

**CATAPULT**  
Offshore Renewable Energy

# 5G Ports and Offshore Renewables Technology Accelerator Lincolnshire

27/03/25

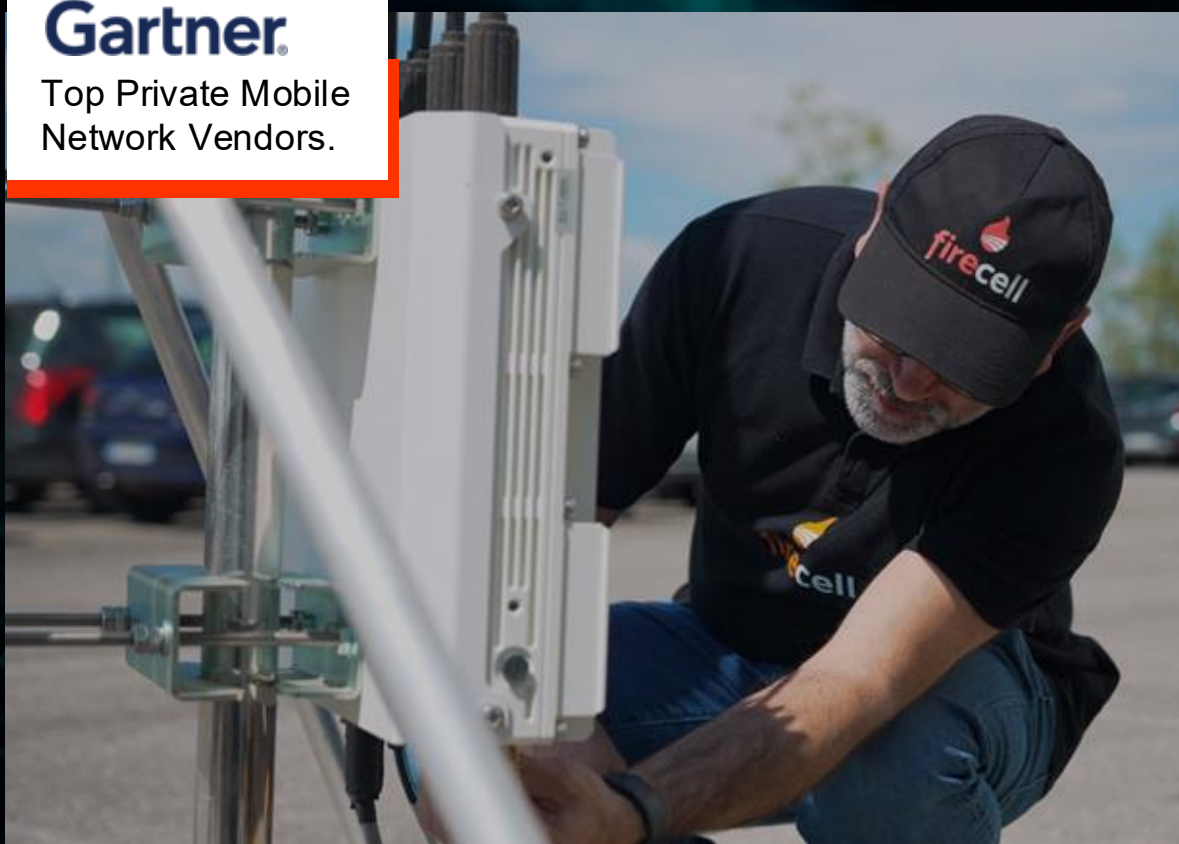




# Europe's new Private 5G Champion

**Gartner.**

Top Private Mobile Network Vendors.



**160 clients** in Europe, US, Japan



# THE OFFSHORE RENEWABLE ENERGY CATAPULT

The UK's Leading Technology Innovation and Research Centre for Offshore Renewable Energy

**Our Mission is to Accelerate the Creation & Growth of UK Companies in the Offshore Renewable Energy Sector.**

- Unique facilities, research & engineering capabilities
- Bringing together innovators, industry and academia
- Accelerating creation and growth of UK companies
- Reducing cost and risk in renewable technologies
- Growing UK economic value
- Enabling the transition to a low carbon economy



# Ports Role in Offshore Wind

## **Manufacturing and assembly:**

Raw material tracking through processing, assembly, outfitting and commissioning. Large workpieces processed and assembled require swept path preparation, expansive laydown areas and innovative processes to maximise efficiency.

