

ESROE

identifying the spectrum

Radar ESM Everywhere – networking with miniature automatic radar ESM equipment

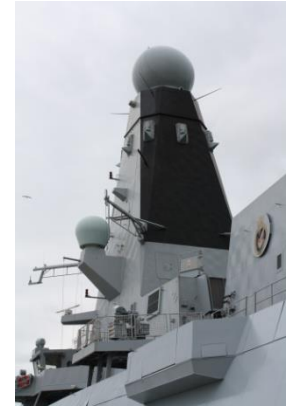
Presentation objectives

- To introduce the MicroESM concept – a miniature, yet powerful automatic battery powered radar ESM
- Show how such devices can be networked to provide radar spectrum awareness in many more applications

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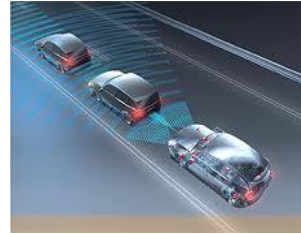
Monitoring radar signals

- The detection and identification of radar signals has traditionally been the domain of military radar ESM equipment
- Military ESM equipment is typically very expensive and often very bulky
- This limits the availability of ESM to the warfighter



Radar in the Electromagnetic Spectrum

- The spectrum today is awash with a large range of radar types
- Use of radar has proliferated, particularly in the civil domain
- Detection and, at least partial identification, provides valuable intelligence information



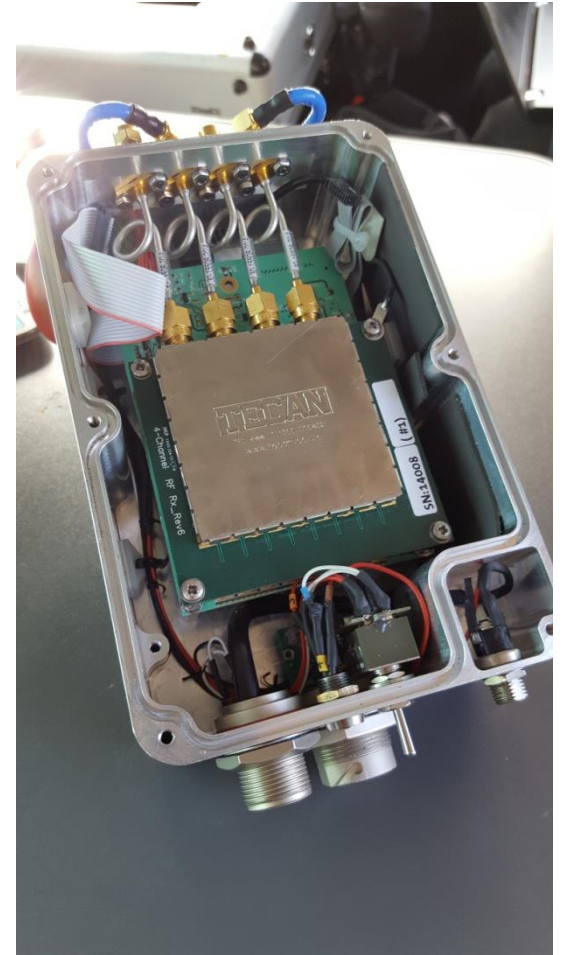
MICRO ESM – A Breakthrough

- Miniature, autonomous radar ESM system represents a technology breakthrough
- Small enough to be hand-held, battery powered, low cost
- Provides significant proportion of conventional radar ESM and RWR capability



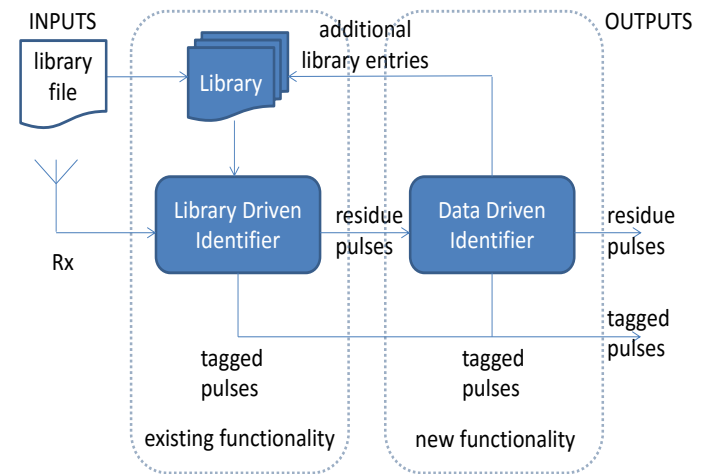
MICRO ESM – Low cost receiver

- Very small
- RF to PDW
- Wide band
- DF
- Low power consumption
- -60 to -70 dBm sensitivity

