

The UK's marine robotics platform for proving, validating and demonstrating advanced marine autonomy, technology and digitalization

# Pioneering technology development

Smart Sound Plymouth is the UK's premier proving area for designing, testing and developing cutting edge products and services for the marine sector. This multi-million pound development provides access to first class off-and onshore facilities plus award-winning marine science and technology expertise.

## Providing access to a unique combination of:

- Largest marine scientists & technologist grouping in the UK
- UK's premier triple helix autonomy cluster: Future Autonomous at Sea Technologies (FAST)
- Unique UK net zero ocean observing capability
- Diverse testing environment and >1,000 sq. kilometres of authorised, de-conflicted water space
- Private high speed marine communications network (with 5G & offshore mesh capability)
- Interconnected remote operation centres
- System of Systems capability with interconnected sub-surface, surface & aerial autonomous platforms
- Digital twins & simulations to drive a UK Centre for Autonomy Assurance & Regulation
- Hands-on learning & research for the marine + maritime workforce.

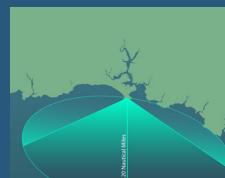
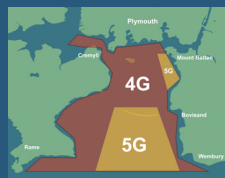
The area's impressive variety of water depth, sea states and weather conditions is perfectly suited for conducting sea trials, including sub-surface trials with access to offshore water depths of 75m, providing the ideal environment for multi-platform mission operations.



# Pathways to innovation:

## Smart Sound Connect - Advanced marine communications network

Smart Sound Connect delivers world leading advanced communications infrastructure across the entire Smart Sound. Incorporating a private 4G/5G marine network that will provide full coverage across the coastal proving grounds in partnership with Vodafone and Nokia. Offshore high-speed communications are delivered through Steatite's Wave Relay mesh network. The 4G/5G and mesh networks are seamlessly integrated to provide an advanced communication capability from the quayside to over 20 miles offshore. Access to these private networks is delivered through three high performance remote operations centres based across Plymouth. Smart Sound Connect further cements Plymouth's position at the forefront of marine technology development.



## Platforms for technology testing, including data buoys & sensors

A variety of platforms provide the opportunity for trials and validation of basic prototypes through to commercial product development. Data buoys are equipped with a range of sensors to measure atmospheric and marine parameters, which include an autonomous water column profiling buoy, a first for UK marine waters. High speed communications allow real-time remote sensor diagnostics enabling system monitoring and reconfiguration throughout the trial.



## Autonomous Research Vessel

Research Vessel Oceanus will be a fully autonomous, AI powered marine research vessel. Oceanus will be capable of navigating the global ocean, showcasing the capabilities of the UK both nationally and internationally. It will also act as a testbed for autonomous systems and other technology that can be utilised by businesses looking to test and certify in Smart Sound. As the UK marine research community embraces the advantages of marine autonomy, there will also be an ongoing research and innovation need for the development of new sensing systems to accurately measure the Essential Ocean Variables (EOVs). The Oceanus will play a critical role in providing the UK with a state-of-the-art ocean-going platform for science and innovation delivery.



## Leading marine science and technology expertise

Smart Sound Plymouth provides access to world-renowned, award-winning marine science and technology expertise. Offshore testing is complemented by onshore facilities, including state-of-the-art laboratories and testing environments for small to large items of equipment. The team is experienced in working with commercial organizations and on confidential projects, whilst working to time and budget.



## Large fleet of surface and subsurface autonomous and unmanned vehicles

Smart Sound provides access to a wide range of surface and subsurface platforms to facilitate dedicated unmanned systems trials. Fully integrated platforms deliver a system of systems mission capability, integrating subsurface, surface and aerial capabilities.



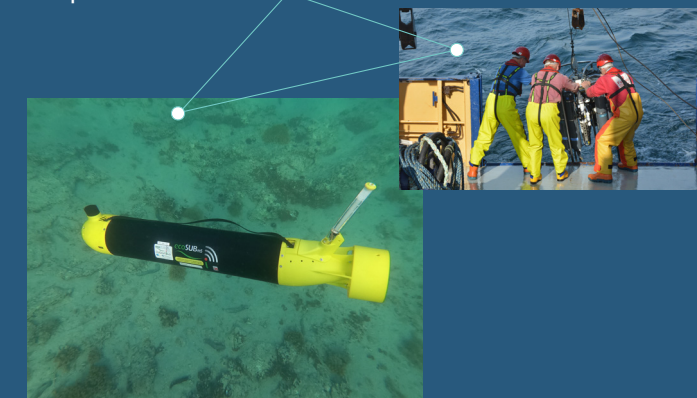
## Maritime Autonomy Assurance Testbed

Lloyd's Register and the National Physics Laboratory (NPL) are collaborating with Smart Sound Plymouth to deliver the Maritime Autonomy Assurance Testbed (MAAT). This programme will develop the world's first assurance framework for Maritime Autonomy, bringing together leading global and local businesses, world-ranking universities, national agencies and Research & Technology Organisations (RTOs).

MAAT combines the fully digitalised 'Smart Sound' of authorised, deconflicted water space with the world's first reliable virtual test environment providing the entire UK with the opportunity to scale and exploit applications of Maritime Autonomy to the full.

## Western Channel Observatory: putting the 'Smart' into Smart Sound

A wealth of data and specialized interpretation makes the waters of Smart Sound some of the most intensively sampled and best understood on the planet.







# PLYMOUTH

Millbay Docks

Billacombe

A38

Dee

Fore

A3121

Broad

- Advanced private marine communications network, including 5G and Wave Relay capabilities.

- Over a 1,000 sq. kilometres of authorised and de-conflicted water space.

- Western Channel Observatory - putting the 'Smart' into Smart Sound.

- Centre of excellence for marine autonomy assurance.

- Largest grouping of marine science and technology expertise in the UK.

- State-of-the-art fleet of surface and sub-surface autonomous vehicles available for trials.

## SMART SOUND PLYMOUTH

- Interconnected high performance remote operations centers for mission delivery.

- Platforms for technology testing, including data buoys & sensors.

- Research and mission support vessels.

- Future Autonomous at Sea Technologies (FAST) Cluster.

# Explore your pathways to innovation

To find out more please contact:

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Smart Sound Plymouth is led by Plymouth Marine Laboratory in partnership with the University of Plymouth, Plymouth City Council, the Marine Biological Association and the University of Exeter. This partnership boasts considerable expertise in autonomous systems, environmental sensor technologies, alternative propulsion, advanced manufacturing and cyber security.

## Future Autonomous at Sea Technologies (FAST) cluster

The FAST cluster is the largest marine autonomy cluster in the UK and provides access to collaborate with leading industrial and academic partners specialising in the delivery of innovative marine autonomous solutions, such as: surface and sub-surface autonomous systems, advanced manufacturing, smart ports and cyber security.

The FAST infrastructure includes platforms, sensors, advanced power systems and communication networks to Smart Sound Plymouth. The cluster is playing a significant role in marine autonomy assurance and regulation.



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