## **Marshalling:**

Area capacity and space management critical, digital twin and simulation can improve planning and logistics, We have seen some sites improve capacity by 60% by introducing logistics simulations.

## **Operations and Maintenance:**

Opportunity to develop innovative logistics solutions focusing on tools loaded onto vessels, equipment tracking, crew and vessels tracking. Transition to clean maritime, take telemetry data from clean vessels to demonstrate value and track decarbonization.



# THE OFFSHORE RENEWABLE ENERGY CATAPULT

- Over 300 engineering, research and sector experts
- World-leading test and demonstration facilities
- Collaborating with Industry, Partners and Academia to develop the Offshore Renewables sector though:
  - Research
  - Innovation
  - Testing & Validation
  - Supply Chain Growth



# CATAPULT

Offshore Renewable Energy

## Largest P5G O/S Test Bed in Europe

Complex Project

Extreme Conditions

Fully Replicable

- 24 Month Project
- 21x Total O-RU's Deployed
- Central Core Location in Port Harbour
- Multi Company Eco-System
- Fully Accessible
- Facility for P5G at Sea

# 5G Ports and Offshore Renewables Technology Accelerator Lincolnshire

## Wind Farm

5G Radio kit installed on 4 wind turbines provides network coverage across the wind farm.



## Port

Radio kit installed on the communications mast in the port provides coverage of the port and surrounding waters.



## Research Buoy

30 tonne 5G enabled research buoy providing signal relay and network coverage in area between the windfarm and port.



# 5G PORTAL

## Summary Offering

- Private 5G network deployed across
  - Operational wind farm
  - Operations and Maintenance port
  - In-field solar-powered research buoy
- Office / lab space
  - 5G onboarding lab
  - Operational data payload transfer
  - Data analysis and modelling

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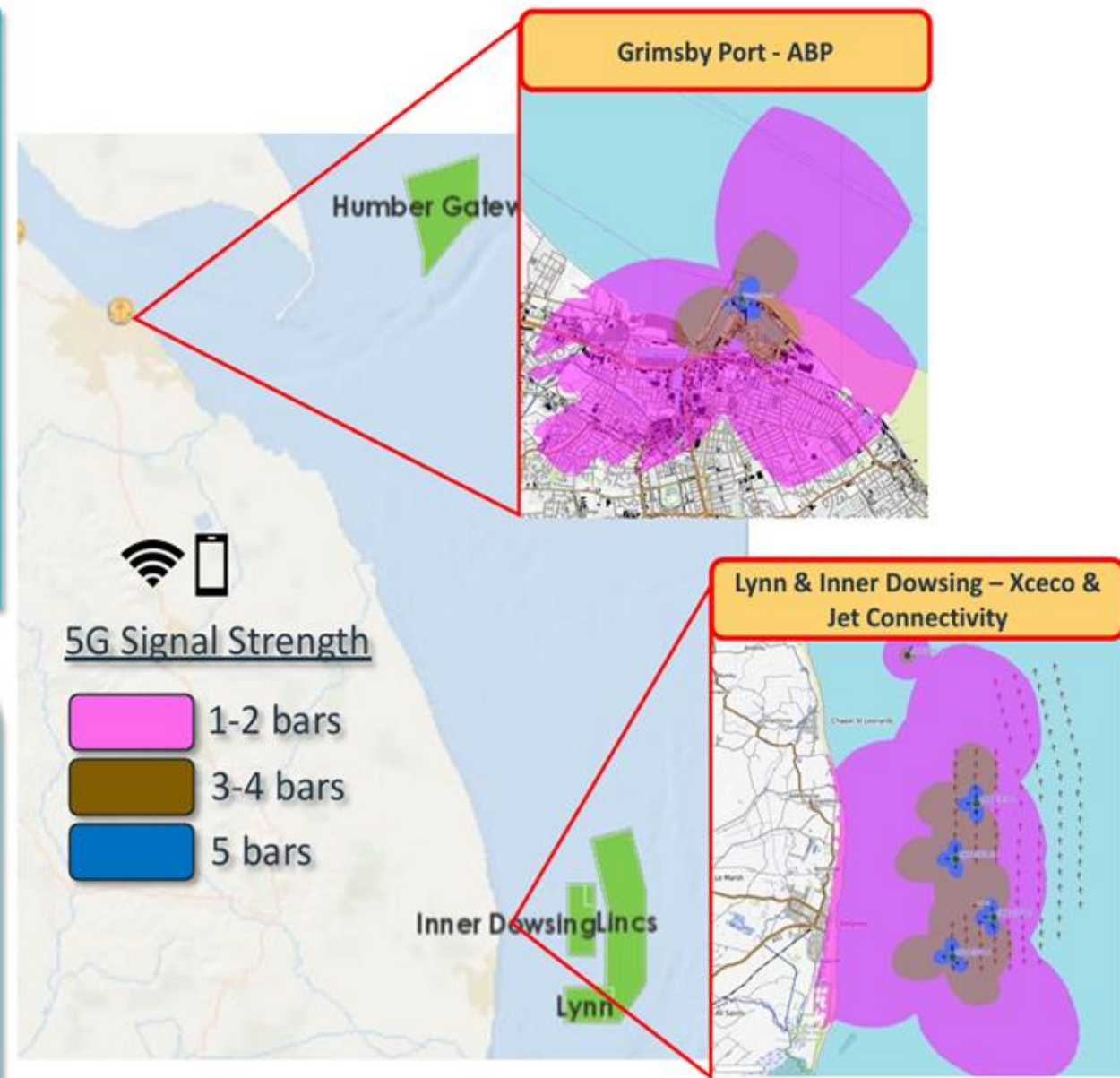


