunked solutions.

"Low-cost digital technologies are mainly used in cost-sensitive regions for simple

response time have all now been improved through enhanced network management, security and new location-based capabilities.

The Addis Ababa Police Commission has awarded Hytera a contract to supply an emergency command and dispatch system. While precise details are as yet unavailable, Hytera said the scope of the project also includes establishing a PMR network covering Addis Ababa, Ethiopia's largest city, as well as offering two-way radio terminals to the police force. The value of the deal is around USD7.2m.



**Bryan Raath,**  
Business  
development  
manager, Africa  
Sepura

**The year ahead:** We have seen an increase in the number of TETRA enquiries for public safety and business critical environments in the region. But as user density is rarely an influencing factor, DMR and its coverage capabilities is the forerunner in the race to secure future networks.

From a cost perspective, DMR is most often associated as the best fit-for-purpose

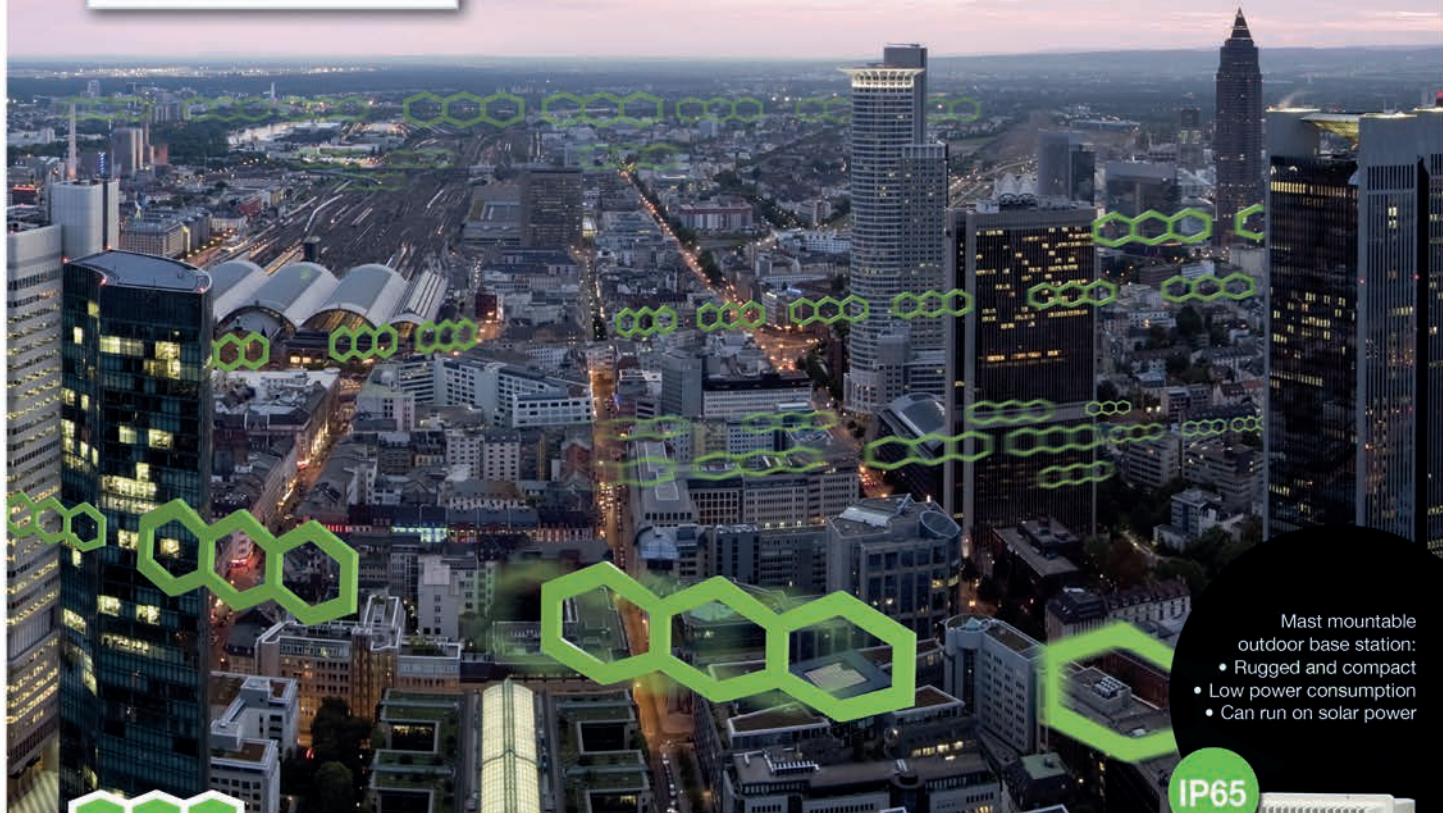
technology as it addresses most of the operational requirements whilst offering a slower and easier to consume migration strategy designed on budget availability.

