In Case of Emergency...

An ETSI Summit on Critical Communications

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HYDRA – DEPLOYABLE 4G FOR EMERGENCY SERVICES

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Who is HYDRA?

Avanti Communications Ltd is a UK satellite operator and provider of mobile data (backhaul) services.

Quortus is a UK company that specialises in soft core networks i.e. in distilling core network functionality into edge-based software applications.

UK’s number 1 association for all professionals in public safety and civil contingencies communications and information systems.

HYDRA is co-funded by Innovate UK, a UK public body that funds and supports innovative British businesses. (Formerly TSB).
What is HYDRA?

Background
- Driven by increased interest in LTE/4G for the emergency services:
  - Potential replacement for current TETRA-based technology
- Allows public safety agencies to replace degraded proprietary communications systems with alternative services that support standard handsets and broadband speeds.
- HYDRA provides a complete LTE network,
  - can be deployed rapidly
  - provides secure communications for first responders
  - can be backhauled over satellite
Where is HYDRA needed and by whom?

- Areas where there is no or limited network access
- Hard-to-reach areas
  - System is portable and man movable
- First Responders
  - Fast set-up
  - Assists in prioritisation of resources
  - Plotting of active handsets and therefore possible affected persons
  - Allows resource management with best chance of viable results
- Secure
- Access to VLAN and WAN
Location Sensing for disaster victims

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Features & Benefits of Location Sensing

- Indicates the location of handsets in a disaster area as a ‘probability heat-map’
- Based on IMSI grabbing and survey cell data, gathered with any off-the-shelf handset
- Deployed as an Android app
Visualising Victim Patterns

- Plots the likely location of multiple handsets thereby enabling the prioritisation of rescue assets and effort
- Visualise handset movement pattern over time – handset now becomes “person”
- View current location of active responders (‘R’ in map)
HYDRA LTE / 4G over satellite
Direct Communication

- Provides communication over VPN:
  - Responder to public
  - Public to Responder
  - Responder to Responder

- Voice & SMS

- Private 4G network for responders - backhaul over high throughput Ka-band satellite
## HYDRA 4G over satellite – Features & Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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<tr>
<td>Provides a local and secure 4G network for emergency use</td>
<td>No dependency on mobile communications infrastructure and no risk of network overloading due to high volumes of civilian traffic post incident</td>
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<td>Satellite backhaul provides complete independence from existing fixed line networks and base stations</td>
<td>Complements existing mobile network infrastructure and provides mobile voice and data connectivity where none is present</td>
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<td>Works on 2G, 3G and 4G devices</td>
<td>Can be configured to support legacy networks</td>
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<td>High data throughput using satellite bearer</td>
<td>Potential in excess of 60Mbps download and 20Mbps upload</td>
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Current status and the way forward

- Development of the HYDRA system will be completed in Q1 2015
- HYDRA partners still working on:
  - Ensuring that all elements are standards-conformant
    - It can be used with all existing handsets and MNO SIM cards
  - Architecture in line with proposed TETRA replacement solutions for the UK Emergency Services Network (ESN) within the ESMCP programme
  - Final productisation of the solution