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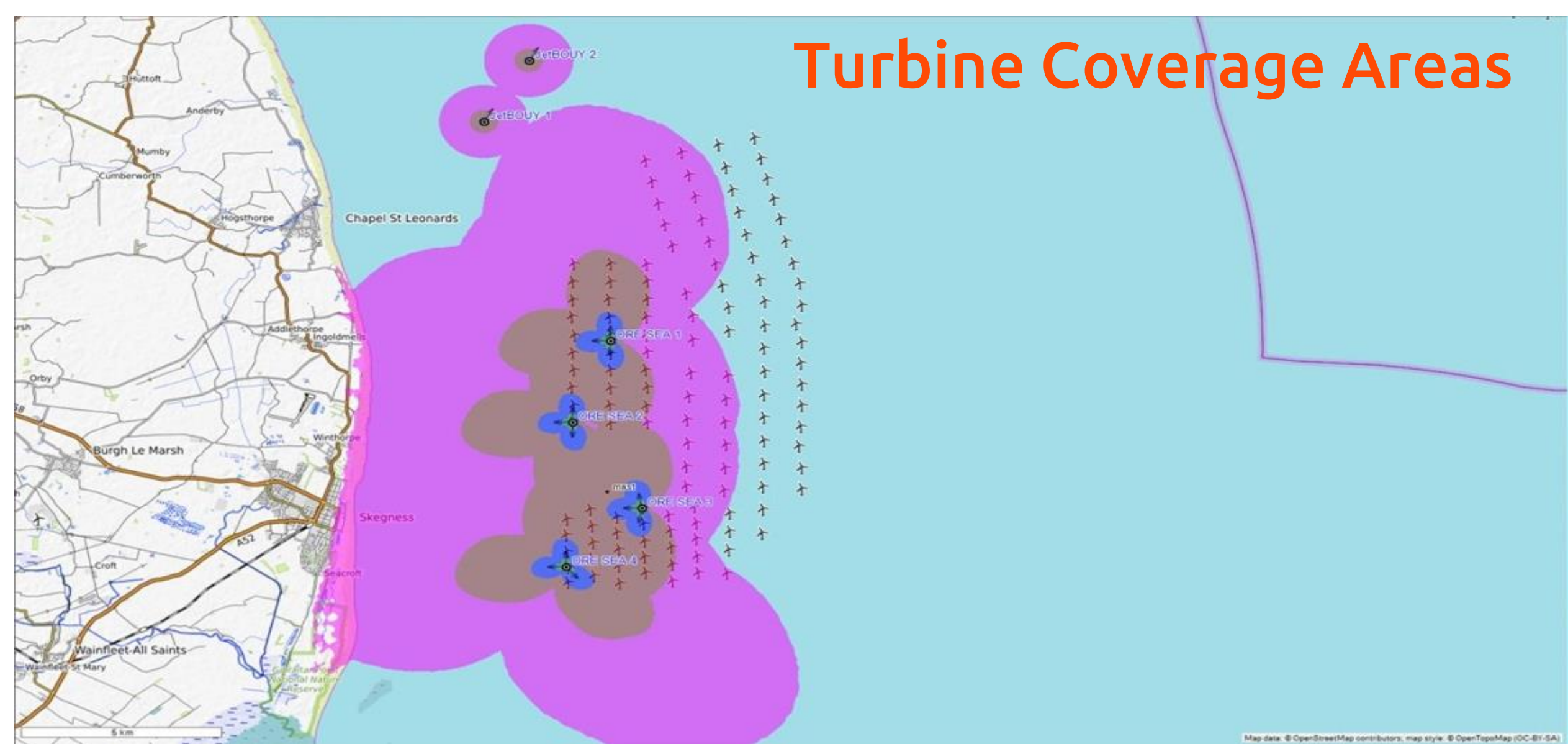