As many African countries still rely on legacy analogue radio systems, there will continue to be a clear drive and intention to migrate these systems to a digital platform.

But switching to a digital standard is a long term commitment for end-users, and they need the support from manufacturers to fully understand their options before making a commitment on any investment.



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DAMM solutions and support are available worldwide through an exclusive network of authorized partners

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DAMM is a world-leading provider of critical radio and broadband communication solutions to industrial, commercial and public safety customers.



push-to-talk systems and standalone radio communication systems. For professional and advanced solutions integrating other services for voice and data, [systems] based on TETRA technology remains the preferred choice.

“For instant communication in first-responder emergency and security services (especially for rural areas with limited or non-existent infrastructure) DAMM offers a fully featured TETRA node in a compact format called *Rapid Deployment Tetra (RDT)*. This allows for a full featured TETRA system to be deployed in less than five minutes.”

Housed in a tough wheeled suitcase for maximum mobility, Detlefsen says RDT offers a fully functional high powered TETRA communication system that can be instantly deployed in any situation. Its internal battery offers independent power for more than two hours, and can additionally be connected to solar-powered devices. With extremely low power consumption, RDT is described as an “ideal robust, secure and compact solution for the African continent”.

Detlefsen says the challenges critical comms users face in Africa are the same as in other regions of the world.

“Users should be able to navigate in the huge pool of information provided by manufacturers of different communication technologies and solutions. They should be able to maximise the benefits of the investment in a critical communication solution.

“It is key to select a cost effective and future proof system that matches current needs, yet stays open to changing demands and requirements. Customers go for the best ROI in critical communication with a future proof and technology independent solution that will help keep costs down.”

To meet the challenges in Africa, Detlefsen says DAMM offers a multi-technology platform that features an outdoor system capable of handling multiple technologies – all in a single base station. As a result, the platform is able to meet the user’s needs of today as well as their potential needs of tomorrow. “The customer also eliminates the uncertainty of making the wrong choice today, affecting his options tomorrow.”

Detlefsen continues by saying DAMM’s platform offers the world’s first outdoor DMR tier 3 base station optimised for direct outdoor mounting, thus eliminating the need for special housing or additional cooling.

“Other cost saving features include plug and play installation, as well as an extremely low power consumption making it possible to operate on solar power, which is ideal for the continent. A self-sustained solar power supply enables easy and agile infrastructure expansions to meet Africa’s challenges.”

As he looks forward to the foreseeable future, Detlefsen says the company’s mission is to be able to reach new geographies and new market segments on the continent, and to introduce its cross-technology platform to even more customers, partners and system integrators.

“Industry leaders worldwide trust DAMM in critical radio and broadband communication. We are eager to establish a strong presence in Africa, and to bring the benefits of the most flexible and scalable communication solution to customers.”



**Tony S Sibanda,**  
Director of sales  
& business  
development,  
Emcom Wireless

According to Tony Sibanda, the process of migrating customers to new digital technology is often met with scepticism due to unfamiliarity with not only the new products and vendors, but also the different forms that digital technology comes in.

“The influx of eastern products onto the continent has seen digital radio, though rich in features and functionality, land at prices a fraction of conventional analogue products.

“But in their quest to buy the ‘cheapest’ and ‘save’ money, customers have often ended up with elephants in their backyards, having chosen the wrong digital type for their application. Lessons have been learnt through educating the market and using case studies to demonstrate the importance of planning and finding fit-for-purpose technology and products, and not purchasing on price alone.

