Wind Farm TETRA Case Study

How TETRA radios and applications enhance operations

Hannu Aronsson
Head of Applications Technology, Sepura
CTO, Portalify (part of Sepura)
Hannu.Aronsson@sepura.com
Offshore wind power

- Clean renewable energy
- Quickly growing
  - Worldwide capacity ≈20GW
  - UK leads with largest capacity
- Enormous projects
  - This UK wind farm will be in the global top 5
  - Adds ≈600MW, enough for 450,000+ homes
Offshore operations

- Rough environment
  - Seawater
  - Wind and waves
  - Freezing to hot
  - Ships, helicopters, platforms
- Dozens of highly skilled workers — safety is critical
  - Hazardous marine environment
  - Communications solution is critical for safety
TETRA network and radios

• Wind farm off-shore is out of any commercial network coverage
  • Must have own resilient network and site coverage outdoors and indoors
  • Safety off-shore is absolutely critical for operations

• TETRA is the premier radio technology for private safety and mission critical networks
  • Amazing audio quality in wind or noise or rain
  • Data and apps capability enhances operations
  • Widely deployed in utility sector around the world
  • Safety features such as man down alerts
Salt water environment

• Salt water is extremely harsh environment for electronics (radios)
• Need high environmental (IP) protection for most demanding situations and places

• TETRA radios can fulfill these needs and beyond
  • Salt water proof connectors, rain, shower, submersible, rugged, ...
Voice and Apps for operations

• Complete TETRA communications solution for utility sector
  • Applicable to other sectors and public safety

• Provide both voice and data communications
  • Comprehensive solution for every situation

• Why applications?
  • Improve worker safety
  • Higher efficiency...
Hello, unit 5 calling dispatch?

Go ahead, unit 5

Please check vehicle delta lima one two alpha mike seven three seven, thank you?

Vehicle database "DL12AM737" Search

Vehicle delta lima one two alpha mike seven three seven is a white 2007 Kia hatchback, taxes are not paid...

Please check vehicle owner status

Copy & paste Driver database "090467112K" Search

Vehicle owner zero nine zero four six seven one one two kilo license is suspended...

Thanks, unit 5 out

Traditional voice communications to access office data.
Typical database access application query response.

Database App

"DL12AM737"
Send

DL12AM737 White Kia 2007 hatchback.
Taxes NOT paid.
Owner 090467112K licence SUSPENDED.
Vehicle details ->
Driver details ->
Tax details ->
Voice operations

Hello, unit 5 calling dispatch?

Go ahead, unit 5

Please check vehicle delta lima one two alpha mike seven three seven, thank you?

Vehicle database “DL12AM737” Search

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Thanks, unit 5 out

Database inquiry application

"DL12AM737” Send

DL12AM737 White Kia 2007 hatchback. Taxes NOT paid. Owner 090467112K licence SUSPENDED. Vehicle details -> Driver details -> Tax details ->

Apps can be so much more precise and quicker than voice communications.
Resource usage comparison between voice and application. 
Look at both personnel and network resources.
Not just save resources, this can be process-changing efficiency boost.
Not just do more, but enable new ways to operate.
Outdoor and **Indoor** Location

• Location situational awareness is key for safe and efficient operations
  • Control room must know where personnel is at all times
  • Outdoors GPS (GNSS) satellite location
  • Indoor location by beacon-based location solution
  • TETRA and broadband — single can cover both

• Wind farm operational control room
  • Vessel, personnel and task tracking systems
  • Voice communications dispatcher

• Indoor Location is key situational awareness improvement for everyone who works indoors
  • Airports, hospitals, factories, offices, police stations, arenas and stadiums, museums, shopping centres, hotels, ...
Indoor Location App Details

- Beacons provide location information where no satellite is available
- Industry standard beacons (Bluetooth 4 Low Energy, iBeacon, smartphone compatible)
- Easy low cost and practical installation required
  - Beacons can be battery powered with battery life of 4+ years, no expensive cabling required
- Beacons can cover area from 1m to 200m
  - From tracking guard round points to airplane hangars
- Single device for critical voice, emergency and location
  - The same TETRA radio should do voice, location and apps
- Smartphone support for the future
Log On Application

• Track people, not radios
• Easy to use
  1. Take a radio from shared pool of radios
  2. LogOn with employee number
  3. Location is updated automatically when passing Bluetooth beacons, no user action needed
  4. The control room and emergency response knows who you are and where you are
  5. Return radio to radio room, automatically logged off
• LogOn application is applicable to any environment with shared pool of radios
• LogOn integrates with control room systems
Smarter TETRA terminals

• TETRA terminals are becoming smarter and better
  • More functionality, more flexibility, more power

• Sepura AppSPACE can run apps on TETRA radios
  • Smart Indoor Location app, and more...
  • Packaged and custom apps available
Putting things in place

- Wind mill tower
  - Bluetooth beacons at each door (bottom and top)
- Technical platform
  - TETRA base station
- Ships & helicopters
  - Bluetooth beacons at entryways
- On-shore operations centre
  - Radio room
  - TETRA network base station
  - TETRA network central components
- Application servers
- Office Bluetooth beacons
Summary

• TETRA provides communications and safety solution that supports communications and safety needs at this wind farm
• Wind farm is a really harsh environment with high communications and safety needs
• Voice and data together provide the best and required level of service

• Sepura delivered this complete communications solution
  • Sepura SC20 TETRA radios
    • Waterproof, submersible, marine hardened, water porting audio, sensitive receiver, high 3W transmission power, etc...
    • Radio apps with AppSPACE — voice and safety apps in one device
  • Teltronic TETRA network — proven for utilities around the world
  • Applications to enhance operations — Sepura apps included
    • Indoor location application with beacons, radio and back-end
    • LogOn application, radio forms and back-end
    • Capable to deliver complex integration projects up to nationwide public safety systems
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Questions?

Visit the Sepura stand F1 in the exhibition to
• Learn more about the SC20 TETRA radios
• See apps that can enhance your operations too
• Meet people who deliver solutions like this
• ... and more

Thank you!