## Private 5G network

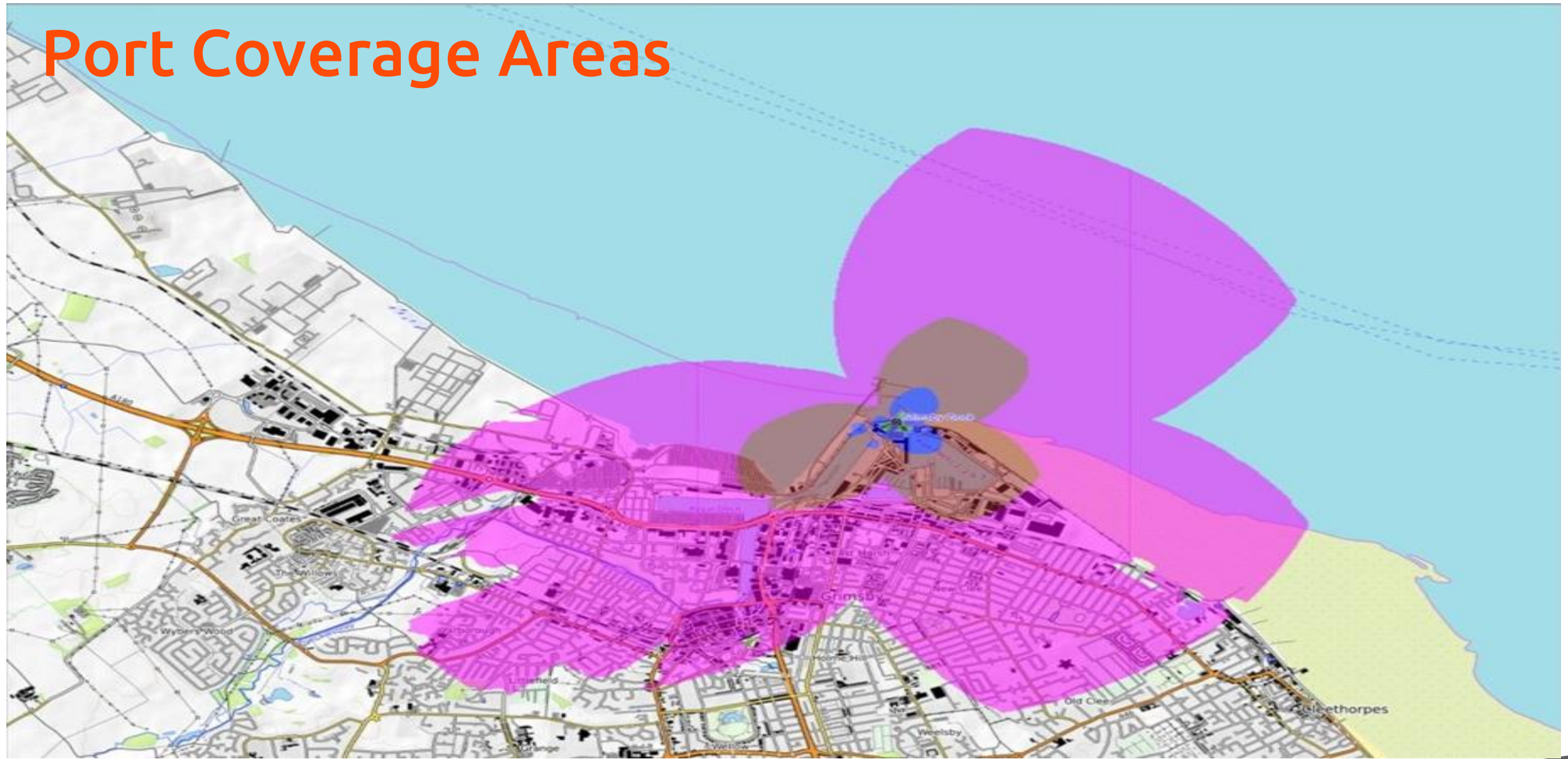
- F**lexible - This network can be altered to fit the test required.
- L**ower cost – Test remote comms kit at lower cost than sat comms.
- A**ccessible – unique test facility available to the wider market.
- S**peed – Rapid speed, low latency data transfer
- H**ealth and Safety – Reducing in-field safety incidents.



