Incident Ground Communications Solution

Presented by: Richard Russell, Incident Ground Communications Architect, Tait Communications
Hosted by: John Anthony, President, British APCO

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Questions and Answer Summary

Would the users do any firmware upgrades
If firmware upgrade is required then trained technical personnel and or station staff with appropriate training could implement controlled updates, the solution offered is flexible.
If Wi-Fi enabled radios are used, this could be pushed automatically by the fleet manager / maintainer to all stations where radios are located (via the FRS corporate IT network), where radios will automatically update. Confirmation of task complete will be visible to the manager / maintainer.

Do all radios require a licence and is this chargeable
A fleet database licence is required per radio and is an annual cost of a few pounds per year for each device.

Can they be unbricked if fw fails.
If Firmware upgrade is not completed, it will automatically roll back to previous firmware version = no brick!

You stated discreet listening. As in the ability to listen to a radio without the radio operator being aware?
Discreet listening is possible so others in earshot won't hear sensitive received audio.
Regarding "ambient" listening of a remote radio, this is possible in digital mode but assumes appropriate Fleet Mapping of all radios and their individual identities have been considered and implemented. The NFCC NoG needs to consider this implementation of Fleet Mapping across the whole of the UK and agreed with each FRS prior to implementation so to avoid cross boarder communication difficulties.

The problem with comms in buildings. As we improve comms (power/digital) modern building construction methods provides additional comms issues
For FRS radio communications in building, coverage and reliability needs to be considered at the NFCC level along with building owner / operator - with best practice shared for lessons learned. Various solutions are available and can help, starting with high power ATEX IIA radios with enhanced receiver performance.

In addition, the use of portable repeaters can help, and it is recommend predefined locations of their deployment should be identified in advance, for maximum benefit, in the event of an actual incident occurring.

However, in larger of complex structures, properly engineered radio infrastructure such as system grade repeaters with distributed antenna systems and resilient power supply should be considered, with regular maintenance inspections are needed to ensure “life safety critical” comms will work when needed. Moreover, quality standards for installation and resilience should be adhered to and are available from the UK's Federation of Communication Services who work with spectrum regulator, Ofcom. For independent guidance refer to the following document:
FCS 2020 - Resilience Levels in Business Radio Systems. The FCS 5-Level Resilience Assessment Scheme.

This provides buyers an insight on what to consider and levels of resilience with an audit guide.

During the 1980'2 ERP was limited to a quarter watt erp but when in post I arranged for erp to be increased to 1 watt erp. An irony related to this was a number of complaints things were now too powerful causing intermod issues and on one occasion I witnessed range of over 20 miles! have things changed in that respect or am I simply out of date?
Historically and for intrinsically safe reasons, ATEX IIC 1 watt and was adopted by ESFRS, but antenna performance can contribute to reduced Effective Radiated Power and could be attributed to reduced range, communication issues and lost comms they were experiencing.
To overcome this, higher power ATEX IIA 4 watt radios are now deployed. Moreover, the quality of the radio transmitter and receivers design has helped reduce interference created by intermods.

You have just described a gateway system of talking through from 4G / LTE to end users on UHF radios. What security aspects have you considered within this solution?
Authentication of the vehicle mobile to the network is one consideration, routing, and encryption from the vehicle to the UHF high power DMR portable is possible including the fleet map of the device(s). User access to the portable can be pin protected etc, but the solution can evolve with the cooperation of the NFCC. The primary benefit is to convey accurate instruction instantly to the front-line, eliminating errors and wasted time in life critical situation.

How are the channels configured in the radio and why?
The channels programmed into new digital radios conform the National Operational Guidance document as defined by the UK’s National Fire Chief’s Council. Where channel 1 to channel 8 are digital mode and channel 9 to channel 16 are old analogue mode channels providing backward compatibility.

What are the benefits of new digital mode radio?
There are many.

- Extended useable range, longer battery life duration for the shift, less background noise transmitted.
- Enhanced portable radio features such as, voice announcements for channels, battery status or radio type or appliance call sign.
- GPS location and ability to integrate communications especially when used with the Tait Unified Vehicle solution on the incident ground.
- To put that into perspective, the potential for control to communicate to Incident Command Unit vehicles fitted with a Unified Vehicle via 4G and repeat out over UHF radio to an officers radio or even BA wearers radio in real time – the technology exists, it just needs to be embraced through policy.

What improvements are there for Breathing Apparatus?
Tait Communications' holistic view of the Incident Ground has focused on how Entry Control and BA Wearers communicate.

- Improvements can only be achieved when manufactures collaborate, and Tait has invested in this area.
- Through collaboration with the major SCBA manufactures, extensive improvements have been achieved for voice communications, especially in digital mode operation.
- This also includes compliance to Intrinsically Safe ATEX standards for Health & Safety and regulatory compliance such as the Radio Equipment Directive.
- This hidden value is often not fully understood, but provided by manufactures such as Tait Communications to deliver best in class comms.

Can ATEX IIA batteries fit on non ATEX radios
Yes. Tait TP9300 series of radios have a common hardware size that allows ATEX IIA battery to fit non-ATEX TP9300 radios, but TP9361 ATEX radios prevent non-ATEX battery fitment for safety reasons. The benefit is a common ATEX IIA battery across the fireground.