Robotics Innovation Diffusion Event

11th September 2025

UK Agri-Tech Centre

https://iuk.ktn-uk.org/

UKRI Innovate UK | Business Connect

Agenda

10:30 – 11:30
The Robotics Proving Ground – infrastructure overview

11:30 – 11:45
Agri-Tech case study

11:45 – 12:45
Site Tour

12:45 – 13:30
Lunch & Networking

13:30 – 14:30
Needs, Capabilities & Opportunities for Diffusion

14:30 – 15:30
Testing & Standards – pathways for validation and assurance

15:30 – 16:00
Wrap up

UKRI Innovate UK | Business Connect

Innovate UK Business Connect

About Us

https://iuk.ktn-uk.org/

Innovate UK | Business Connect

About Us

Innovate UK Business Connect exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions.

Our Network

46,229
Unique Organisations

72%
Small

15%
Medium

13%
Large

234,478
innovators

Every university in the UK

UKRI Innovate UK | Business Connect

Our Purpose & Vision

We are part of Innovate UK, the UK's innovation agency.

We create diverse connections to drive positive change.

To establish a network of innovators so powerful its ideas will change the world.

UKRI Innovate UK | Business Connect

Our Values

Open

We value diversity of opinions, ideas, skills and perspectives.

Creative

We embrace ideas with curious minds and use our insight to uncover opportunity.

Collaborative

We are one team, working together across sectors, people and geographies to drive positive change.

Determined

We are determined to meet challenges with solutions and enable innovators to think and act beyond expectations.

UKRI Innovate UK | Business Connect

Our Strategy

Positive Change

We create diverse connections to drive positive change

Deep Expertise

We have wide-ranging expertise and convene the expertise of others

Powerful Connections

We drive powerful connections with business at the heart of what we do

Future Shaping

We shape the innovation communities of the future

Our People

We provide an exceptional place of work for our exceptional people

UKRI Innovate UK | Business Connect

IUK Business Connect Outputs

66%

introduced by IUK Business Connect go on to **collaborate**

42%

reach outcomes **faster** (1-2 years)

60%

increased **investment** in R&D direct result from IUK Business Connect engagement

£100m

per year increased **investment** in R&D

UKRI Innovate UK | Business Connect

We connect

Diverse communities | Innovate UK Innovation Networks

Regional, national and global | Innovate UK Global Alliance

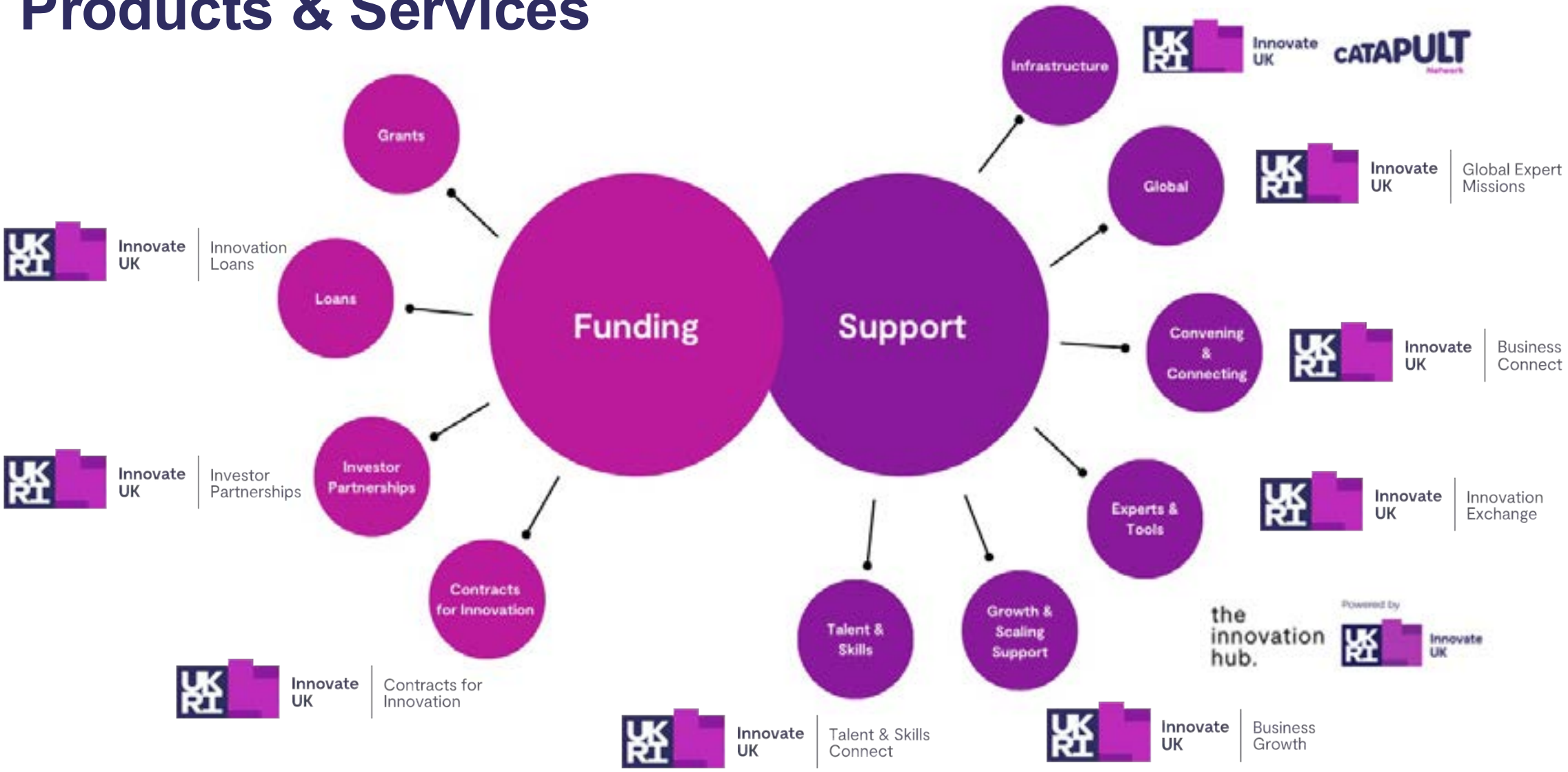
Research and business | Innovate UK Knowledge Transfer Partnerships

Innovators, funders & collaborators | Innovate UK Innovation Exchange

…**for positive change**

UKRI Innovate UK | Business Connect

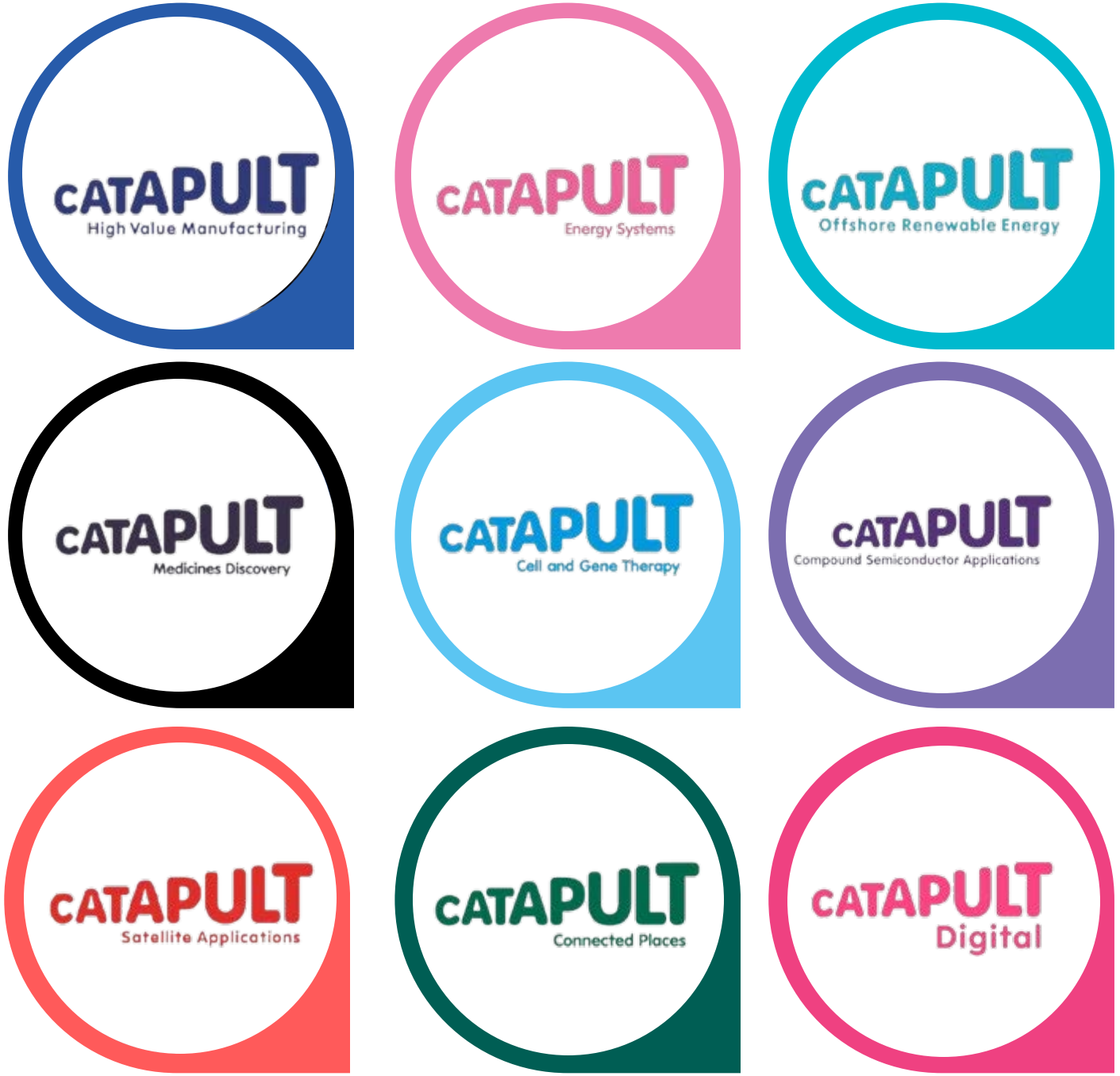
Products & Services



UKRI Innovate UK

CATAPULT Network

Each Catapult plays a critical role in delivering innovation across our domains, place and products and services. Catapults help to accelerate innovation, grow businesses, grow sectors, and stimulate additional private sector investment in research and development
in the UK.



About the programme

https://iuk.ktn-uk.org/programme/robotics-proving-ground/

UKRI Innovate UK | Business Connect

How it works

Robotics Proving Ground

Welcome to the registration page for the Innovate UK Business Connect Robotics Proving Ground Programme! Please register your interest so that we can direct your enquiry to the most appropriate support to test your robotics. We are partnered with the Satellite Applications Catapult, Manufacturing Technology Catapult (MTC), and Offshore Renewable Energy Catapult (OREC) to provide testing in specific environments but also standard testing in any of the facilities.

Your personal data provided in this form will be shared with the relevant contact points at Satellite Applications Catapult, Manufacturing Technology Catapult (MTC), and Offshore Renewable Energy Catapult (OREC) for the purpose of facilitating your introduction. Please see the Catapult privacy notices listed below for information on how they will store and handle personal data in line with UK data protection legislation.

Satellite Applications Catapult
Manufacturing Technology Catapult (MTC)
Offshore Renewable Energy Catapult (OREC)

First name *

Last name *

Email address *

Organisation Name *

Postcode: *

Please select what needs/support you will require? *

- Business Advice
- Funding application support
- Robot testing
- Safety guidance and qualification
- Technical support
- Other

Your consent:

- Please tick to confirm you would like to sign up to the Robotics and Artificial Intelligence Mailing List.*
- Please tick to confirm Innovate UK Business Connect has your permission to process your data. You can view Innovate UK Business Connect's Privacy Policy here. *
- Please tick to confirm that you understand that we will share the data in this form with the relevant contact points at Satellite Applications Catapult, Manufacturing Technology Catapult (MTC), and Offshore Renewable Energy Catapult (OREC) for the purpose of facilitating your introduction. You can view the catapult privacy policies here: Satellite Applications Catapult, Manufacturing Technology Catapult (MTC), and Offshore Renewable Energy Catapult (OREC)*

Submit

Register your interest

Join us on this transformative journey as we position the UK as a global leader in service robotics, delivering technological advancement and economic growth for the benefit of all.

Subscribe →

UKRI Innovate UK | Business Connect

MTC A&R Overview
Robotics Innovation Diffusion Event

11th September 2025

Dr. Mahesh Dissanayake

mtc where progress happens

About us

Our purpose

To harness the power of our pioneering mindset and engineering excellence to positively impact society

- Independent Research Technology Organisation (RTO)
- Opened in 2011
- Opened training facility in 2015
- £120 million+ in turnover
- 1000+ staff members over 600 engineers & 100 apprentices

Market sectors

Our broad experience across a range of sectors means we can transfer valuable knowledge and insights, giving us the expertise to help with your next challenge.

Energy & Utilities

Civil nuclear, Hydrogen, Electrification, Renewables & Water

Defence & Security

Air, Land, Sea, Platform systems, Sub systems & Government security

Built Environment

Construction, Rail & Road

Future Mobility

Automotive, Aerospace & Space

Emerging Markets

Agri-food, FMCG, Circular economy & Life sciences

Business challenges

We work with businesses of all sizes, from SMEs, start-ups, and entrepreneurs to large and multinational organisations, helping solve challenges and achieve goals.