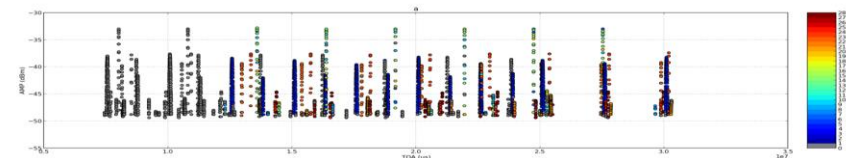


MICRO ESM – Advanced software

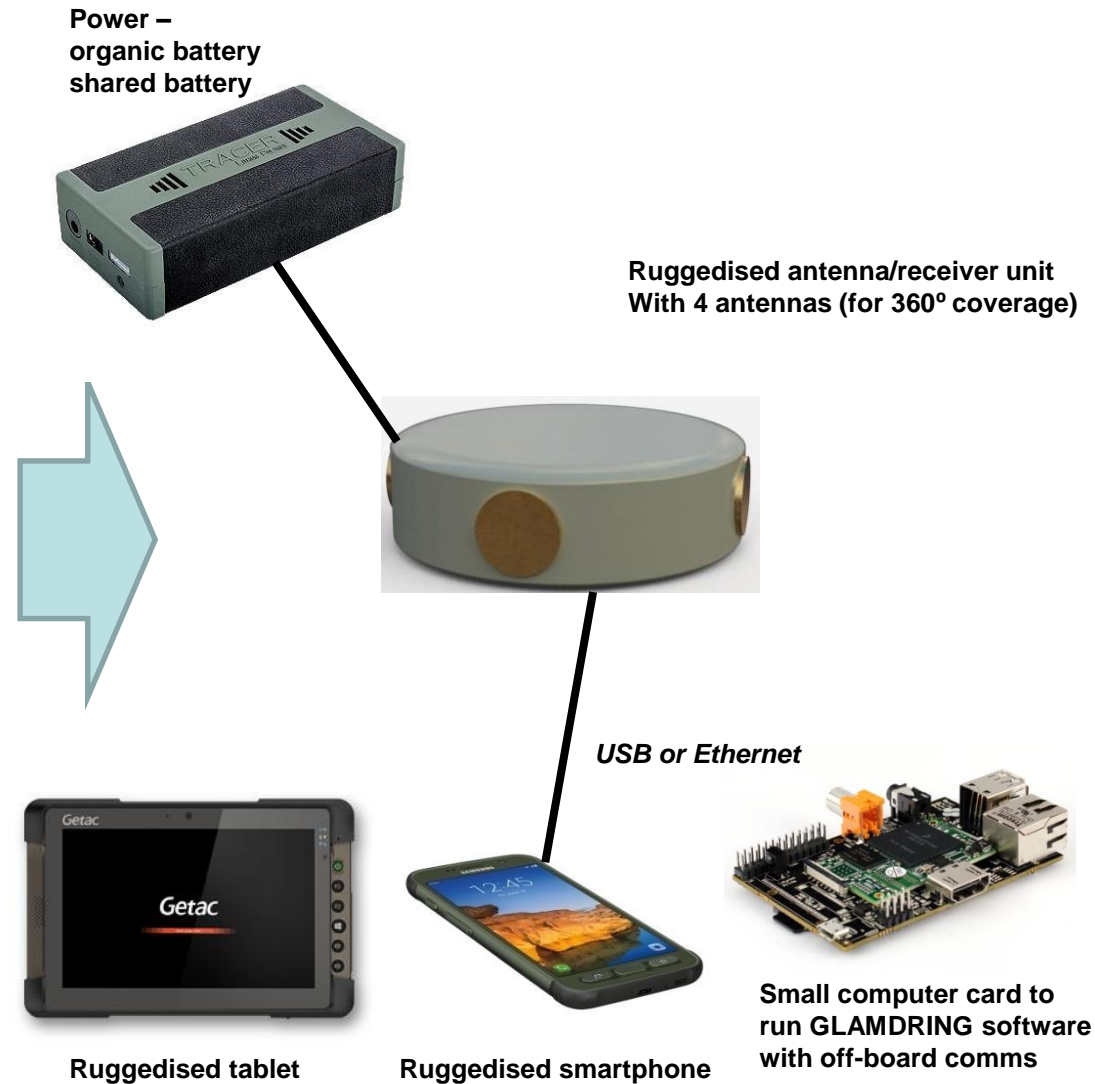
- Fully automatic processing
- Accurate identification at pulse level
- Identification of unknown emitters
- Automatic library creation
- Process real environments on smartphone
- Continuous data recording