“We have thus seen a rapid shift from the initially favoured TETRA technology onto the now mature DMR platform. In our experience, the latter is better suited for wide area coverage in sparsely populated regions, allowing some use of existing analogue high-site infrastructure.

“The last 12 months has seen Emcom successfully deploy multi-site DMR Tier 3 systems in six countries, half of which have been national, with the capacity to accommodate multiple agencies on one network. Sectors covered have included wildlife management and anti-poaching, mining, public safety, municipalities and electricity utilities.

“Right from commissioning date, the customers have reported significant operational efficiencies and immediate returns on investment through better fleet management. That’s thanks to: tracking and location services on terminals; improved voice quality; cheaper communication costs through integration and linking of sites for long distance radio calls; and improved safety in environments where traditional communication means fail.

“What has been key in the successful deployment of radio technology in Africa has been Emcom’s customer centric business development team that has travelled extensively on the continent. The team adopts a culture of empowerment and skills transfer in every interaction with the client and practices a culture of listening before proposing any new technology or product.

“Relationships matter and trust has been built over time through always delivering on promises and seeking opportunities to always improve and exceed expectations. For my part, I keep my finger on the pulse through interactions with technology and product suppliers, as well as with a wide range of customers on the continent.

“I believe Africa’s radio market is where the cellular industry was in 2009, with the introduction of smartphones into the market. Digital radio has come as a major game-changer in that it’s not so much about voice anymore. Data has introduced a new dynamic in how professional radio is used.

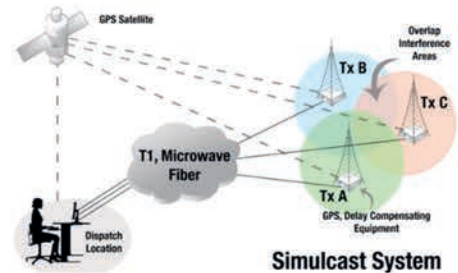
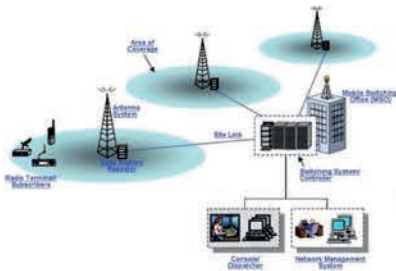
“With the dawn of unified communications, the IoT, and faster data speeds with LTE (and 5G on our doorstep), we see a big shift soon to software defined radios and more demand for customised applications on radio. Already we have integration of radio to Bluetooth, Wi-Fi and GSM on our laps. Soon it will be a question of what the radio can do for the user and not so much what brand of radio one uses.

“With the standardisation of communication protocols over different products through ETSI, interoperability has become key in integrating different brands and bridging devices. In Africa, like the rest of the world where disasters such as flooding, fires and building collapses still occur, command and control centres are a growing priority, making it ever more important to unify the different communication platforms in recovery and rescue operations. This calls for a different skill set in applying the technology and requires a bit more thought in understanding where the digital drive is going and forecasting future needs that we may not be aware of today.

“Finally, I would say the benefits of adopting DMR today cannot be over-emphasised as they talk to the fundamental principles governments are preaching about. These include infrastructure development, improved service delivery, safety and security, skills development, and employment creation, to name a few.

“The growth in connectivity on the continent must not ignore this area of communications which is often the last line of defence in every incident where resources are stretched to the limit, and life and limb are at stake.”

# MISSION-CRITICAL RADIO COMMUNICATIONS



## EMCOM INTEGRATED SOLUTIONS

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EMCOM wireless is a tried and tested industry leader in professional mission-critical radio communication solutions. With solutions deployed in over 30 African countries over the past 43 years, our products can be seen in operations covering Policing, Public Safety, Defence & Peacekeeping, Mining, Oil & Gas, Transportation (road, rail and air), Utilities (water & electricity), Agriculture and Wildlife Conservation. Our success results from long-term relationships with our customers and technology partners which ensures customized fit for purpose deployments. Reliability, commitment, flexibility and excellence are some of the values that define us, the partner of choice, in the African professional radio communication industry. We lead the way in empowering our customers with the skills and knowledge required to make the correct decisions on their choice of two-way radio communication solutions.



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