

# Laurie Prandolini Fellowship for Collaborative Research into Autonomous Marine Fleets



The Institute of Marine Engineering, Science & Technology (IMarEST) has awarded its Laurie Prandolini Research Fellowship of AUD14,000 to Fletcher Thompson. Fletcher holds a BEng degree in naval architecture and is a PhD candidate at the Australian Maritime College of the University of Tasmania. This fellowship will go towards supporting Fletcher's PhD research project, Project FOX (Fleet Operations and eXpeditions), aiming to "establish distributed intelligence into an autonomous marine vehicle fleet to exhibit collaborative behaviours".

Greg Hellessey from the IMarEST's Victoria Branch said that Fletcher's research was chosen because of its global potential. "Out of all the applications from across Australia, Fletcher's was an absolute stand-out in that it was clear it would be ground-breaking work

at a national and international level. His work here is pushing into new ground in the maritime sphere around the world."

## Built-in Collaboration

Autonomous marine vehicles that have the capability to collaborate will be able to achieve multi-faceted and complicated missions that the current industry standard solo platform would be unable to complete. Such missions include persistent and sustainable environment monitoring; autonomous monitoring and maintenance of subsea systems and structures; and, persistent search and rescue standby. The underlying requirement is that the vehicles within the fleet must be capable of recognising their ability to contribute to a task in a collaborative manner. This distributed intelligence is the primary focus of research for Project FOX.

This fellowship will fund the equipment needed for physical experiments which will extend the research, building on the existing computer-based modelling and bringing the results into the real world, according to Fletcher Thompson.

## Integrating Aerial, Surface and Subsea Autonomous Fleet

Project FOX's secondary aim is "to pursue real world fleet-specific tasks and scenarios to provide basis of applicability for a heterogeneous autonomous marine vehicle fleet". To achieve this aim, Fletcher seeks to implement an aerial, surface, and subsea fleet that is capable of performing search and rescue missions for an extended time at sea. He aims to demonstrate the capabilities of such fleets and to outline that the scope of missions for which such a fleet can be configured has no restrictions.

With the support of the IMarEST's Laurie Prandolini Research Fellowship, Fletcher will be able to obtain additional equipment for these vehicles and extend the scope of Project FOX. These resources, such as embedded high performance 3D image processing systems; laser scanning modules and high resolution mono and stereo camera units will improve the navigation and environmental sensing abilities of the fleet, to a globally competitive level.

The IMarEST awards a single AUD14,000 Laurie Prandolini Research Fellowship every year to a Doctoral candidate or post-Doctoral researcher in either marine engineering, marine science or marine technology. Applicants will be formally affiliated to a university in Australian, New Zealand or the Pacific Islands.