Product innovation & development

Process innovation & development

Digital transformation & servitisation

Industrialisation & scale-up

Supply chain transformation

Sustainable manufacturing & net zero

Skills & training

How we work

One-to-one
Single client project

1400+ industrially funded projects

Company owns all IP generated

Government backed
Collaborative R&D projects

Involvement in 2000+ CR&D projects

IP ownership determined by partnership

Membership
Collaborative R&D projects

£10m+ total core research project value

IP owned by MTC and licensed to members

Our impact in numbers

9000+
Projects delivered

600+
Multi-disciplinary engineers

90+
Collaborative members

1200+
Apprentices trained

200+
Upskilling courses available

3500+
SMEs worked with

Progressing Innovation Into Industry

Challenges

Industrial transformation	Business & supply chain transformation Digital & automation transformation Technology & sustainability transformation
Engineering Design	High Value Design Assembly Systems Product Design
Advanced production systems	Intelligent Robotics Controls & Automation Mechatronics & machines
Digital engineering	Modelling & simulation Metrology & non-destructive testing Informatics
Component manufacturing technologies	National Centre Additive Manufacturing Laser Processing Centre of Excellence Materials technology
Future skills	Manufacturing engineering apprenticeships Advanced manufacturing training & workforce foresighting Bespoke course creation & delivery

Solutions

Robotics & Automation

A&R Technology Development Focus

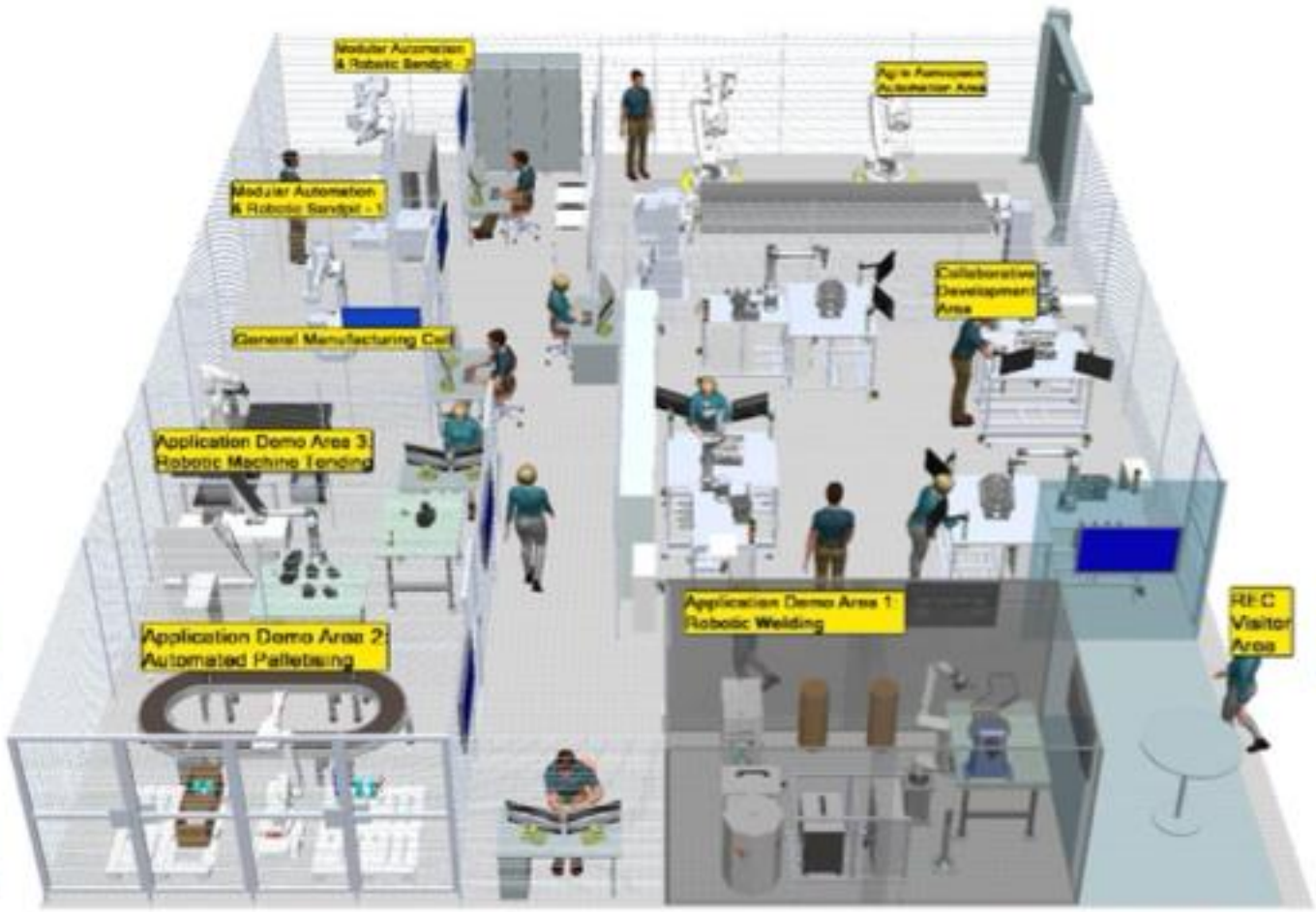
Agile manufacturing
- Adaptable, fast and reconfigurable systems for small-medium batch, high mix manufacturing
- Cost effective no / low code automation systems
- Increasing automation capability through artificial intelligence and novel robotics
- Reconfigurable and adaptable assembly systems
- Novel automation-focussed manufacturing concepts

Sustainable manufacturing
- Decommissioning, sort and segregation of hazardous materials.
- Recycling of domestic and industrial waste and textiles.
- Batteries and electronics disassembly for refurbish, reuse and recovery of rare materials.
- Delivered through Design for Disassembly, artificial intelligence and advanced sensing.

Challenging environments
- Autonomy and teleexistence in hazardous environments.
- Autonomous and automated inspection.
- Remote operations and component handling.
- Autonomous and remote servicing and maintenance.

Accessible Robot Automation
- Assisting companies to identify, specify, procure and implement automation solutions.
- Realising efficiency and productivity improvements in manufacturing and industrial establishments in the UK
- Sharing best practice for the industry
- Building a resilient supply chain and benchmarking systems integrators
- Support BARA certification initiative.

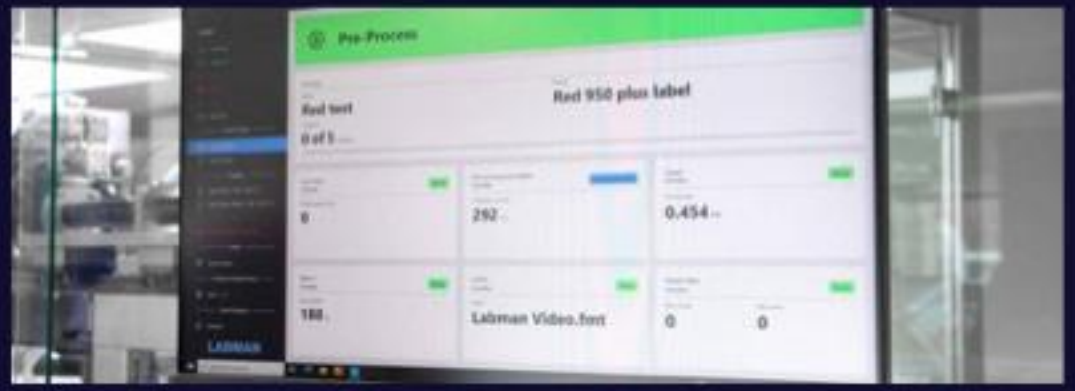
A&R proving grounds - Robot Experience Centre



- Provides a safe, controlled sand-pit environment for testing and de-risking new ideas, prototypes, and technologies.
- Encourages rapid prototyping and iterative design, reducing the time from concept to implementation.
- Supports cross-disciplinary innovation, combining robotics, AI, digital, controls, mechatronics etc.
- The MTC is supplier agnostic and able to work with any suppliers.
- We work with our members to bring in new and exciting equipment.

Digital Manufacturing Accelerator (DMA)

Digital Factory Environment



A sandbox offering ready-made tools and solutions to help you develop and test new manufacturing technologies. With preconfigured setups – including digital twins, you don't need to start from scratch, saving time and resources while increasing your chances of early success.

- On-demand data & computing power
- Control & data acquisition modules
- Safe, no-risk environment to experiment
- Library of manufacturing ICT systems & simulations

Rapidly-Reconfigurable Factory Environment

A modular space where you can build flexible production lines and bring your digital twin to life. It helps optimise your processes and cut costs before rolling them out in your business.

- Flexible reconfigurable controls architecture
- Modular mutli-vendor automation hardware support
- Flexible modular software
- Multi-automation network protocol support

https://www.the-mtc.org/digital-manufacturing-accelerator

Thank you

mtc where progress happens

Proud to be part of CATAPULT High Value Manufacturing

Robotics at Satellite Applications Catapult

CATAPULT Satellite Applications

We work with

UKRI Innovate UK

Our Mission

CATAPULT Satellite Applications

To innovate for a better world, empowered by space.

CATAPULT
Satellite Applications

Communications

Earth Observation

Exploration

Navigation & Timing

Industrialisation

Space Can Deliver Growth, Productivity And Opportunity

CATAPULT Satellite Applications

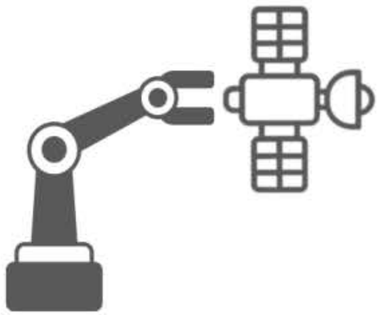
>£360bn

UK economic activity
is underpinned by space

Space is a
critical enabler
for many
downstream sectors

>48,800

high-value, highly-skilled jobs
across the whole of the UK



Creating an **entirely new sector** in which the **UK can take a lead**

Globally growing 9%pa
with a projected value of
£1.35tr
by 2035

How we do it

Increasing Market Adoption

We stimulate market demand for satellite services by bringing together suppliers and end-users in sectors like financial services, communications and agriculture where satellites can make a real difference.

Business Support

We support businesses in the sector directly with access to facilities, technical experts and help with starting, commercialising and scaling-up a business

Collaborative Projects and Programmes

We play key roles in collaborative and commercial R&D projects, often taking risks which other companies are not able or willing to do.