GLAMDRING



Modular design



MICRO ESM system concepts

- Hand-held and static systems for civil maritime surveillance
- Military hand-held or soldier-borne ESM
- Military micro-UAV ESM payload
 - Also relevant for larger UAVs and military vehicles
- All system concepts to include networking for signal location



Civil maritime surveillance

- Border control, fishery protection, anti-smuggling, counter terrorism, counter piracy and environmental protection
- ESM is not used by civil authorities due to cost, size and complex staff training requirements
- ESM provides non-cooperative identification of radar carrying vessels
- IMO SOLAS Chapter V Regulation 19 requires all passenger ships and ships of > 300 gross tonnage to use 9 GHz radar



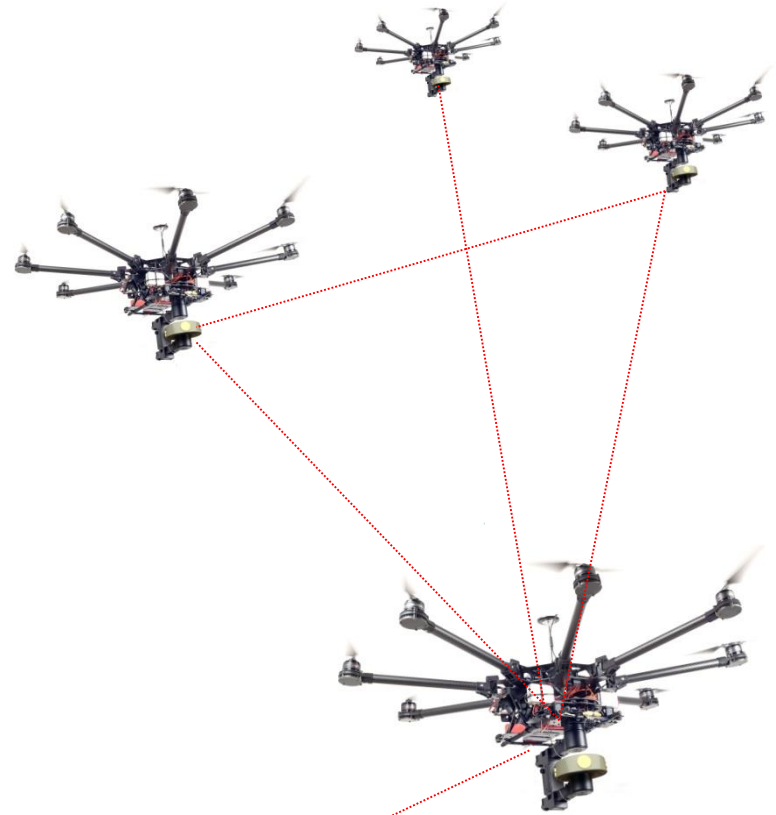
MICRO ESM – radar ESM everywhere

- Small size and cost means many more sensors
- Small sensors can cover the whole battlefield
- Sensors can be placed close to the threat
- Sensors can be carried by small drones, small USVs, unattended ground sensors



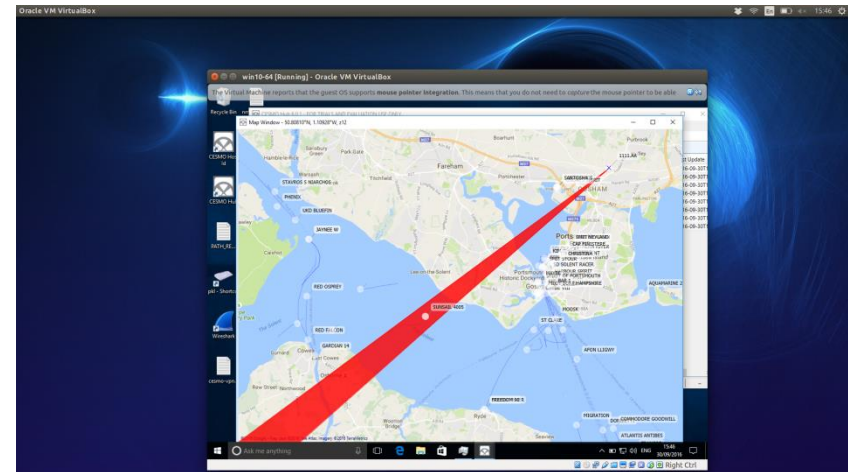
MICRO ESM – radar ESM everywhere

- Networked sensors provide greatest benefit
- Provide location data as well as just a line of bearing
- Can use existing encrypted comms
- Amount of information being transmitted can be minimised



