

# Motorola Solutions sees a hybrid technology evolution for critical communications

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Motorola is anticipating a mixed technology future for critical communications with PMR and LTE being used in a variety of combinations and different business models, as the company's Jeff Spaeth explains to James Atkinson.



The debate around the suitability and reliability of narrowband professional mobile radio (PMR) versus 4G LTE broadband technology for critical communications can get more than a bit polarised.

However, Jeff Spaeth, Corporate VP & General Manager, Systems and Software Enablement at Motorola Solutions (pictured below), thinks that both the industry and its end customers should not be framing the debate in terms of a stark choice between one or the other.



'I think the question is flawed,' he says. 'Customers should benefit from both technologies and I think this will be the case for decades to come. We are building on our PMR heritage, which I would describe as being about work group communications. But solutions should be based not on the technology behind this, but the function that needs to be delivered.'

He argues that the key is to maintain the functionalities that make PMR so powerful - namely: defining groups in common for voice and messaging; prioritisation and pre-emption; and security – and apply these features across multiple networks, devices and applications.

'Motorola's role is to be a trusted advisor to help customers determine what solution best meets their needs,' continues Spaeth. 'The key concept here is to enable customers to bridge PMR and LTE as seamlessly as possible.'

Hence, Motorola has developed a number of products that make up what it calls its convergence suite. This includes: the WAVE Portfolio, providing PTT-centric solutions enabling voice and data interoperability between PMR and broadband systems; mobile communications applications; and intelligent middleware, providing data-centric solutions which are mainly aimed at control rooms.

Speaking to Wireless at CCW 2016 in Amsterdam, Spaeth says: 'For me the headline is: it is an exciting time to be in this business because of all the change that is happening. Historically, we as a company have defined ourselves as PMR people – and that has pretty much gone from the standpoint of the work group communications industry. It is a question of how you enable the work groups to communicate.'

## **UK's ESN project**

Motorola Solutions is in the front line of this development following the award of the Lot 2 User Services contract for the UK's new 4G Emergency Services Network (ESN). 'We are very excited about playing a role in helping that,' says Spaeth.

'It is a journey we are on with the UK Home Office (the awarding authority for ESN), working with them to begin the process of establishing push-to-talk (PTT) over broadband services and how work groups will use broadband in the future.'

The Home Office has also contracted Motorola to enable the new ESN broadband network, provided by UK mobile operator EE, to interoperate with the existing Airwave TETRA emergency services network during the transition period. 'We can help with that seamless transition using our WAVE technology to enable PTT over broadband and interoperation between broadband and PMR,' says Spaeth.

He believes the lines between the two technologies will increasingly blur over time. 'The definition of a work group will change from one with 100 two-way radios to one that has a potpourri of two-way radios, broadband devices, mobile units, tablets, desktop devices - some broadband, some PMR. The more we can make that seamless, the more value can be created.'

Spaeth sees this as the main theme of the critical communications industry for the next 10 to 20 years. He cites a survey carried out at a CCW session where the audience was asked to say when they thought LTE voice and data would replace PMR. The average response of the polled audience was between 10 and 15 years.

The audience was also asked what percentage of the PMR user base will have gone over to LTE in 10 years' time. Almost 60% of the audience said less than 5% will have abandoned it and migrated to LTE by 2020.

'That audience at least believes there will be a co-existence of the two technologies for a while,' notes Spaeth. 'The other comment I made in that session was that I think one of the problems that I see in our industry right now is that people want to manage this topic of PMR and LTE by soundbite.'

'If you ask the LTE guys they will say: "PMR is dead; we have LTE Release 13 mission critical PTT; this is the future, so you should use that." Then on the other side you have the PMR community which says: "No, LTE is not mission critical yet; and it will never be ready, so stay with PMR as it will be here for ever".'

For Spaeth, the discussion needs to acknowledge that things will be more complicated than that, as for some customers PMR will be the answer for decades, but for others the answer is LTE.

Where customers position themselves depends on a variety of factors such as spectrum holdings and availability, budget, government policy, where they are in the PMR lifecycle, what vertical markets they are in, and what kinds of geography they are trying to cover.

'That is why some will chose PMR and some LTE, but the majority will be somewhere in the middle,' believes Spaeth. 'They will use PMR for voice and LTE just for data at the start perhaps. How fast or slow they want to migrate is up to them, but we will help facilitate that.'

## **Mixing PMR and LTE**

He explains that Motorola's position as a company is that while it obviously has a long heritage in PMR, it is also investing heavily in broadband PTT and its ambition is to serve customers with the best of both technologies.

As customers will migrate to LTE at different speeds, adopting some services and holding off buying others, Motorola is developing solutions that will be somewhat modular in nature.

For example, the newly released WAVE 7000 has a messaging and mapping module that all works together, so if a user wants to utilise PTT voice, messaging and mapping data it will work seamlessly. They can look at a map, see their colleagues, press a button and make a PTT call and send a message to all of them on demand.

But others may prefer to stick with PMR for PTT voice services and use a second broadband device for data services. The point is not to force anyone down a particular route, but to provide flexibility.

'It is about having the ability to mix and match capability, but still have it work seamlessly - that is what we are trying to target,' says Spaeth. 'The point of having this bridge between PMR and broadband is that it enables users to dip their toe in the water, test broadband and try things out.'

'You can see how users accept the new devices, what devices they want to have, learn about the use cases, determine how they want to use them, and as they gain confidence they can start to utilise more services. Or they can slow it down if the device isn't what they need or the network performance isn't good enough yet. We have that flexibility to go as fast or as slow as the customer wants,' he asserts.

Building flexibility into its offerings is a key consideration for Motorola, because no one really knows how things are going to evolve. 'Everyone has a theory,' says Spaeth, 'but I'm not going to tell you I have the answer. Sure, we have our view in Motorola Solutions, but the whole industry is going to learn this together.'