CATAPULT
Satellite Applications

The Satellite Applications Catapult in Numbers

£700.3M
Total Private Sector Funding Secured By Supported Companies

508
Industry Collaborations

836
Smes Supported

111
International Projects

Over
£15M
Of Research and Development Facilities

242
Academic Collaborations

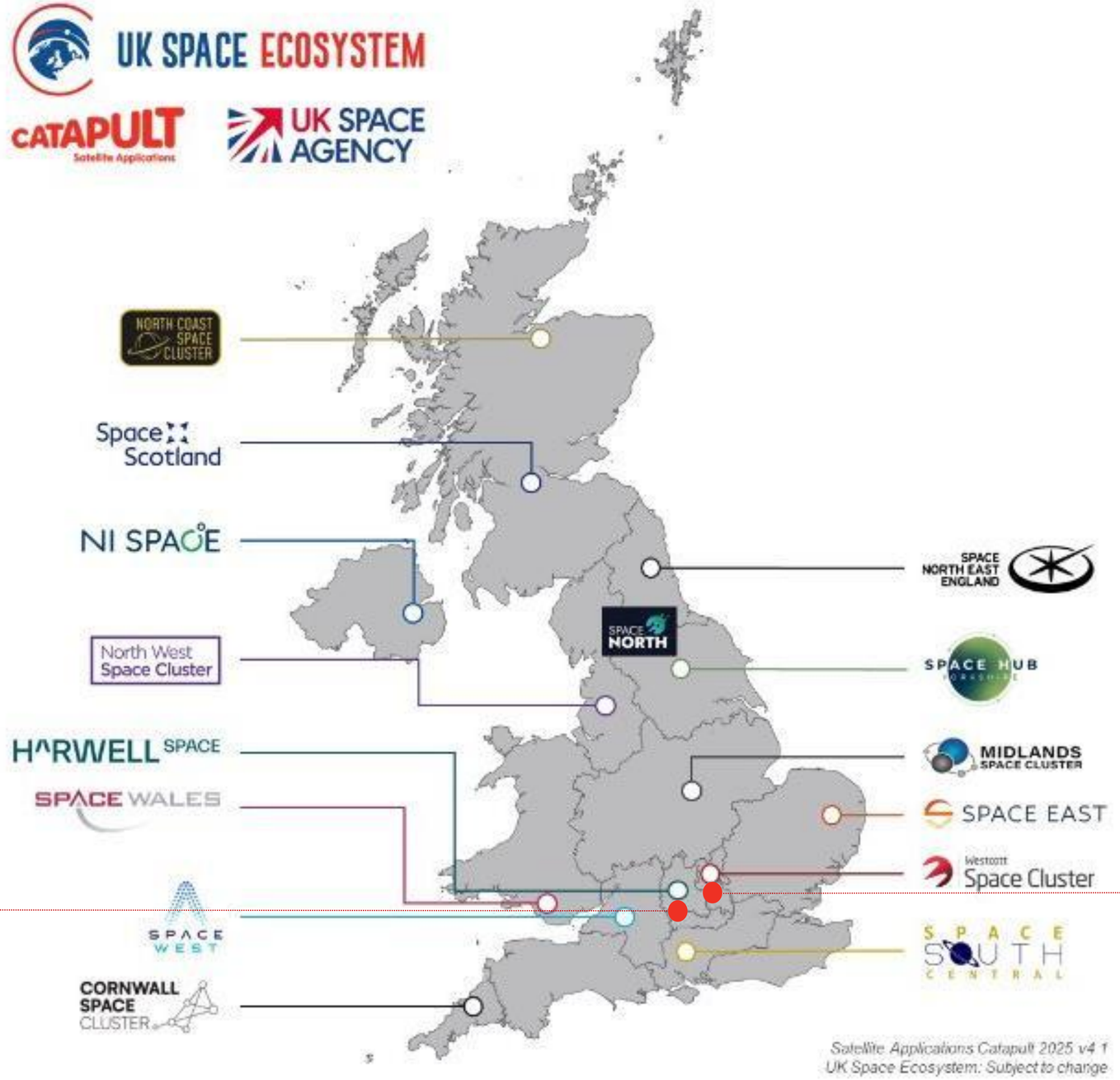
200
Employees

CATAPULT
Satellite Applications

Enabling: A Whole - UK SPACE ECOSYSTEM

CATAPULT Satellite Applications

UK SPACE AGENCY



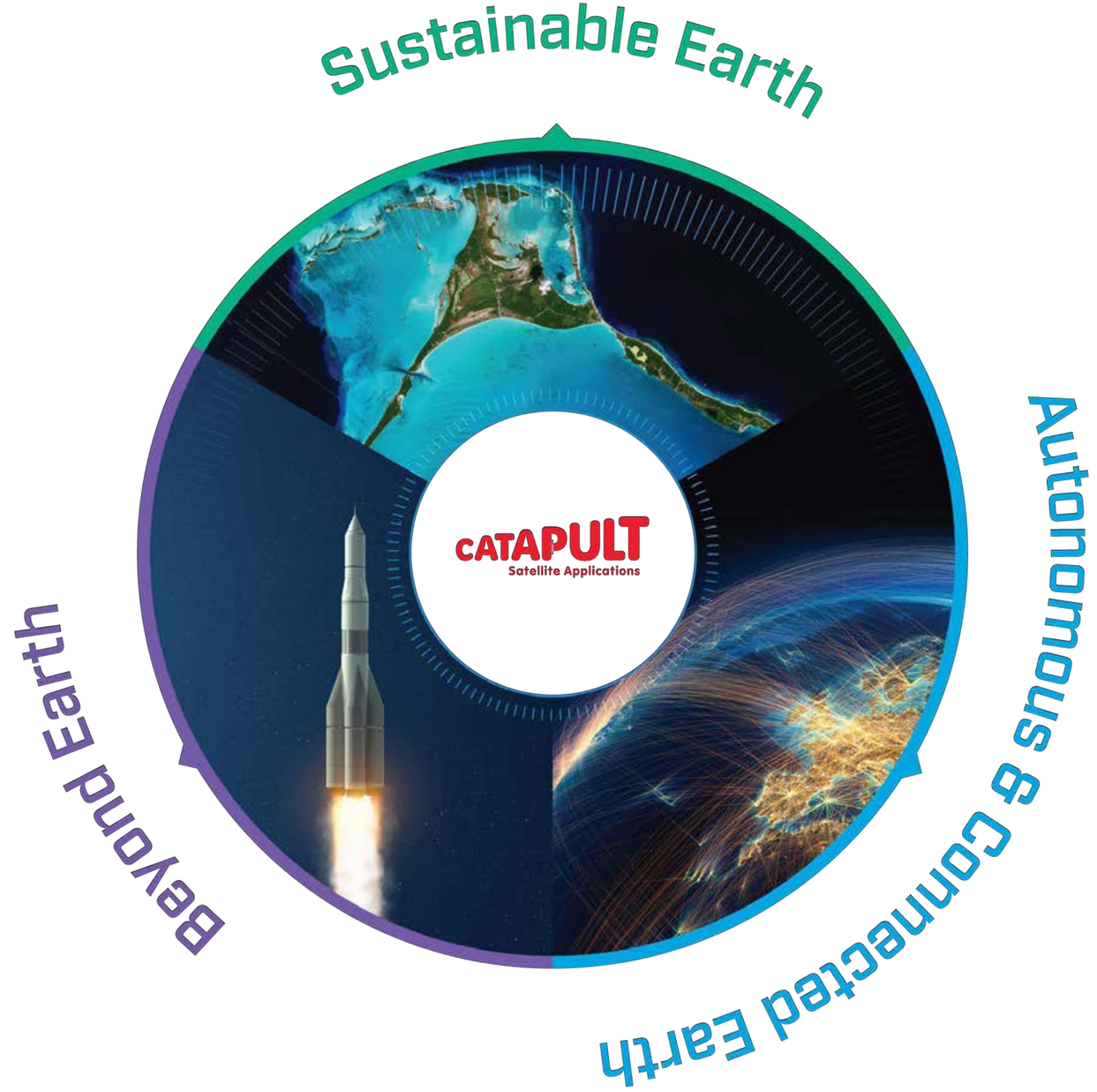
- Head Office
- DISC
- Antenna Test Ranges
- Operations Centre

CATAPULT Satellite Applications

- Future Networks Development Centre
- In-Orbit Servicing and Manufacturing
- Drone Test and Development Centre
- Westcott Innovation Centre
- Business Incubation Centre

CATAPULT Satellite Applications

A Mission-Led Organisation



Commercialisation of the in-orbit environment

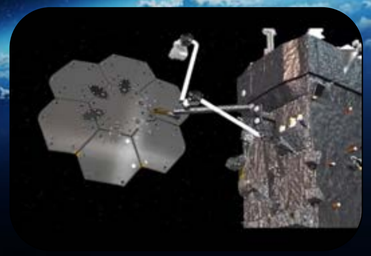
Ability to launch more often and, in the near future, larger payloads

Looking beyond our own orbit to the moon and beyond

Increasing commercial opportunity for satellites, space stations & space tourism

But how do we use space sustainably?

Robotic Development Activities

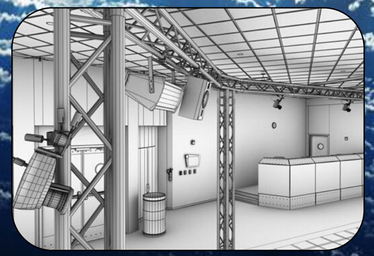


Assembly Tooling Development

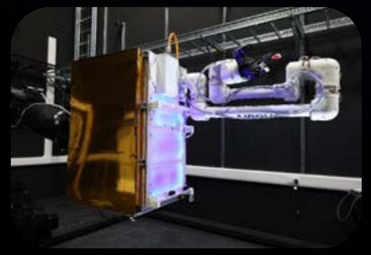
Software Development

Autonomous Operation

Sensor Testing

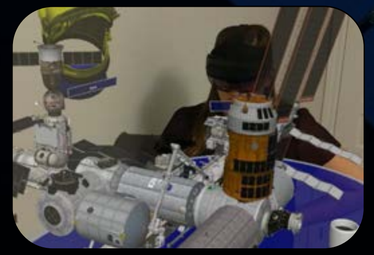


Motion Tracking



Robot Development

Haptic Tele-operation



Simulation & Virtualisation

Autonomy (state switching)

Human Robot Interaction in ISAM

ISAM Facility – Westcott Venture Park

- Robotics
- Manufacturing & Assembly
- Unique capabilities & scale in Europe
- Open access model

Image: Satellite Applications Catapult

ISAM RPO Simulator

Image: Satellite Applications Catapult

ISAM RoboticsLab

Image: Satellite Applications Catapult

ISAM Control Room

Image: Satellite Applications Catapult

Virtual Environments

Image: Satellite Applications Catapult

Drone Technology Development Centre

- Test and develop drone products and services
- Support Beyond Visual Line Of Sight (BVLOS)
- Pilot training and remote flight operations
- Multiple open flying areas, no conflicting traffic, and a low residential density

Image: Satellite Applications Catapult

How the ISAM Robotics Facility Can Support Agri-tech Robotics

CATAPULT Satellite Applications

🔧 Prototyping and Testing of Robots

🧪 Sensor and AI System Validation

🤝 Human-Robot Interaction and Safety

🌐 Virtualisation and Simulation Integration

🧭 Autonomous Navigation

Contact Us

Visit our website to find out more and to get in touch with our teams to discuss your business.

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- +44 (0)1235 567999
- www.linkedin.com/company/satellite-applications-catapult
- @SatAppsCatapult

We are one of nine Catapults across the UK, to find out more about the network visit **www.catapult.org.uk**

Thank you

CATAPULT
Satellite Applications

We work with

UKRI Innovate UK

CATAPULT
Offshore Renewable Energy

Robotic Capabilities at Offshore Renewable Energy Catapult

Credit: Equinor Hywind Floating Offshore Wind Farm

Outline

1. ORE Catapult Introduction
2. Robotic Test Facility & Case Studies
3. VDARE Simulation platform
4. Performance-Based Robotic Certification

CATAPULT
Offshore Renewable Energy

The Offshore Renewable Energy Catapult

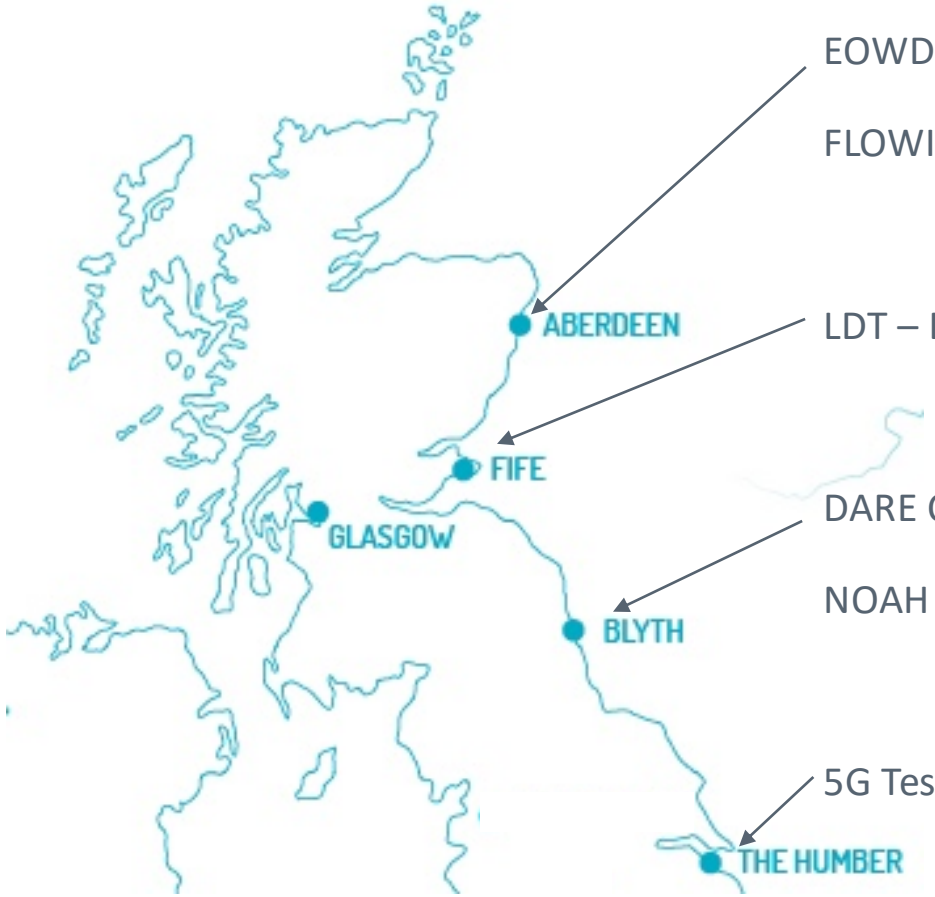
The UK's leading technology innovation and research center for offshore renewable energy

Mission: to accelerate the creation & growth of UK companies in the offshore renewable energy sector.

- Unique facilities, research & engineering capabilities
- 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
- Help the UK economy by enabling innovation

Credit: Lynn & Inner Dowsing Wind Farm

THE CATAPULT TEST CENTRES – A NATIONAL CAPABILITY



EOWDC (Vattenfall)

FLOWIC

LDT – Demonstration Turbine

DARE Centre

NOAH

5G Test Bed & LID Windfarm

Full TRL support from concept to commercialisation

TRL 1-2	TRL 3	TRL 4	TRL 5-6	TRL 7-8	TRL 9	
Concept Development	Proof of Concept	Design	Testing & Verification	Prototyping	Demonstration	Product Launch

CATAPULT
Offshore Renewable Energy

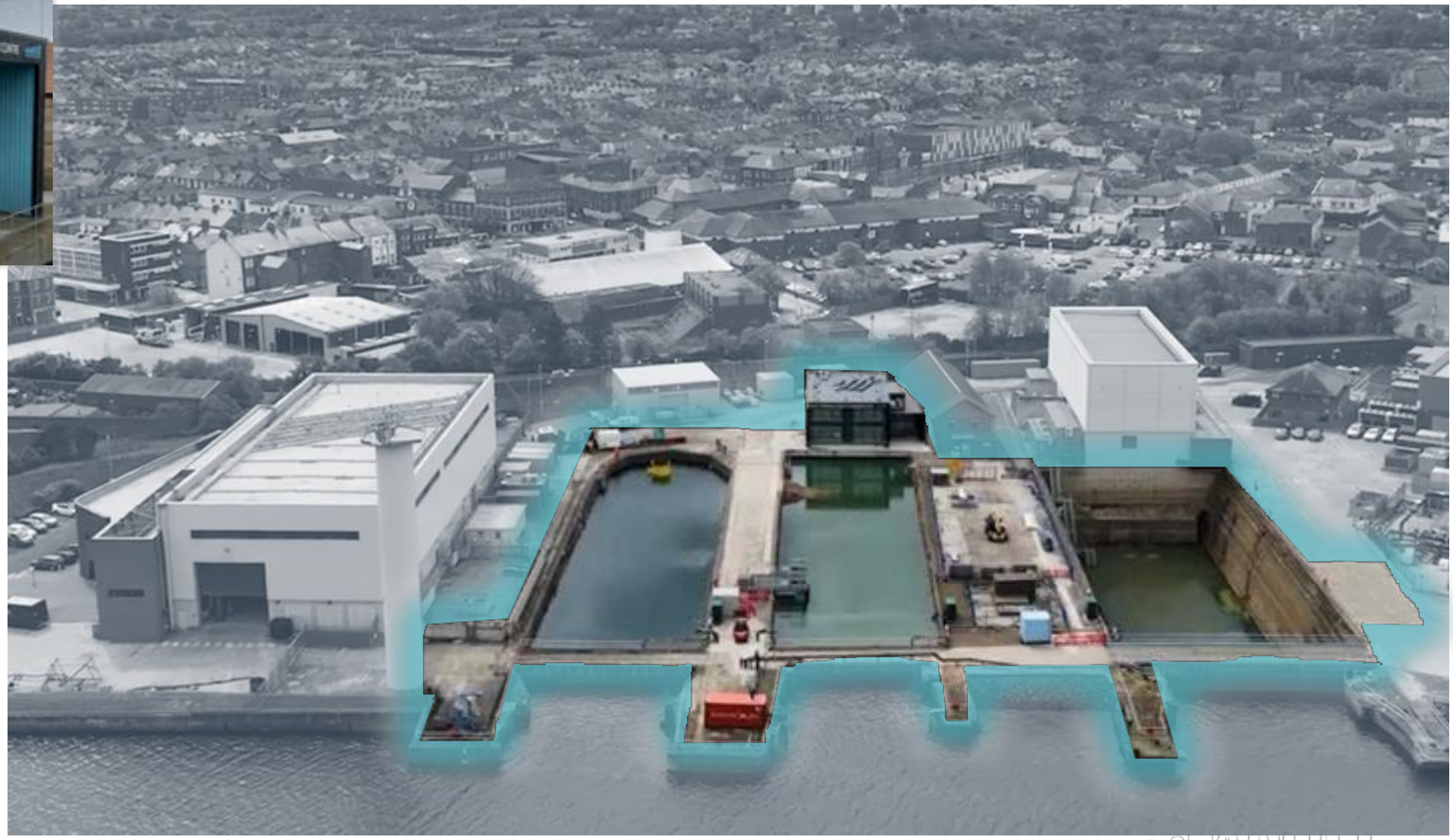
BLYTH

DIGITAL

AUTONOMOUS

ROBOTIC

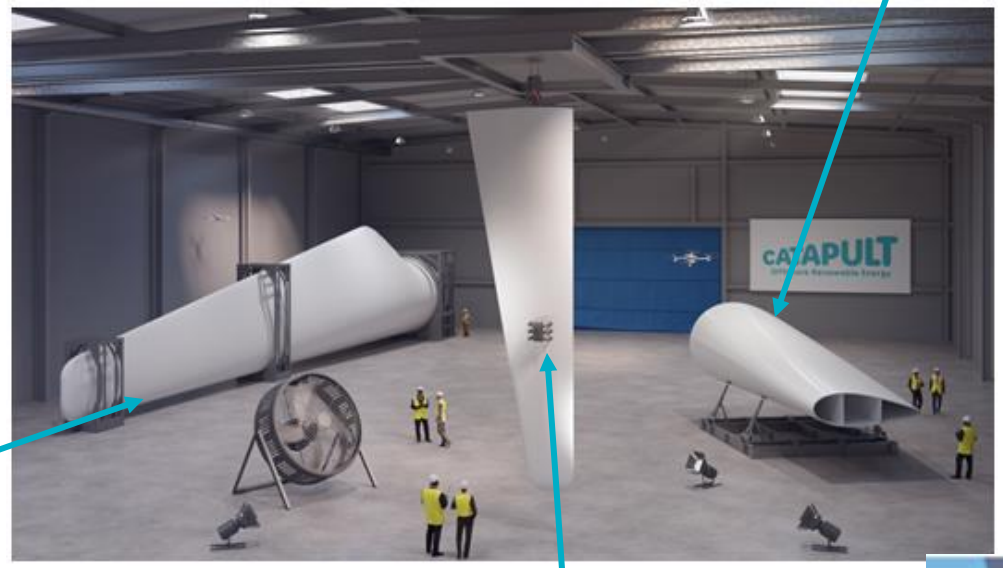
ENGINEERING



DARE – Subsea Overview

Aerial & Contact Robot Testing

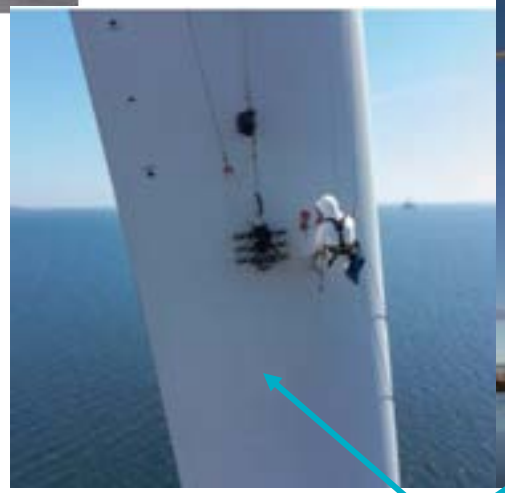
Indoor Test Hall



Full blade test piece

Horizontal test piece

Vertical blade section with known and graded defects, including
Tape damage
Erosion
Paint damages
Impact damage
Lightning damage
Surface damage