MICRO ESM – CESMO

- CESMO enables the sharing of ESM/ELINT data
- Any number of sensors can plug and play
- Geolocation algorithms enable the derivation of emitter location
- MICRO ESM is CESMO enabled – enables a network of sensors to be created



MICRO ESM – multi-sensor trials

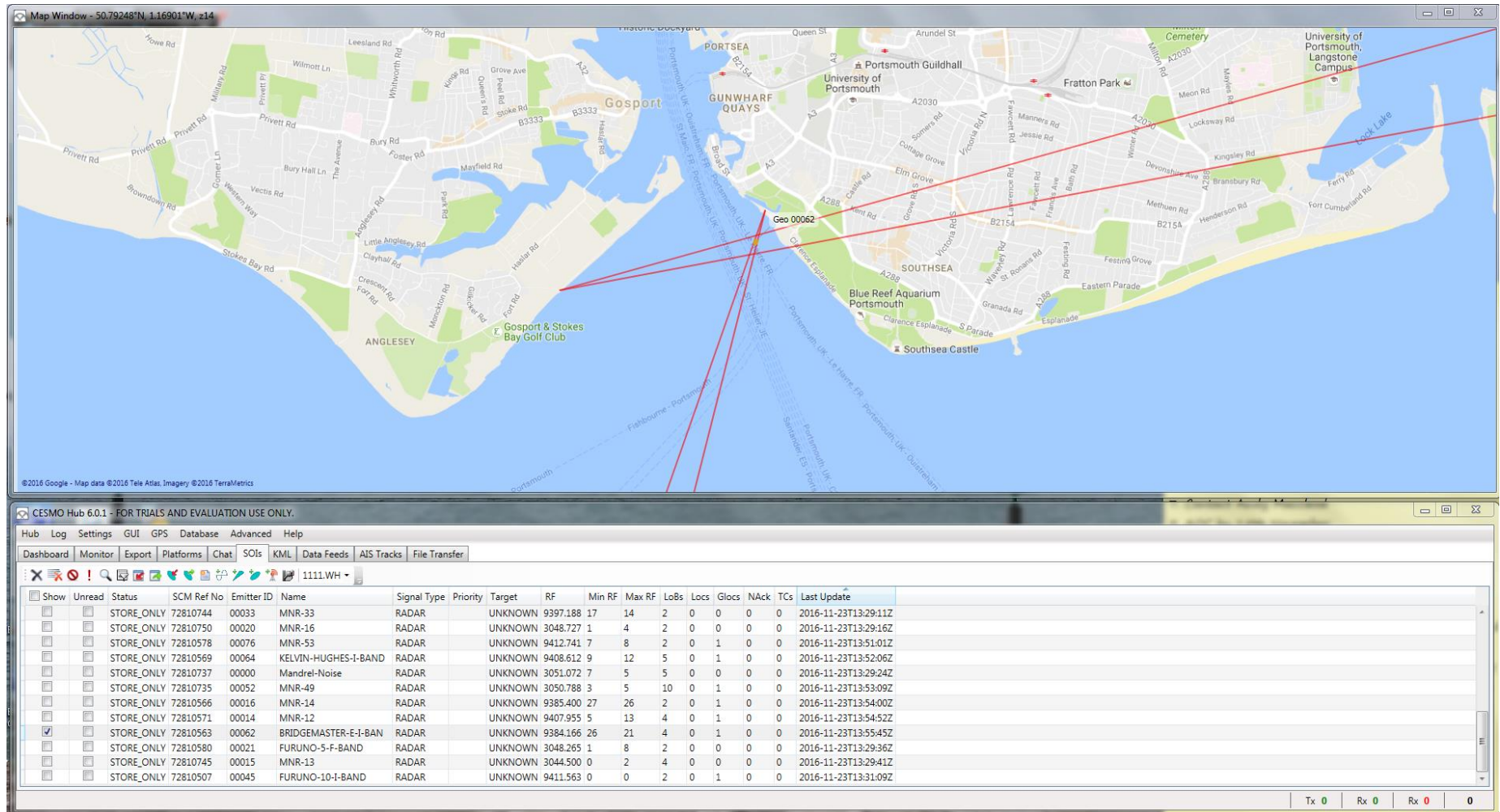


2 MICRO ESM sensors

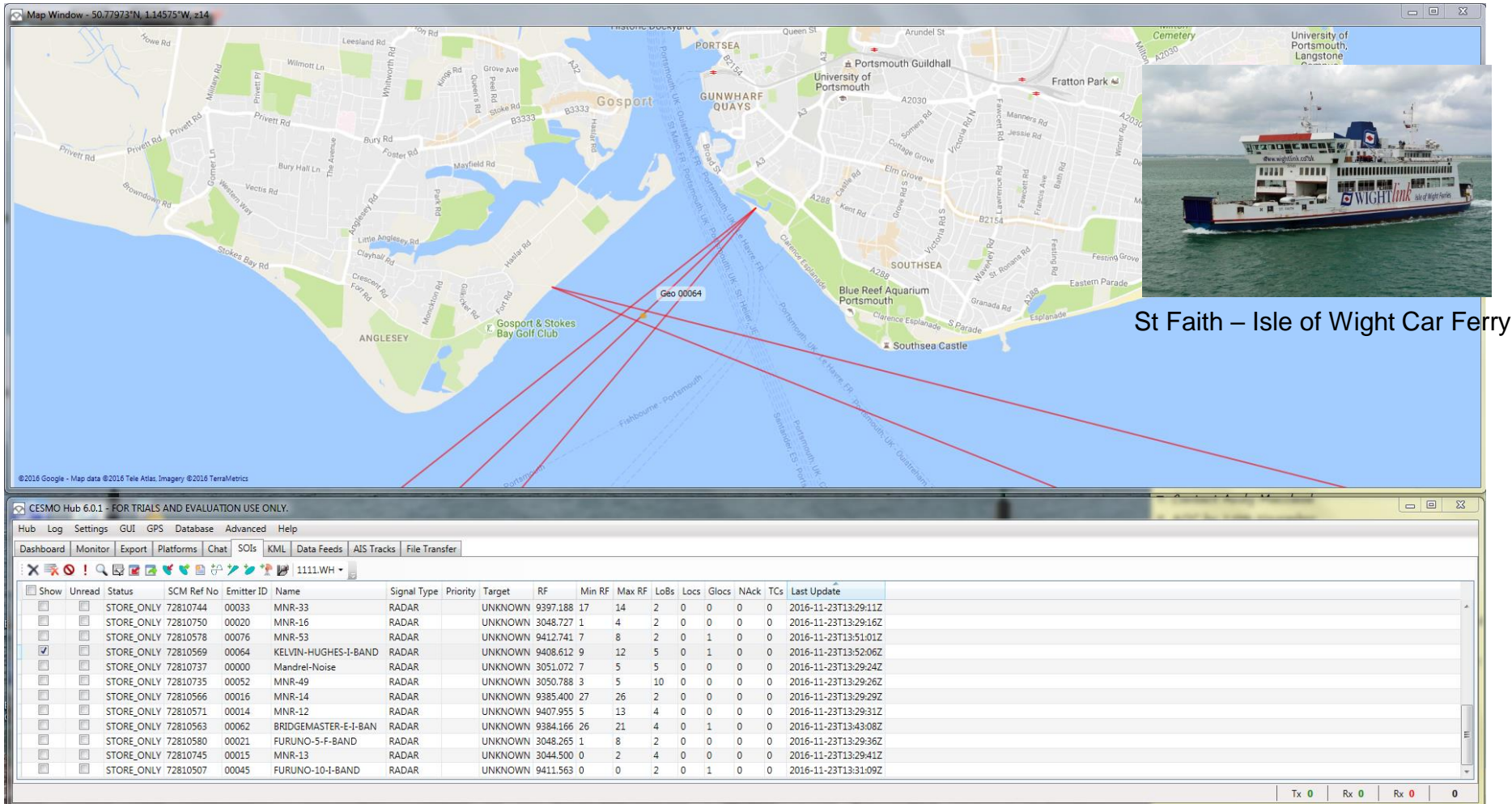


MICRO ESM Sensor Positions

MICRO ESM – multi-sensor trials

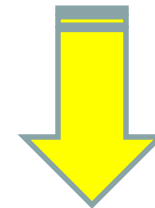


MICRO ESM – multi-sensor trials



Summary

- MICRO ESM creates the possibility of a low cost radar ESM system that can be used anywhere
- The system has been successfully networked to provide geolocation of emitters
- Production systems with 360° DF coverage will be available in Q1 2018



Come and see MICRO ESM
on Stand 8