



Charting a course for autonomous vessels

The challenge

Like self-driving cars, self-driving or autonomous vessels are rapidly developing. Limited testing facilities and unclear regulatory pathways are major challenges in developing operational uncrewed and autonomous marine vessels in Australia. Tropical waters, which make up around 42 percent of the world's oceans, pose unique challenges for marine technology.

The approach

AIMS is exploring innovative ways to use next-generation sensors and autonomous vessels to provide more comprehensive knowledge about our marine ecosystems, faster, to inform sustainable management. In 2022, with the support of the Queensland Government, AIMS opened Australia's first marine technology facility, ReefWorks, at our headquarters near Townsville.

ReefWorks provides the expertise and facilities to routinely test and evaluate marine robotics, autonomous systems, and artificial intelligence (RAS-AI). It is also the first such facility in Australia, and one of the few in the world, located in tropical waters.

The capability to verify these systems as fit-for-purpose, safe to operate and environmentally compliant is essential for their certification and commissioning into operational service.

AIMS is also working closely with organisations such as Trusted Autonomous Systems (TAS) and regulatory authorities to help bring maritime regulatory frameworks into the 21st century.

The impact

ReefWorks provides Australian innovators with a safe, secure facility and dedicated expertise to test and evaluate marine RAS-AI in a tropical, real-world environment.

In 2022, ReefWorks facilitated the first tropics-based component of Royal Australian Navy exercise, Autonomous Warrior and facilitated the first significant commercial demonstration of multiple autonomous vessels in Australia – the TAS Maritime Showcase – testing a new framework for uncrewed vessels to comply with existing maritime regulations.

ReefWorks is a key link in development of the north Queensland technology hub and is positioned to be an important catalyst of Australian innovation in marine RAS-AI. Operationalisation of marine RAS-AI will reduce human risk, environmental impact, and operating costs, while scaling up capability to perform a wide range of tasks from marine monitoring and mapping to surf rescue, border patrol and ocean surveillance.

In its first year of operation, ReefWorks test ranges were used by five Australian innovators to test and evaluate marine technology products: ADR, Unique Group, Edge ROV, James Cook University and Surfbee. Its inshore test range is the first Australian facility granted regulatory sandbox status, removing the time-consuming hurdle for innovators of having to secure individual permits.



FIRST

SIGNIFICANT COMMERCIAL
DEMONSTRATION OF
AUTONOMOUS VESSELS
IN AUSTRALIA



5

INNOVATORS TESTED
MARINE PRODUCTS IN
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MARINE TECHNOLOGY
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IMPORTANT

LINK

IN THE NORTH QUEENSLAND
TECHNOLOGY HUB