Persistent Maritime Surveillance

Ocius Presentation
9 October 2019
AAUS

Agenda:
i) Background Bluebottle USV
ii) Recent trials ‘scenarios’
iii) ASW with Thales
iv) Summary
OCIUS Technology Ltd

1997 - 2000
• Winner Solar Boat race in Canberra
• Inspires formation of Solar Sailor

2001 - 2013
• solar and sail and hybrid powered ferries in Australia, HK and China
• Provide design consultancy for sustainable shipping projects
• Numerous awards and honours

2014 - present
• “Nemo” prototype USV
• $3M CTD to develop an ASWUSV
• $1.6M DIH to develop “Intelligent C2 network”
• Partnerships with UNSW, Steber, Thales
• Australian SME Innovation Award Pac 2017
• AW 18 success
1) ADF:

2) Home Affairs

3) Fisheries protection

4) Oil + Gas: monitoring, asset protection

5) Science: BOM, GA, CSIRO

6) Oceanographic research
1) Fossil Fuel powered

2) Renewable energy powered
R&D - 7 patent families & 2 registered designs in USA

rudder flipper  winch  solarsail
Radar
VMS/ADSB
EW
MBES
pair with UUVs
Weather
Hurricane prediction & Tsunami sensors
WINCH-lowering sensors to significant and varying depths
Introduction

- Thales Australia partnered with Ocius Technology to demonstrate a proof of concept autonomous Anti-Submarine Warfare (ASW) surveillance system

- Acoustic linear towed array integrated onto an Unmanned Surface Vessel (USV) platform
Purpose

- Demonstrate a persistent autonomous ASW surveillance system with sonar equipment integrated onto a USV platform
- Reduce the number of personnel involved in the mission
- Elimination of repetitive, dirty and dangerous work
- Present a force multiplying autonomous system to Defence to assist large platforms e.g. surface ships and submarines
- Innovate to face the challenges of the 21st century
Project Experience

- Conducted design, prototyping, testing and trialling of sonar equipment at sea
- Able to progress from concept to demonstration in a short timeframe through R&D
- Exposed to an exciting area of development breaking new ground
Outcomes – To Date

- Demonstration team of Autonomous Surface Vessels (ASV’s) conducting sonar operations
- Successful marine detection and tracking
- Proof of concept integrated system

Next Steps

- Increased sonar detection ranges
- Fully autonomous operations
- Scalable autonomous solution
- Ruggedisation of system for safe and secure long term missions
### Capability Brick - modelling

<table>
<thead>
<tr>
<th>Target</th>
<th>1) Detection range individual BB</th>
<th>2) Detection between BB overlapping detection ranges</th>
<th>3) Picket fence 5 BBs coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Fishing boat</td>
<td>14 km</td>
<td>28 km</td>
</tr>
<tr>
<td>Case 2</td>
<td>Fast boat</td>
<td>8 km</td>
<td>16 km</td>
</tr>
<tr>
<td>Case 3</td>
<td>Ship</td>
<td>20 km</td>
<td>40 km</td>
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</tbody>
</table>

**Legend:**
- **Range** indicates the detection range of each BB.
- **Spacing** represents the distance between detection ranges.
- **Picket Fence** denotes the coverage area where multiple detection ranges are applied.
WHY?

monitoring below + above sea level
large areas long distances from mainland

Continuously

No crew
Disruptively low cost
Sovereign capability
Thank you.

Questions and Answers.