# Turbine Coverage Areas



# Port Coverage Areas



# P5G Use Cases for the Wind Farm & Port

## Hero Tech 8 and ABP



**Drone in a box – autonomous drone, flying nearby. The feed for the visuals captured will relay to the screens at the event.**

## Microsoft



**Wearable comms – Technician at comms mast will be wearing equipment that will connect to the interactive screen at the event.**

## BT and ABP



**Visual computing will be used to capture images of the dock and software will analyse the live feed to carry out inspection tasks. The feeds were presented on the screen at the launch event**

## ORE Catapult



**Network will display as ORE. Compatible for Teams, video call, streaming data, Facetime**

# 5G PORTAL Development Opportunities

This represents increased demand for port activities covering consenting, construction and O+M.

5G enables technology that increases efficiency and productivity while reduce carbon emissions, cost and safety incidents.

## Consenting

- Aerial bird surveys
- Marine biodiversity monitoring
- Geotechnical surveys
- Benthic monitoring
- Water quality testing
- Unmanned Surface Vessel

## Construction

- Digital Twin
- Logistics tracking and optimisation
- Weather monitoring
- Emergency rescue
- Marine mammal monitoring

## Operations and Maintenance

- Remote Sensor
- Smart tooling
- Drone inspection
- ROVs
- EMF monitoring
- Cable inspection
- Personnel monitoring

## Decommissioning

- End of life analysis
- Foundation monitoring
- Remote sensor
- Digital twin analysis
- Environmental Impact Assessment





# Energy Saving xApp - Next Project Stage



## xApp use case: Energy Saving xApp

**Problem:** More than 50% of the energy in a mobile network is consumed by the RAN.

**xApp:** Powers down radio cells in low traffic times to save energy.



Accelleran presenting the latest advances in our RAN Intelligent Controller and related xApps at the FYUZ 2024 event hosted in Dublin, Ireland.

Accelleran's RAN Intelligent Controller was first released in 2019 and supports both Non and Near-RT functionalities.

### Key Points

Ability to remotely monitor 5G Radio Consumption

### Benefits

Embedded in the Firecell P5G Product

Available as a S/W add on

Real world Energy/Cost Savings

RAN Automation



# Ran Intelligent Controller (RIC)



## Accelleran x/rApps & Use Cases



Handover Optimisation



Energy Saving



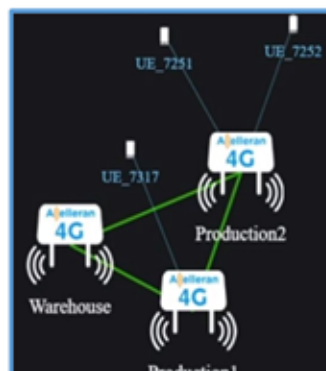
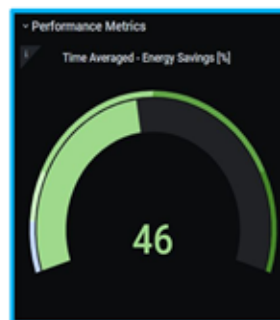
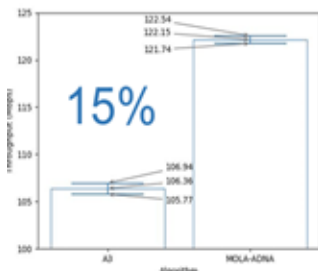
Automatic Neighbor Relations



PCI Optimisation



Energy Saving Scheduler



Objective	Cron Spec	Cron Description	Local Cell Ids	Activate/Deactivate	Remove Policy
SwitchCellOff	1-5/0	Every 2 minutes, minutes 1 through 58 past the hour	1	Deactivate	Remove
SwitchCellOn	0-5/0	Every 2 minutes, minutes 0 through 58 past the hour	1	Deactivate	Remove
SwitchCellOn	15 14 * * *	At 02:15 PM, only on Tuesday	1	Deactivate	Remove

### Key Points

Deployed a RAN Intelligent Controller Software Layer Directly Controlling Radio Endpoints

### Benefits

Energy Saving  
Cost Saving  
Carbon Footprint Reduction  
'AI' at the Edge for RAN Optimisation  
Resource monitoring



**firecell**

Thank you

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