Levenmouth Demonstration Turbine

Offshore turbine

CATAPULT Offshore Renewable Energy

Marine (Subsea & Surface) Testing & Test Asset Development

Monopile

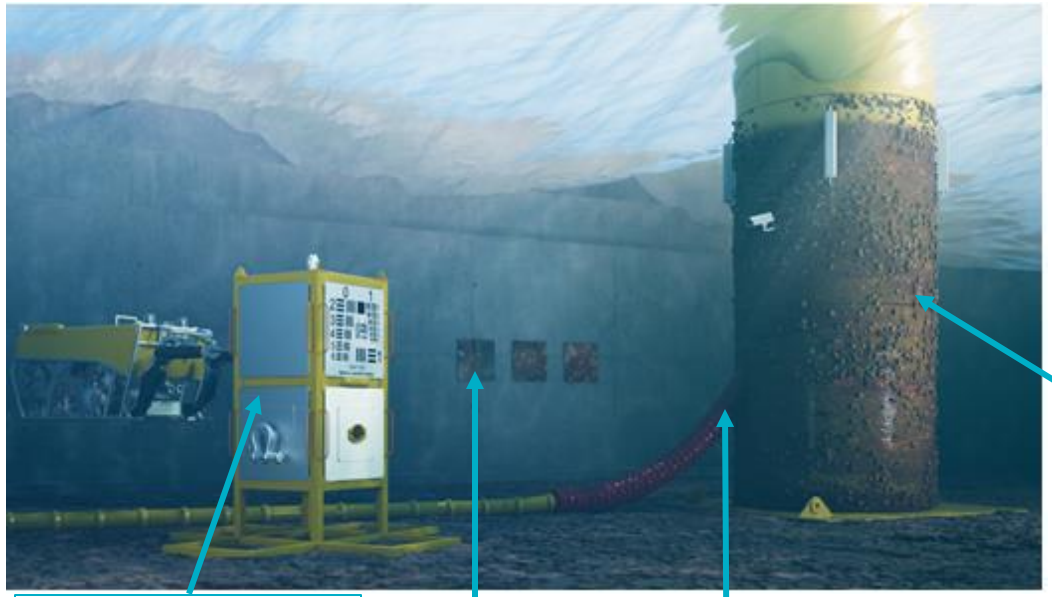
- Collaboration with CORROSION Ltd to install a mock ICCP (Impressed Current Cathodic Protection) on the monopile structure

Simulation Seabed Burial

- Export cables
- Single core telecom cables
- Metallic objects including Manta, Cylindrical and Square Target
- Surface Rock trails

PEBL Sensors Instrumentation - June 2025

- Up to 4 sensors deployable at different depth of the dock to measure water column activities and live data



Dock facility

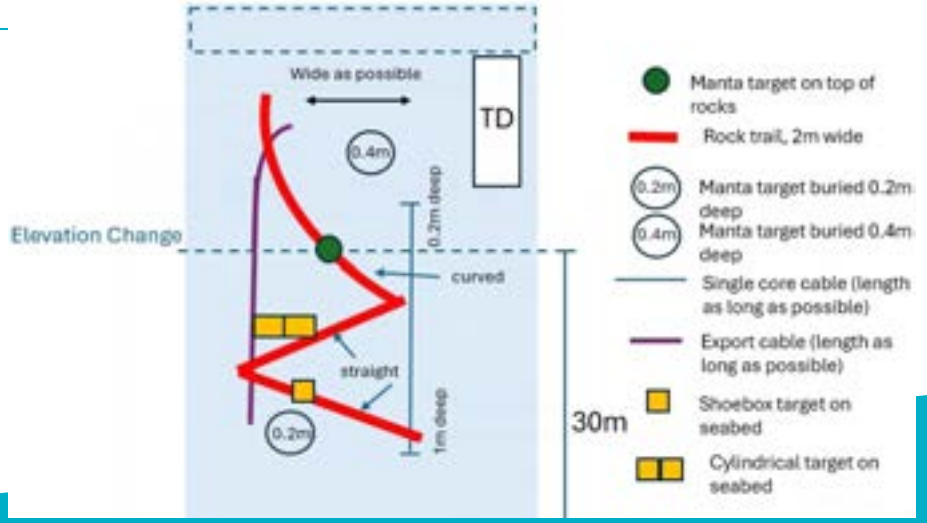
Visual and manipulation test piece including visual panels, handles etc

Defect and corrosion examples

Cable and CPS

Monopile with biofouling and anodes

Simulated seabed with buried assets



CATAPULT Offshore Renewable Energy

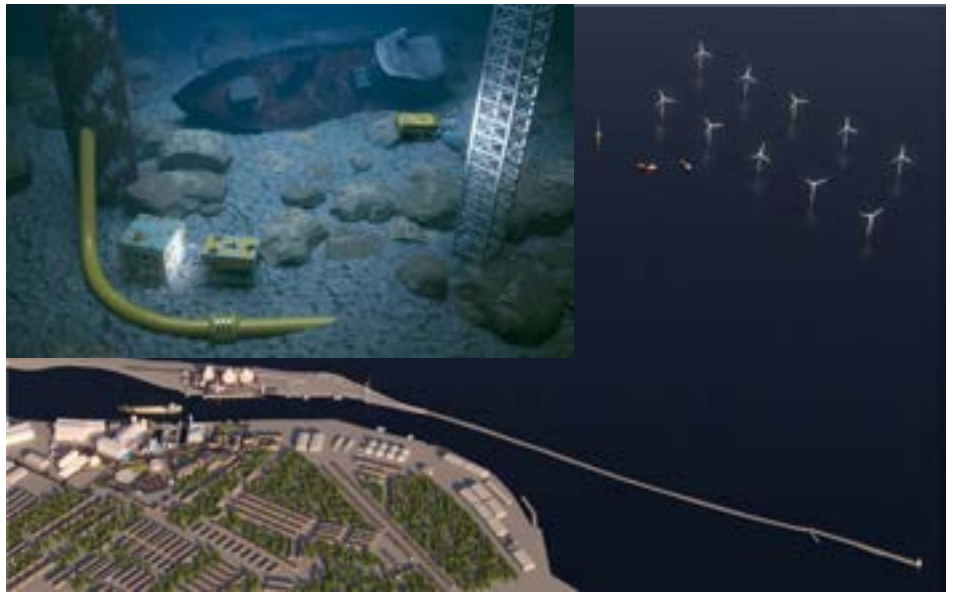
Offshore Demonstration Assets

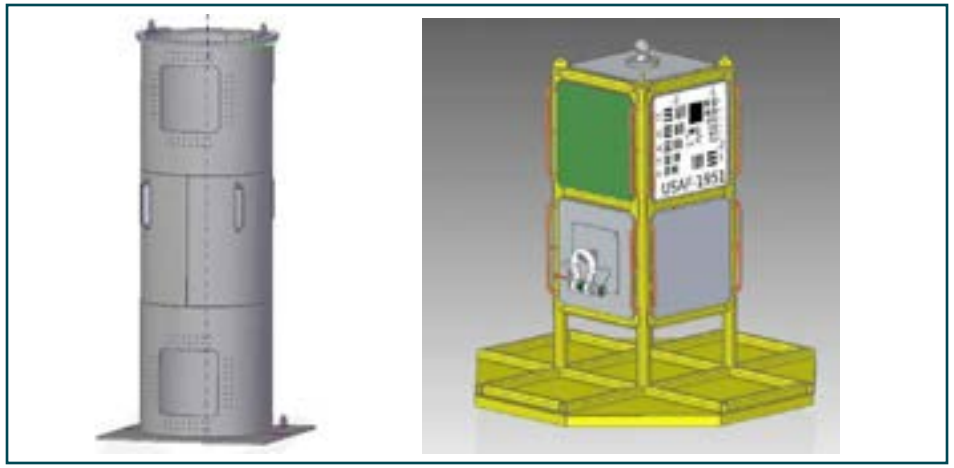
NOAH – Metrology mast

- Access to near shore test zone
- Inspection to foundation structure
- 40 metres depth 1-3n current

Levenmouth Demonstration Turbine

- Active working demonstration turbine
- Nearshore structure
- Vessel / land access





Offshore Demonstration Area (In Development)

- 1 km² Development
- South of the Blyth NOAH met mast
- Inshore of the existing EDF Windfarm
- The demonstration zone will provide representative conditions for testing technology in an offshore environment.

Engineering services

- Custom designed test beds
- Pre-build simulation and engineering validation
- On site expertise available

TRL 1-2	TRL 3	TRL 4	TRL 5-6	TRL 7-8	TRL 9	
Concept Development	Proof of Concept	Design	Testing & Verification	Prototyping	Demonstration	Product Launch

CATAPULT
Offshore Renewable Energy

ORE Catapult Robotics – DARE / NOAH FLS

Examples of DARE / NOAH related Technology Development projects ORE Catapult has completed,

- **SMD eROV** – Testing campaign including component integration, functional validation, and Harbour acceptance demonstrations and industry technical workshop.
- **BeeX AUV** – 3 years testing agreement for AUV mission development on Monopile, CPS, Burial Cables and UXO detection.
- **CRP Subsea** – Commercial acceptance testing of cable protection systems, including a customer/operators' workshop and technical sign-off for product acceptance.
- **SSE** – Technology demonstration in collaboration with a selected supplier to showcase robotics technology as part of their supplier chain development process.
- **Sonardyne / EIVA / Voyis** – Group technology demonstration day, incorporating three sister companies for testing, validation, and industry showcasing.
- **OEG / SEAJET** – Harbour acceptance test, including a live operations demonstration with customer and industry technical workshops.
- **Pulcea** – Acoustic barrier testing under the TIGGOR funding programme, including three dock tests for TRL progression and customer demonstrations.
- **NOAH-related projects** – Floating LiDAR performance validation projects for Stage 1, 2, and 3 certifications.

Sonardyne · EIVA · SMD · sse · BEEX Autonomous Systems · oeg Renewables · PULCEA · CRP Subsea An AIS company · OES Group · AXYS · Green Rebel · Force55 Offshore Network Solutions · oldbaum Reaching for the Wind · eolos Wind Ocean Environment · Fraunhofer IMS · Fugro

Smart Shipping: Offshore Swarm for Inspection and Renewable Infrastructure Servicing (O.S.I.R.I.S)

Project Summary

- Revolutionizing the inspection and maintenance of offshore renewable energy infrastructure through the deployment of advanced nested robotic systems and a hydrogen-powered autonomous vessel.
- Testing and validation of nested robotic system in a custom-built simulated environment of an offshore wind farm.