An unexpected result of this ability to provide flexible solutions is that it appears to be providing PMR sales with a boost. 'Having this seamless bridge solution between PMR and LTE has given customers the confidence to continue to invest in PMR, as they now know it is not a dead end technology. That has added to the value of PMR in a way that I hadn't anticipated,' says Spaeth.

## **Managed service provider**

Motorola's strategy over the last few years has been to reposition itself as more than just an equipment supplier. But despite now being the owner of network since its acquisition of Airwave in the UK, Spaeth says: 'We don't think of ourselves as an operator, but as a managed service provider. We are not trying to be the next Telefonica, but just supplying kit to the customer does in some way keep us at one remove from them.'

'We can stay closer to the customer by having this managed service offering and by being able to better understand their needs. We can now work with them on transitions; we can advise them on how fast or slow they want to go to a PMR and broadband future.'

'So, if the customer does not want to own or manage his network, we can step up and do it for them. Are we going to go in and do that commercially and take on the MNOs? No, and ESN is a good example of that,' he says.

'The Home Office has chosen an MNO - EE, and we are providing services in areas where we think our value is – namely, everything around the knowledge of the end customer use cases, software that provides PTT, messaging and group communications, and so on.'

Spaeth points out that Motorola has in fact been in the managed service provider sector for a number of years. The company operates public safety networks for customers in the States of Carolina and Illinois in the USA, for example. In the State of Victoria, Australia, Motorola has won a contract to operate a network there, while in Denmark and Austria it is involved in networks through partnerships arrangements.

'The UK's Airwave network is undoubtedly the largest network we operate, but it is not the only one,' he says. 'What we are doing there and with ESN is an amplification of what we have done in the past.'

## **Iterative approach to product development**

Returning to the theme of getting closer to the end users, Spaeth points out that this helps the company because the pace of change means it is having to shorten its development cycle. This is in contrast to the 'old days' where someone would create a new spec for a software release, the engineers would go away and develop it, and 12 months later it would come out.

Now this process is done more iteratively, but to do that Motorola needs to be much closer to the customers, so it can really understand what they want and not end up producing something that doesn't meet market requirements.

Spaeth adds that aligning itself closer with the end user also enables the company to get involved in not just communications, but also workflow applications such as intelligence-led policing and command and control applications and services. 'We are not big in that area in Europe, but we are in the US,' he observes.

'In the future, we may be able to offer hosted models and solutions, which will open up a number of options for us to do more things for the customer, such as Cloud-hosted applications.

'If the customer is already paying per month for communication services, maybe it will want to pay per month for other services and applications. At the very least we have the flexibility to offer that to customers and that delivers us another potential revenue stream.'

Spaeth highlights the fact that the software industry has already gone this way by offering software as a service (SaaS) solutions, which have become a widely adopted business model. 'We employ more software than hardware engineers these days, so while we will continue to be in the device and infrastructure business, more and more of the value is to be found in the software.'

As a result of this, Motorola is in the middle of a huge transformation of skill sets and the way it thinks about the business. Although kit is still part of the picture, the business is now as much about all the applications and facilitating the migration to broadband. Customer expectations have changed too. 'We would not have done an Airwave type transaction 10 years ago, but now we both need and want to do these kinds of things,' says Spaeth.

## **New mission critical network models**

The UK's ESN project represents one model of how critical communications may evolve, albeit an extreme one where the TETRA network will be turned off and both voice and data will be provided by a commercial provider on spectrum and infrastructure shared with EE's 23 million consumer subscribers.

The USA's FirstNet programme demonstrates another model. Here, the Government is in the middle of a competitive process to appoint an organisation to build out a data-centric 4G LTE emergency services network with first responders retaining their existing P25 PMR networks for PTT mission critical voice services.

FirstNet bidders have to provide nationwide coverage utilising the spectrum that will be granted to the winning bidder (700MHz) but they can also use their existing spectrum holdings.

'The winning consortium would need to have the capability of offering nationwide coverage,' observes Spaeth, 'so the US carriers are the ones who are well positioned to do that. Our strategy is to partner.

'In the US, there has been no declaration of the end of PMR like there has been in the UK, so the whole concept of being able to use PMR and LTE technologies seamlessly together positions us quite well for that, perhaps more so in the US than the UK as we have a larger installed base in the US.

'The whole point is that around the world there are different business models emerging for critical communications,' he continues. 'We are deploying relatively large private LTE systems in the Middle East and we have trials going on in Latin America for private LTE networks. South Korea has selected two mobile network operators to provide a service, but with dedicated spectrum.

'In Mexico, the Government is looking to set up a new MNO, which will be run by an independent company with MVNOs running services on top of it, so that is another different business model. That one is driven less by public safety considerations and more by the Mexican Government wanting another MNO and more MVNOs in the market,' he says.

'If you fast forward five years, I think we will see all kinds of blended solutions using PMR, private LTE, MVNO type models - some with dedicated spectrum, some leveraging carrier spectrum. So, there will be a potpourri of business models and we are prepared to participate with any of them.'

The point being, that discussion over the evolution of critical communications should not be couched in terms of an either PMR or LTE debate. 'The challenge is to move the discussion beyond the soundbite,' says Spaeth. 'Our aspiration is to have that discussion with customers and work with them and we have solutions on either side of the fence that can be dialled up and down.'

He adds that his favourite take away from the IHS Technology presentation on the TETRA market at CCW 2016 is that TETRA is forecast to grow by a CAGR of 6% from 2015 to 2020. 'PMR is not a business that is dying. PMR continues to be strong, it is just that it is not what it was historically - that is the big thing,' he says.

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