ORE Catapult Role

- Technical Feasibility: Demonstrate the operational capabilities of the nested robotic systems and their integration with the hydrogen-powered vessel.
- Economic Viability: Conduct a cost-benefit analysis comparing traditional inspection methods with our innovative approach, highlighting potential savings and efficiency gains.
- GHG Emissions Savings and Social Value Assessment
- Market size assessment

Project Partners

ACUA OCEAN

XBOW

CATAPULT Offshore Renewable Energy

GRI Tactical Fund Business Case: Global Offshore Wind Robotic Applications (GOWRA)

Project Summary

- Developing an offshore renewable robotic development framework and guideline in collaboration with leading research institutes in Taiwan, such as Industrial Technology Research Institute (ITRI) and Metal Industries Research & Development Centre (MIRDC).
- Capture the detailed requirements for offshore wind applications to enable the design and development of robotic technology for essential tasks such as inspection, cleaning, and repair of turbines, floating platforms, subsea cables, and offshore substations.
- Develop a comprehensive robotic design framework for robotic developers
- In-Person Technical Workshops and Development Sessions (Taiwan / UK)
- ORE Catapult Direct Support to UK Trade Delegations UK->Taiwan
- ORE Catapult Direct Support to Inward-Investment Delegations TW->UK

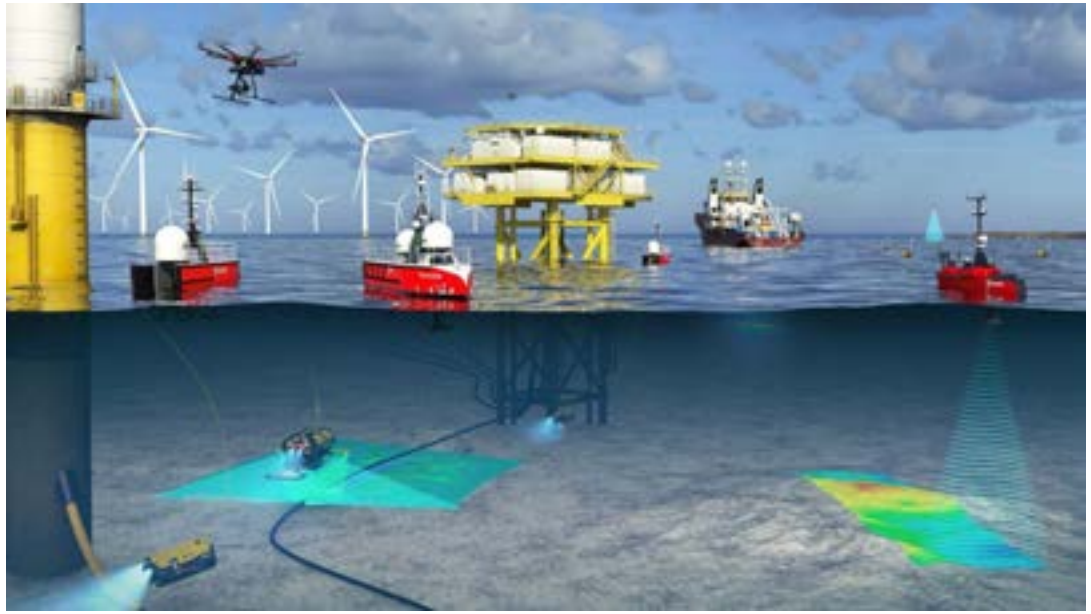


Image Source: https://www.fugro.com/our-services/marine-asset-integrity/remote-inspection

CATAPULT
Offshore Renewable Energy

DARE - Technology Demonstration Day
Industry & Academic Collaboration

Industry technology showcase

- Technical workshop
- Live testing demonstration

Academic round-table Discussion

- Funding
- Collaboration
- Technology development / adoption

- **ORE Catapult has various National (Eg. Robotarium - ORE Catapult MOU agreement) and International collaborations and MOU agreements.**

HUMBER PORTAL

Led by: CATAPULT Offshore Renewable Energy

Partners: Microsoft, xceco, ABP, boldyn networks, CATAPULT Satellite Applications, JET CONNECTIVITY Extending Horizons, Aelleran

Port

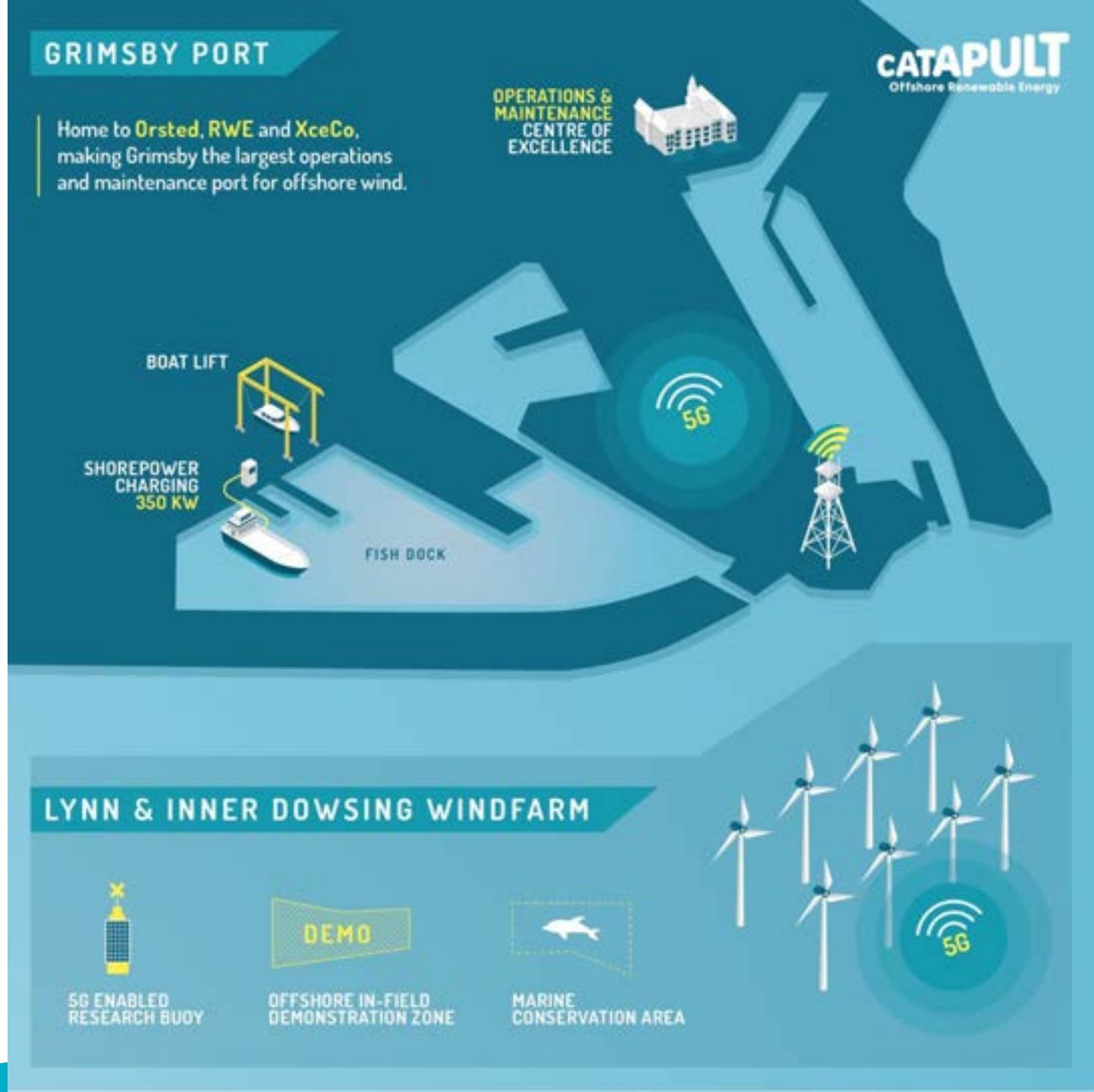
- ABP Grimsby - The worlds largest operations and maintenance port for offshore wind.
- Coverage across port and surrounding waters.
- In port onboarding and demonstration zone.
- Shore power charging for Electric Vessels.

Research Buoy

- 30 ton, 5G enabled research buoy providing demonstration capabilities.
- Extends 5G network into underserved locations.

Wind Farm

- Long serving, well established operational offshore wind farm, Lynn and Inner Dowsing operated by partner XceCo.
- Offshore demonstration zone.
- Biodiversity at nearby marine conservation area.



National Floating Wind Innovation Centre (FLOWIC)

- ORE Catapult's £9 million National Floating Wind Innovation Centre (FLOWIC), in collaboration with ETZ Limited, with funding from the Scottish Government and Innovate UK.
- FLOWIC provides unique facilities for companies to develop, accelerate and derisk essential technologies for the sector's success, meeting high industry demand to capitalize on the growing pipeline of floating offshore wind projects in UK waters.
- Global centre of excellence for dynamic cabling systems and mooring and anchoring systems;
- Floating offshore wind presents a significant economic opportunity, with over 19GW of potential projects in the ScotWind Leasing process.
- The INTOG leasing round also offers potential for floating wind to aid in decarbonizing North Sea energy production.
- Industry estimates suggest floating offshore wind could deliver over £43 billion in UK gross value add by 2050 and create more than 29,000 jobs.

Scotland's First Minister, the Rt Hon. Humza Yousaf MSP, officially opens the world's first dedicated innovation center for floating offshore wind.

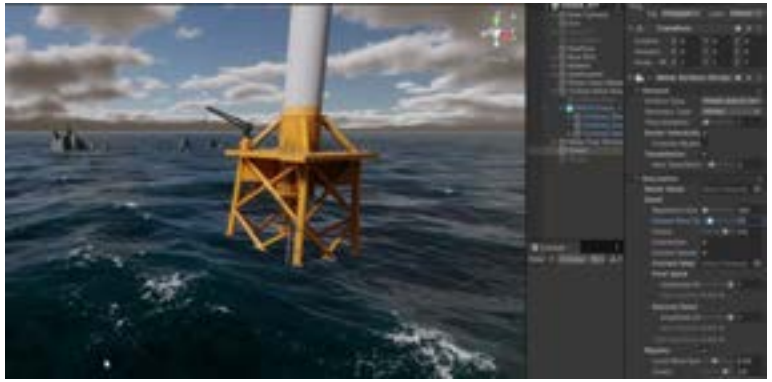
CATAPULT
Offshore Renewable Energy

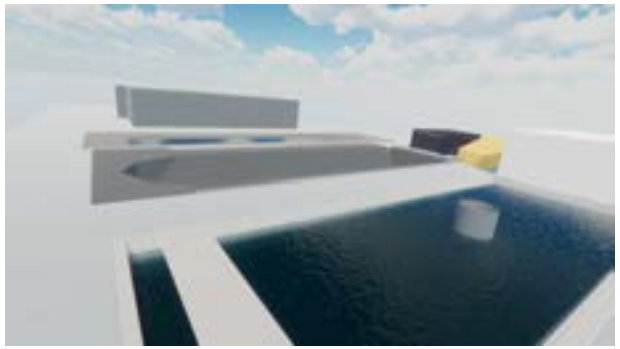
V-DARE: Offshore Wind Farm Simulation Environment for Robotic Developers

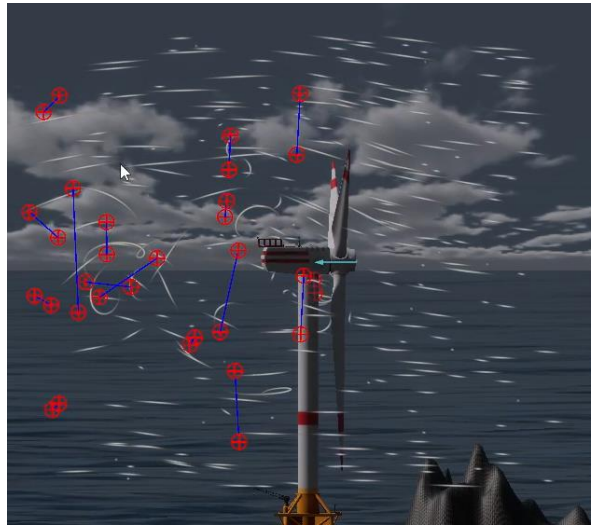
- VDARE is a simulation platform offers a robust and versatile environment for testing, validation, and optimization of robotic systems for offshore wind applications.
- Simulated offshore wind farm, DARE centre, LDT, and Grimsby Fish Docks

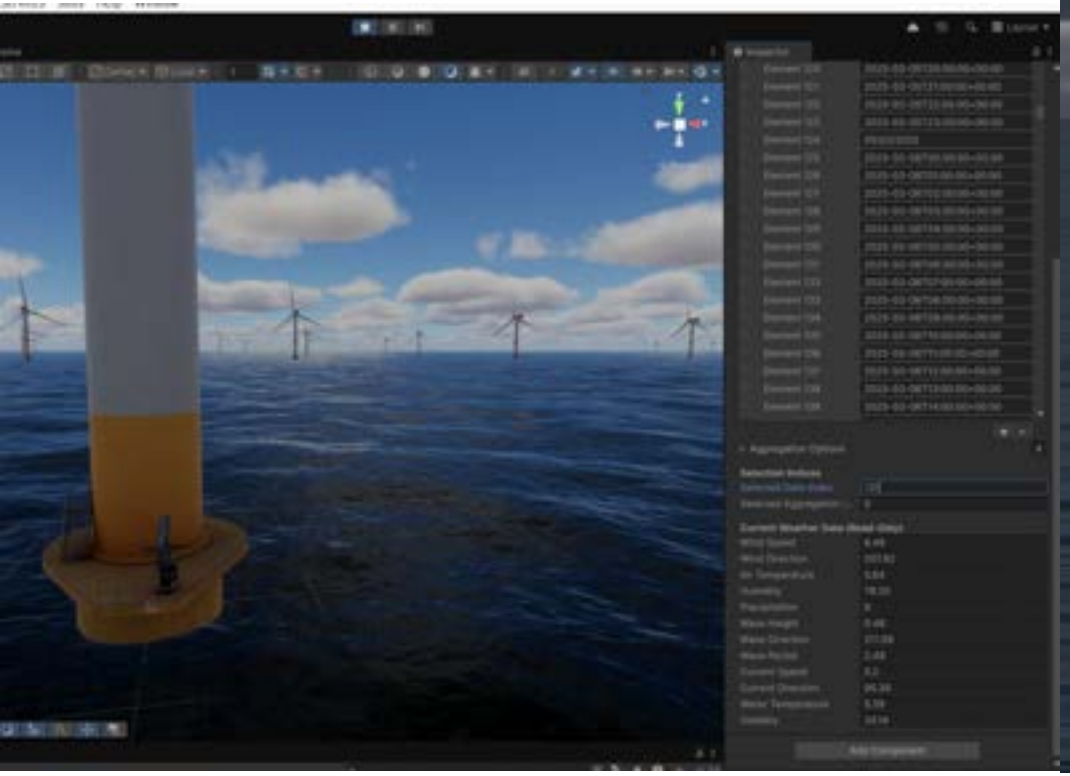
What It Offers:

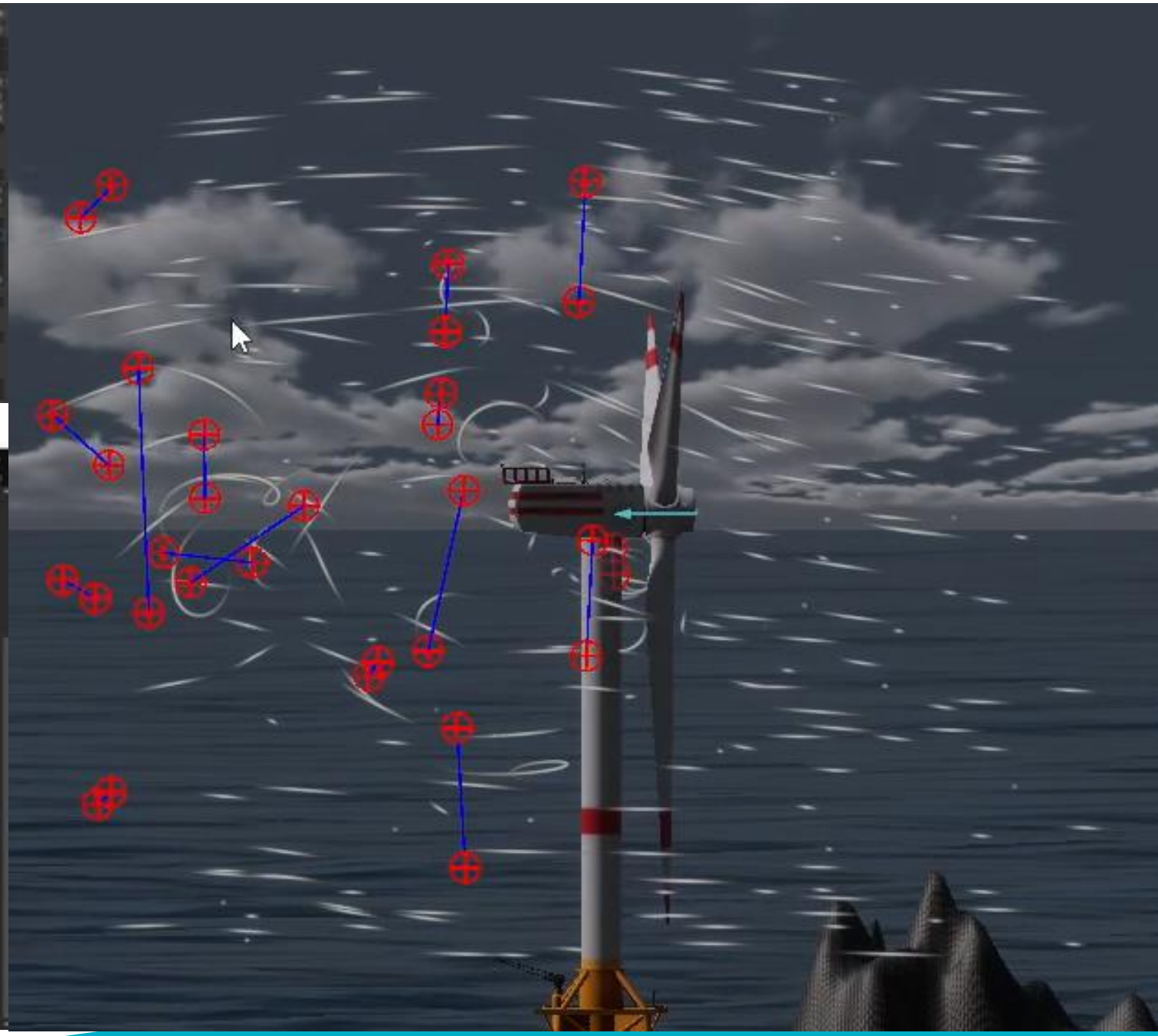
- Adjustable environmental conditions (e.g. wind, wave, visibility)
- Integration of simulated and physical turbine systems
- ***Multi-robot fleet coordination and communication***
- Modular scenes: onshore, shallow water, offshore, and floating turbines
- Hardware-in-the-Loop (HiL) testing support
- Real-time data exchange and time-synced feedback loops
- Designed for robotics testing across the offshore wind lifecycle







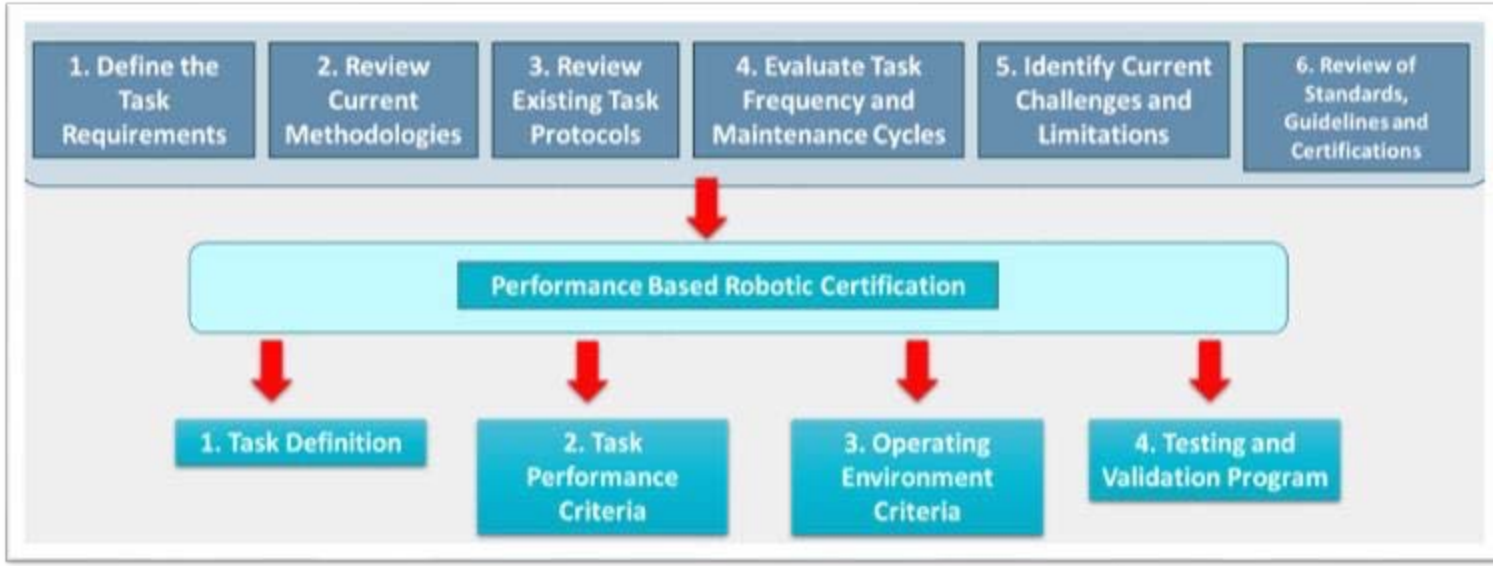




Two Pathways for Performance-Based Robotic Certification

1. Robotic System Exists – But Task Is Unproven

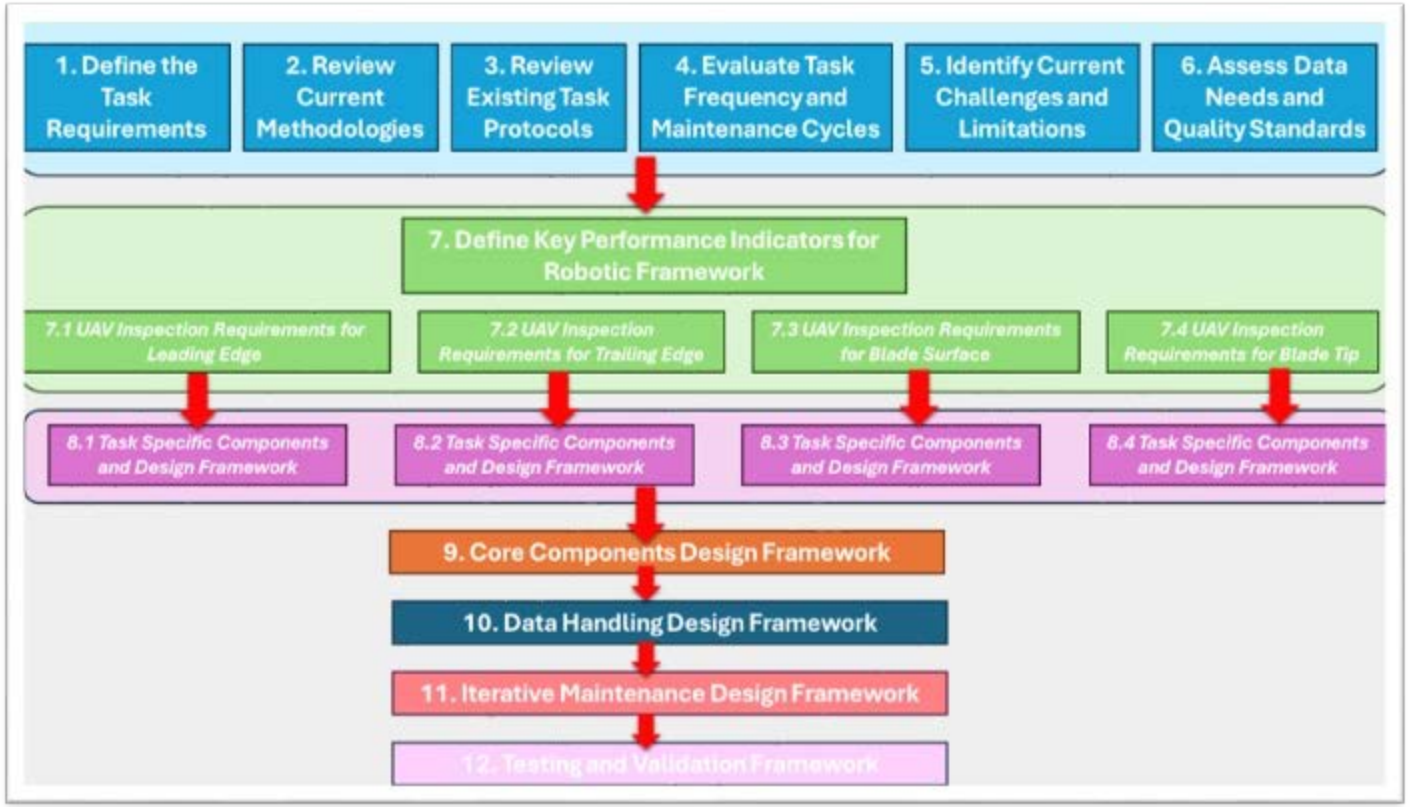
- The RAS platform is commercially available (e.g. inspection ROV, UAV, crawler)
- May not have been used for the specific offshore task (e.g. dynamic cable inspection)
- Modular system could support the required payload (e.g. sensor, manipulator)
- Could be specifically designed for this task, but lacks proven, documented performance
- PBRC provides a way to **demonstrate and verify task capability**



Funding: The OLTER Project, which was a collaboration between NZTC, OREC, the National Robotarium, and the Energy Industry, and funded by the Scottish Government under the recent Energy Transition Fund

CATAPULT Offshore Renewable Energy

Two Pathways for Performance-Based Robotic Certification



2. No Current Solution – But Adaptable RAS Platforms Exist

- No existing robotic system currently performs this task
- A suitable platform (e.g. ROV, hybrid AUV, USV) exists at high or commercial TRL
- Requires development or integration of:
  - Payload tools (e.g. cleaning brushes, cutters, sensors)
  - Supporting software, autonomy, or control
- PBRC could define **performance targets and verification** for a future, adapted solution

Funding: The OLTER Project, which was a collaboration between NZTC, OREC, the National Robotarium, and the Energy Industry, and funded by the Scottish Government under the recent Energy Transition Fund

CATAPULT Offshore Renewable Energy

CONTACT US

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Robotic Related Enquires: joshua.rebello@ore.catapult.org.uk

GLASGOW

BLYTH

LEVENMOUTH

GRIMSBY

ABERDEEN

CHINA

LOWESTOFT

WALES

CORNWALL

CATAPULT
Offshore Renewable Energy

The UK Agri-Tech Centre

Accelerating the development and deployment of agri-tech innovation

ukagritechcentre.com

The UK Agri-Tech Centre

Who we are

The UK Agri-Tech Centre (UKATC) is an independent business, supported by Innovate UK. We enable businesses to develop their innovations to be technically and commercially robust, and work with farmers and growers to increase adoption.

Our role is to provide agri-tech business support, to increase the successful development and adoption of emerging agri-tech, and to create an enabling innovation ecosystem for agri-tech sector growth in the UK by addressing critical challenges that prevent new innovations getting to market.

Mission

To accelerate the development and deployment of innovation across agri-tech.

Vision

An agricultural sector that is among the world's most innovative, dynamic, resilient and sustainable through the development and application of agri-tech.

What we do

- **Agri-tech business support:** enable UK agri-tech SMEs to access the skills, expertise and capabilities needed to successfully deliver solutions through to commercialisation

- **Test, trial and demonstrate:** increase the successful development and adoption rate of emerging agri-tech by farmers to improve agricultural productivity, profitability and sustainability.

- **Sector growth:** create an enabling innovation ecosystem for agri-tech sector growth in the UK by addressing critical challenges that prevent new innovations getting to market

Antobot

ANTOBOT

UNIVERSITY OF LINCOLN

UK Agri-Tech Centre

UKRI

UPP and SusProt

Sustainable Plant Protein from Vegetable Side Streams

About ARRNet

Agri-Robotics Regulatory Network (ARRNet) is delivering on recommendations …

ARRNet is a 1-Year project with the goal of to establish a sustainable network for the regulation, standards, testing, and safe deployment of robotics and autonomous systems in UK agriculture

- Regulatory Horizons Report - Unlocking the Potential of Robotics and Autonomous Systems (RAS) in Agriculture and Horticulture
- National Agri-Robotics Proving Ground (NARPG) - Feasibility Study Report
- Regulatory Science and Innovation Network (RSIN) Discovery Phase project

Year 1 will deliver…

A Regulatory and Standards Gap Analysis

- Provide clarity for developers and end-users on applicable standards and regulations.
- Develop a roadmap for plugging the gaps

A testing requirements framework

- To building confidence that technologies adhere to safety, performance, and operational requirements.

Training - Specify evidence-led training requirements

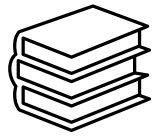
- Establish a baseline to assist developers to navigate regulation and standards effectively, operator knowledge and skills to ensure safe, and compliant deployment

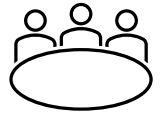
Facilitated collaboration across stakeholders

- Knowledge exchange between and among the network, regulators, industry and end-users

Long-term sustainability

- Establish a network bringing together regulators, industry (developers, users), stakeholders, and standards bodies





Unique testing challenges in agriculture

Environmental Challenges

Uncontrolled environments – weather, terrain, lighting, seasonality, human factors

Diverse technology

Machine type, size and shape, autonomy levels, safety and decision-making considerations

Varied Agricultural Applications

RAS technology may be many purposes like crop monitoring, spraying, harvesting, livestock management, and soil analysis.

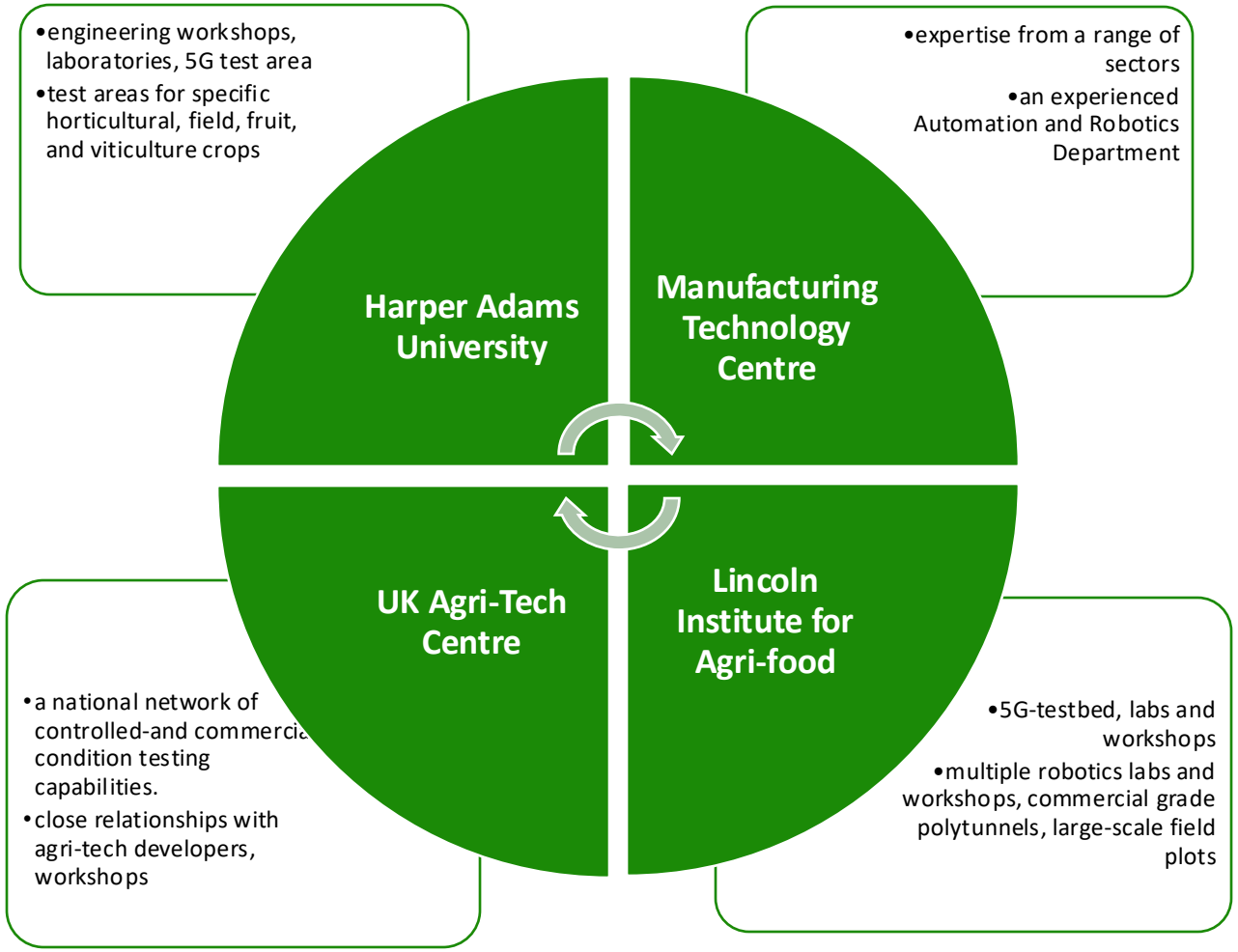
Lack of Standardised Testing Protocols

Few established benchmarks exist for agricultural robotics

Vision of a National Agri-food Robotics Proving Ground

The vision sets out a geographically distributed network of UK facilities, conceptually linked to support:

- Robotic innovation and testing across the agri-food sector
- Accessible locations within a 2-hour drive for most users
- Capabilities include:
  - Physical testbeds and prototyping
  - Multi-robot and human-robot integration
  - Commercial demonstration zones
  - Digital design tools and twins
  - Machine learning data pipelines



Midlands Hub

Agribusiness soft landing hub

UK Agri-Tech Farm Network

UK Agri-Tech Centre capabilities

Providing expertise and world-class facilities to businesses, driving agri-tech development and growth

Unique in agri-tech

Expertise: 150 in-house agri-tech experts

Ecosystem: collaborating with over 470 businesses from SMEs to global corporations

Experience: working with industry to deliver over £85m of agri-innovation projects

Capabilities and resources

43
innovation facilities

22
strong farm network

Geographic & sector coverage

UKRI Innovate UK

Pure Light.
Zero chemicals

EARTH ROVER

Chemical-free agriculture through concentrated-light weeding robots.

Case Study | September 2025 | www.earthrover.farm

Challenge

Weeds reduce crop yields substantially, in some cases, up to as much as 70%. Herbicides are currently the most cost-effective control method, yet their use is increasingly constrained by environmental, regulatory, and performance limitations.

EARTH ROVER

£ 30B

annual spend on herbicides across farms globally

Limitations of herbicides

- over 20% of weeds are resistant
- climate change has reduced suitable spraying days in Europe by 20–25%
- the EU has banned more than 80 active ingredients
- around one million tonnes are released into the environment each year

Limitation of alternatives

- manual labor is prohibitively expensive and unsustainable (effective weed control requires ~10 people per hectare)
- heavy machinery damages crops and degrades soil health

EARTH ROVER

Creating a chemical-free future of agriculture

Focused on making farming and food production sustainable and accessible to everyone. We are on a mission to make fresh, chemical-free produce the new norm for all using smart innovative technologies, AI and robotics.

Solution

EARTH ROVER

CLAWS: An autonomous, solar-powered field robot delivering precision weeding, crop intelligence, and sustainable farming operations.

Meet CLAWS

CLAWS™, an acronym for Concentrated Light Autonomous Weeding & Scouting, is a lightweight autonomous field robot designed for precision weeding, crop scouting, and real-time data analysis.

- Zero Chemicals
- Zero Emissions
- Zero Tillage

The lightweight design, fully powered by battery and solar, enables CLAWS to operate autonomously across varied terrains and weather conditions, day and night.

Video
Daytime weeding

Video
Nighttime weeding

How it works

EARTH ROVER

CLAWS utilizes geolocation technology to autonomously traverse a farm, targeting and killing weeds, without damaging the surrounding plant with the help of our proprietary weed-crop AI detection models.

Weeding

CLAWS uses proprietary AI models to detect weeds, distinguishing from crops, before targeting the meristem (the growing point) with a precise amount of light, sufficient enough to eliminate it without damaging crops.

Patented optical design

Scouting

Through proprietary deep-learning technologies, our robot is able to detect crops, collecting real-time and precise crop data, including detailed maps, crop health status, and growth rates.

Proprietary crop detection AI

Control

CLAWS navigates crop beds autonomously with centimeter accuracy using satellite-based navigation control with RTK position correction.

European Space Agency collaboration

US Patent No. US 12,185,712 B2 & EU patent No. 21 811 480.9

Features

EARTH ROVER

Driving farm productivity through a weeding rate of 60 weeds/second, >90% efficacy, >95% accuracy, and sustainable, fully electric operations.

- Equipped with 12 high-efficiency light concentrators, CLAWS delivers millisecond pulses to weed meristems for rapid root desiccation.
- Deep learning models distinguish crops from weeds as early as the cotyledon stage.
- Five high-resolution stereo cameras with RTK GNSS enable sub-centimeter precision, while also detecting early signs of crop stress, disease, or nutrient deficiency.

>95%
weed identification accuracy

>90%
weeding efficacy

60
weeds/second

12
hours of range

Our journey

EARTH ROVER

Established in 2017, the team at Earth Rover has been developing technology to answer the challenges faced by farmers, supported by UKRI - Innovate UK and ESA funded projects.

2018

Rover and robotic control technology derived from the ExoMars project.

2019

First tractor mounted Scouting system

2020

First electric rover Scouting system

2021

Gen 2 Rover Scouting System

2022

Scouting Rover & Weeding System.

2023

Solar Powered Concentrated Light and Autonomous Weeding System (CLAWS).

2024

Alpha CLAWS Prototype.

esa

Innovate UK

UK Agri-Tech Centre

Test and Development

EARTH ROVER

Lightweeder™ technology has been independently verified to control weeds. CLAWS Alpha was thoroughly tested through 2024, ahead of Beta pilot projects in 2025.

"Lightweeder controls different types of weeds including chemically (ALS) resistant weeds."

NIAB Independent testing

2024 Alpha testing
> 6.5ha / 34km scouting
> 3 ha / 18 km weeding
> 1,000,000 weeds killed in 8 weeks
Over 235 km travelled in total.....

Product planning

EARTH ROVER

CLAWS is initially ideal for farmers with high value crop or high weeding costs.
Product development unlocks the market for broad acre crops on conventional farms.

	Today	2026	2027
	CLAWS V2	**CLAWS V3**	**BROAD CLAWS**
			
	Vegetable, salad, specialty crops	Vegetable, salad, specialty crops	Broad acre crops
Speed	3 ha/day	4.5 ha/day	6 ha/day
Autonomy	semi-autonomous - 1 person on-site to monitor	semi-autonomous - remote supervision	Fully autonomous
Operationality	Start-stop system	Start-stop system	Continuous adaptive motion system
Types of crops	10+ types of salads, vegetable and specialty crops	Salad, vegetable and specialty crops (carrots, onion, baby leaf lettuce)	Salad, vegetable specialty crops, and broad acre crops (e.g. sugar beet)

Team

A multidisciplinary team with deeply rooted farming backgrounds, proven agtech scaling experience, strong engineering expertise with established manufacturing networks.

EARTH ROVER

James Brown

Co-Founder & Chairman

Serial entrepreneur with multiple exits, including agro-chemical & agronomy business, the largest private distributor in the U.K.

5th generation to run Pollybell Farms. Grew the farm to 5,000 acres, becoming one the of the UK's leading organic producers.

Established EarthRover with Luke Robinson to solve Pollybells' weed control and crop measurement challenges sustainably, through robotics.

Luke Robinson

Co-founder, CSO

Technology entrepreneur and venture builder with a focus on deep learning startups.

Partner in Post Urban Ventures with long track record building deep tech companies

PhD in Physics and quantum computing at Cambridge University

James Miller

CEO

+25 years of experience in product and technology development.

Former Group CTO at a leading international
OEM in tractor and agricultural equipment manufacturing.

Large network in emerging markets and low-cost manufacturers.

Chartered Engineer and Fellow IMechE

Tomàs Pieras Morell

CTO

Electronics & automation engineer specialized in robotics and AI

8+ years experience with electronic design and robotics

Master's degree in Automatic Control and Robotics

8 FTE R&D Team

6 FTE Operations Team

3 FTE Management, Finance & Admin Team

EARTH ROVER

Thank you

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Q & A / Discussion

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Disclaimer

Certain information set forth in this presentation contains "forward-looking information", including "future-oriented financial information" and "financial outlook", under applicable securities laws (collectively referred to herein as forward-looking statements). Except for statements of historical fact, the information contained herein constitutes forward-looking statements and includes, but is not limited to, the (i) projected financial performance of the Company; (ii) completion of, and the use of proceeds from, the sale of the shares being offered hereunder; (iii) the expected development of the Company's business, projects, and joint ventures; (iv) execution of the Company's vision and growth strategy, including with respect to future M&A activity and global growth; (v) sources and availability of third-party financing for the Company's projects; (vi) completion of the Company's projects that are currently underway, in development or otherwise under consideration; (vi) renewal of the Company's current customer, supplier and other material agreements; and (vii) future liquidity, working capital, and capital requirements. Forward-looking statements are provided to allow potential investors the opportunity to understand management's beliefs and opinions in respect of the future so that they may use such beliefs and opinions as one factor in evaluating an investment.

These statements are not guarantees of future performance and undue reliance should not be placed on them. Such forward-looking statements necessarily involve known and unknown risks and uncertainties, which may cause actual performance and financial results in future periods to differ materially from any projections of future performance or result expressed or implied by such forward-looking statements. Although forward-looking statements contained in this presentation are based upon what management of the Company believes are reasonable assumptions, there can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. The Company undertakes no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change except as required by applicable securities laws. The reader is cautioned not to place undue reliance on forward-looking statements.

EARTH ROVER

James Miller, CEO
james.miller@earthrover.farm

Site Tour

Back at 12.45

https://iuk.ktn-uk.org/

Innovate UK | Business Connect

Lunch Networking

Back at 13.30

https://iuk.ktn-uk.org/

Innovate UK | Business Connect

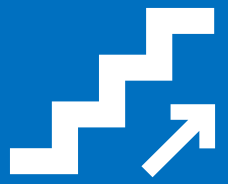
Innovate UK

Robotics Adoption Workshop

11th September 2025

ISCF Robots for a Safer World - £93m over 4 years

£42m four academic hubs
£51m funding 153 business led projects resulting in >£500m of further investment



BEIS Report 2021

£150bn

GVA uplift by 2035 if we fully adopt robotics

Background

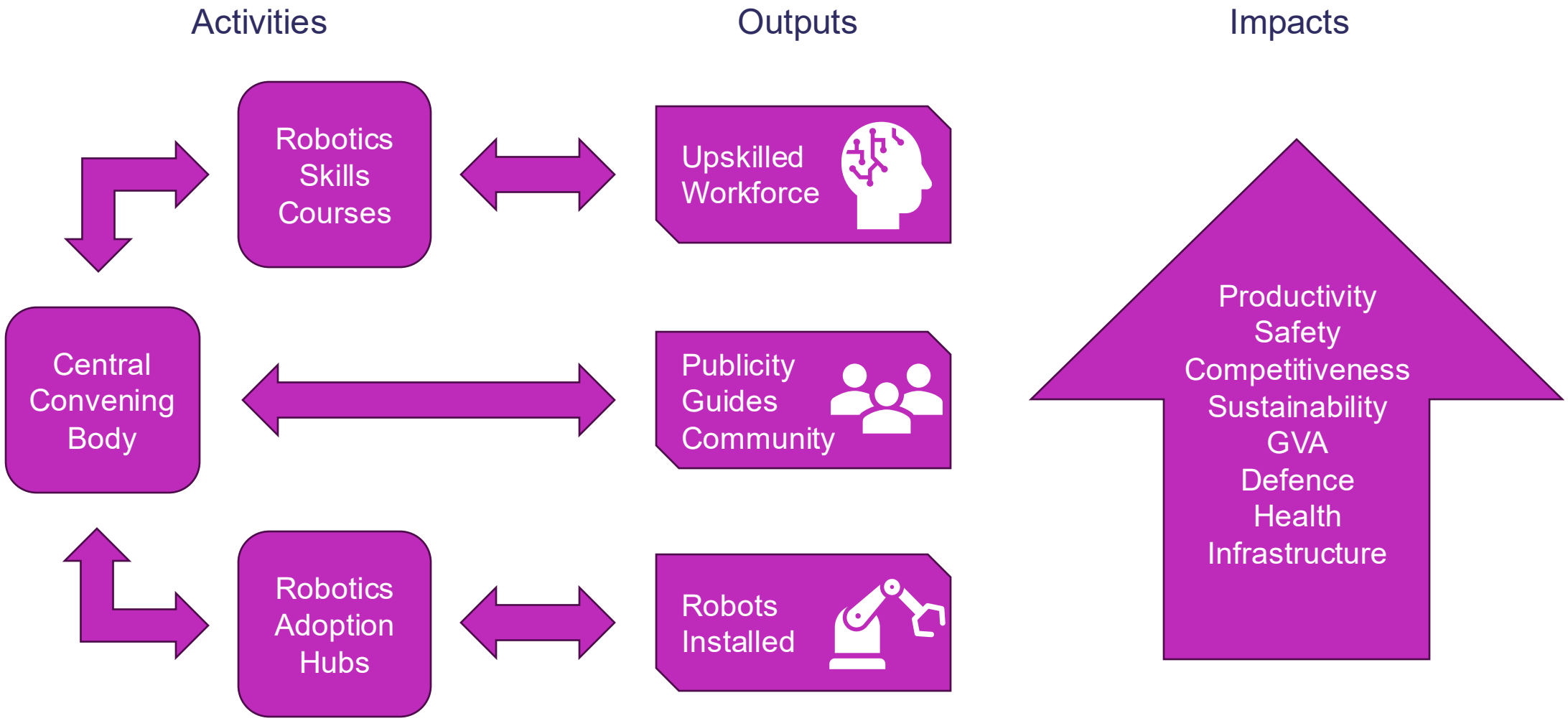
Technology Adoption Review and **Modern Industrial Strategy** identified robotics as essential for productivity.

A new **£40m Robotics Adoption Hubs** programme has been announced with delivery planned to start early 2026.

Our mission is to enable the creation and adoption of innovation across the UK.

UKRI Innovate UK

Robotics Adoption Programme



Workshop structure

15 min - Part 1- Brief Introductions and Perspectives

At tables, attendees take turns to introduce themselves and share 1 key perspective on robotics (e.g. awareness, experience – most impactful applications of robotics in their sector, concerns, possibilities)
Scribes: Please note on the flip chart how many developers and how many end users are on your table.

30 min - Part 2 – Barriers to Adoption, and ways to overcome

First 3 minutes: Ask individuals to brainstorm the barriers their organisation or sector are facing that are preventing or slowing down robotics adoption. One barrier per post it note.
Next 7 minutes: Ask individuals to place their post-it notes on the flip chart, grouping under the relevant Barrier Themes and adding new ones in the blank rows as needed.
Use the remaining 20 minutes to focus on 3-4 (if possible) of the most commonly identified ones in your group, and use group discussion to fill in the rest of the table on the flip chart.
In the final few minutes ask the table to vote for which theme they feel is the biggest barrier to robotics adoption in the AgriTech sector.

Robotics Adoption Barriers and Solutions

Barrier Themes	What we have	What we don't have but do/will need	If addressed, what impact could it have on adoption? What organisations would we trust to provide this support?
Cost/ Access to finance			
Government support (e.g. regulation where appropriate, business services)			
Access to knowledge/expertise			
Developers of robots that understand my organisation's/ industry's needs			
Enabling infrastructure - data and processes for robot implementation			
Other Engineering/ Technical obstacles			
Skills and talent to develop and/or exploit robotics			
Streamlining regulation			
Additional Regulation			
Appropriate security and resilience support			
Interoperability and standards			
Other:			
Other:			

Thank you

Testing & Standards: an interactive exercise

Prof Elizabeth Sklar

Director, Lincoln Institute of Agri-food Technology (LIAT)

University of Lincoln

esklar@lincoln.ac.uk / 11-sep-2025

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Testing & Standards -- Interactive Session

STEP ONE
Working Alone
you have 10 minutes

esklar@lincoln.ac.uk / 11-sep-2025

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STEP ONE: Identify task

(1) Using the **RED** cards on the table in front of you, select a task (from the **RED** cards) that is relevant and/or important to you

CROP CARE – SPRAYING	CROP CARE – HUSBANDRY	CROP MONITORING
HARVESTING – HORTICULTURE	HARVESTING – ARABLE	PACKING
ANIMAL CARE	ANIMAL MONITORING	ANIMAL PRODUCTS
TRANSPORTATION	HYGIENE	OTHER

STEP ONE: Select environment

(2) Using the **GREEN** cards, select an environment in which your task is performed:

OPEN FIELD	GLASSHOUSE	POLYTUNNEL	BARN
SHED	WAREHOUSE	FARM ROADS	OTHER

esklar@lincoln.ac.uk / 11-sep-2025

STEP ONE: Characterise setting

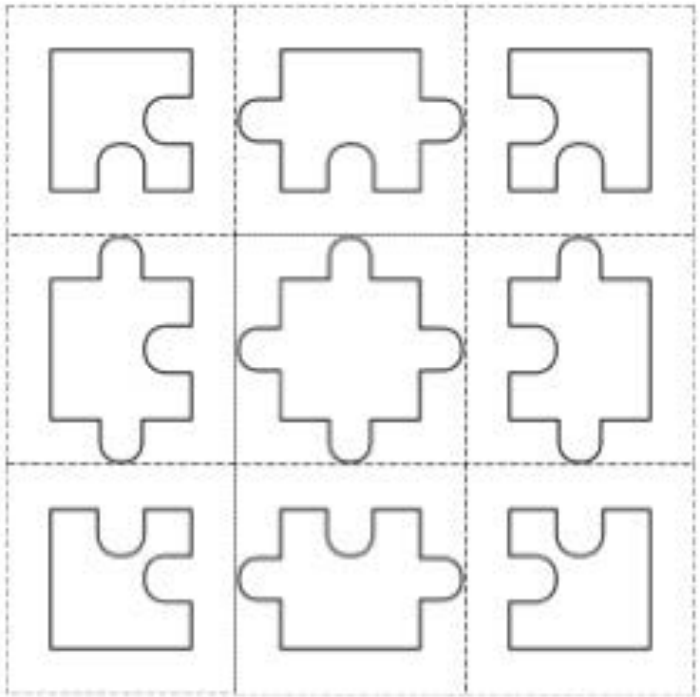
(3) Describe the characteristics of your **task** and **environment**:

- **TASK**
  - ❑ Collaborative vs individual
  - ❑ Quality over speed vs speed over quality
  - ❑ other…

- **ENVIRONMENT**
  - ❑ Controlled vs uncontrolled (e.g. lighting, wind, temperature)
  - ❑ Populated (with people) vs unpopulated
  - ❑ other…

STEP ONE: Design and "build" robot

(4) Using the other cards on the table in front of you, design and "build" a robot to that could perform your task in your environment



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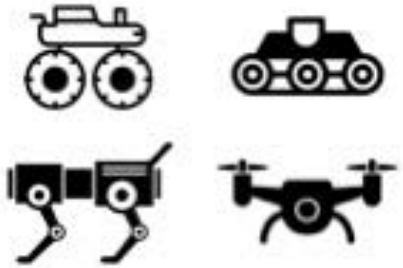
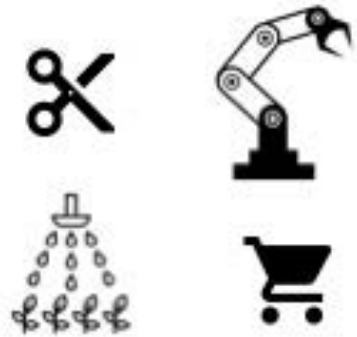
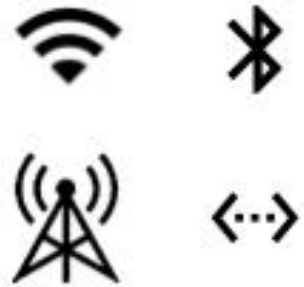
MOBILITY	INPUT / SENSING	MANIPULATION
		
DATA STORAGE	**PROCESSOR**	**COMMUNICATION**
		
ENERGY	**OUTPUT**	**GPS**
		

STEP ONE: Robot building blocks

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STEP ONE: Testing your robot

(5) How will you …

- Prove that your robot works?
  - ✓**VALIDATION**
- Measure how well your robot performs?
  - ✓**PERFORMANCE STANDARDS**
- Ensure that your robot operates safely?
  - ✓**SAFETY ASSURANCE**

Record your test designs for each of these.

STEP TWO
Working in small groups (2-3ppl)
You have 10 minutes

STEP TWO: Share

(1) Each member of the group share with others:

- **Task** and **Environment** and their characteristics
- **Robot design**
- Tests:
  - ✓**Validation**
  - ✓**Performance Metrics**
  - ✓**Safety Assurance**

STEP TWO: Compare & Contrast

(2) Identify **similarities** and **differences**:

- ❑What is similar across group members' test designs?
- ❑What is different across group members' test designs?

➢What can you learn from your group members?

STEP TWO: Synthesize

(3) Design a new set of tests for the group—that works across all tasks, environments and robots in your group

✓Merge tests that are similar

- Capitalise on similarities in task, environment, robot design

✓Reconcile tests that are different (where possible…)

- Learn from differences in task, environment, robot design

? Identify problematic areas

Testing & Standards -- Interactive Session

STEP THREE

Working in big groups

(whole table)

You have 10 minutes

esklar@lincoln.ac.uk / 11-sep-2025

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STEP THREE:

(1) Share

(2) Compare & Contrast

(3) Synthesize

- ❑ Produce a new set of tests for the table—that works across all tasks, environments and robots in your table
- ❑ Identify a set of problem areas that are not covered for any tasks, environments or robots at your table

? Which set is bigger (common tests or problems)?

Testing & Standards -- Interactive Session

STEP FOUR

Report back and Reflect

(each table reports: 1 minute per table)

we have 12 minutes...

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Lincoln Institute for Agri-food Technology (LIAT)






Knowledge exchange with the
Agri-Robotics Regulatory Network (ARRNet)

Working Robots Day

24th September 2025

Register by 15th September

University of Lincoln, Riseholme Campus

- Bring your robots and try in-field test scenarios to assess safety and performance factors.
- Pick which scenarios are right for you:
  - mobility, manipulation, vision, interaction.
- Environments include:
  - polytunnel, walled garden

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UKRI Innovate UK

Lincoln Agri-Robotics

Register here:

https://www.eventbrite.co.uk/e/working-robots-day-tickets-1558928780949

Funding & Robotic Opportunity

https://iuk.ktn-uk.org/

Farming Innovation Programme – Small R&D Partnership Projects (Round 4)

The aims of this competition is to develop solutions with the potential to **improve** overall **productivity, sustainability, resilience** and move existing agricultural sectors **to net zero,** ensure solutions have **positive outputs for farmers, growers or foresters** in commercially relevant situations, **develop new agricultural solutions**, by **collaboration** through engagement **with end users** and the **UK research community in** the innovation process and **accelerate adoption** by ensuring **knowledge exchange** with the wider sector and other stakeholders

You must:

- be a UK business of any size and be able to evidence that you are an established commercial business, including sole traders and partnerships, collaborate with other UK registered organisations, be or work with at least one grant claiming micro, small or medium sized enterprise (SME)

Can collaborate with another business, a research institute or a Research and technology organisation (RTO)

Your project must:

Address a significant industry challenge or opportunity in at least one of the industry subsectors: **farmed animals, plants, novel food production systems, bioeconomy and agroforestry**

Your **project's total eligible costs** must be between **£1 million and £3 million**.

- Competition opens: **Monday 15 September 2025**
- Competition closes: **Wednesday 5 November 2025 11:00am**
- Consortium building event **: 18th September 2025**

https://apply-for-innovation-funding.service.gov.uk/competition/2010/overview/bcd5cf06-313c-4197-ae47-0035f674717f

UKRI Innovate UK | Business Connect

Robotics Opportunities

Smart City Robotics Competition 2025

23-25 September 2025

CENTRE:MK Milton Keynes, UK

Free Entry for Spectators, Teams, Schools & Exhibitors

https://www.smartcityconsultancy.co.uk/robotcomp2025

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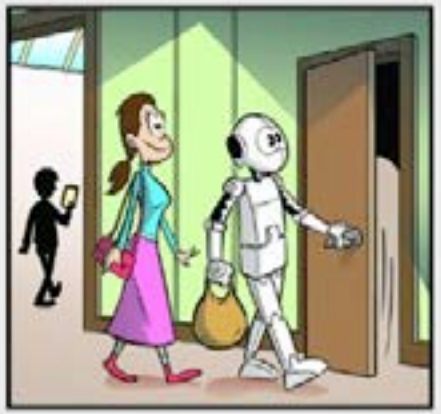
Smart City Robotics Competition

1. Deliver Coffee Shop Orders

Robots take orders from new customers at their table, collect the order from the counter and deliver to the order. This is a challenging environment to navigate, interact with people and safely deliver coffee orders.



2. Through the Door

The robot will navigate a doorway, requiring it to operate the door handle and open the door. This requires a good understanding of motion planning and control.

3. Assisting a Person in their Home

A person with limited mobility asks the robot to retrieve an object in the home. The robot will need to communicate with empathy and find a requested item on the table, pick it up, and pass it to the person safely hand.

4. Select and Pack Shopping

Given a shopping order, the challenge will be to navigate a shopping area to find products on the shelf, safely grasp the product and carry it to the delivery container, without dropping or damaging any products, in the fastest time possible.

5. Drone Medical Deliver

This episode requires flying robots to safely navigate the scene and make a delivery for urgent medicine.

UKRI Innovate UK | Business Connect

Global Business Innovation Programme - Robotics & Automation in Manufacturing, Japan

Innovate UK is inviting ambitious innovative companies to participate in a **9-12 month programme** to help them **grow in the Japanese market**, including attending Factory Innovation Week.

- Innovate UK will **fund** and **organise flights, accommodation, in market travel** and **conference fees** for successful applicants.
- Innovate UK will also pay for any reasonable adjustments throughout the initiative.

You must be a **UK-based company** with **fewer than 250 employees**, application must be made by the **CEO, founder, or senior decision maker** in the business, and they must be able to attend all workshops and complete all activities.

Registration opens: **1st August 2025**
Registration closes: **26th September 2025 10:00**

https://iuk-business-connect.org.uk/opportunities/global-business-innovation-programme-robotics-automation-in-manufacturing-japan/

UKRI Innovate UK | Business Connect

Global Business Innovation Programme - Robotics & Automation in Manufacturing, South Korea

Innovate UK is inviting ambitious innovative companies to participate in a **9-12 month programme** to help them grow in the **South Korean market**.

Innovate UK will **fund** and **organise flights, accommodation, in market travel** and **conference fees** for successful applicants.

- Innovate UK will also pay for any reasonable adjustments throughout the initiative.

You must be a **UK-based company** with **fewer than 250 employees**, application must be made by the **CEO, founder, or senior decision maker** in the business, and they must be able to attend all workshops and complete all activities.

Registration opens: **28th August 2025**
Registration closes: **30th October 2025 23:59**

https://iuk-business-connect.org.uk/opportunities/global-business-innovation-programme-robotics-automation-in-manufacturing-south-korea/

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Robotics Showcase

- Keep an eye out for the InnovateUK robotics showcase in March2026

Innovate UK | Business Connect

Find out more

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LinkedIn: https://www.linkedin.com/in/agnes-wamagui/
Schedule an introduction meeting with me:
Book time with Agnes Wamagui

https://iuk.ktn-uk.org/

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