



Maritime Robotics for Defence

SUT Evening Technical Meeting- 13 February 2019

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Chief Technology Officer



AGENDA

DEFENCE ROBOTICS TRENDS & DRIVERS

MARITIME ROBOTICS IN DEFENCE

FORECASTS

CONCLUSION



ASYMETRIC THREATS

- Maintaining a technology edge when technology is changing fast
- Rapidly changing strategic environment
- New and better ways of staying ahead of adversaries
- Transient advantage is the new normal

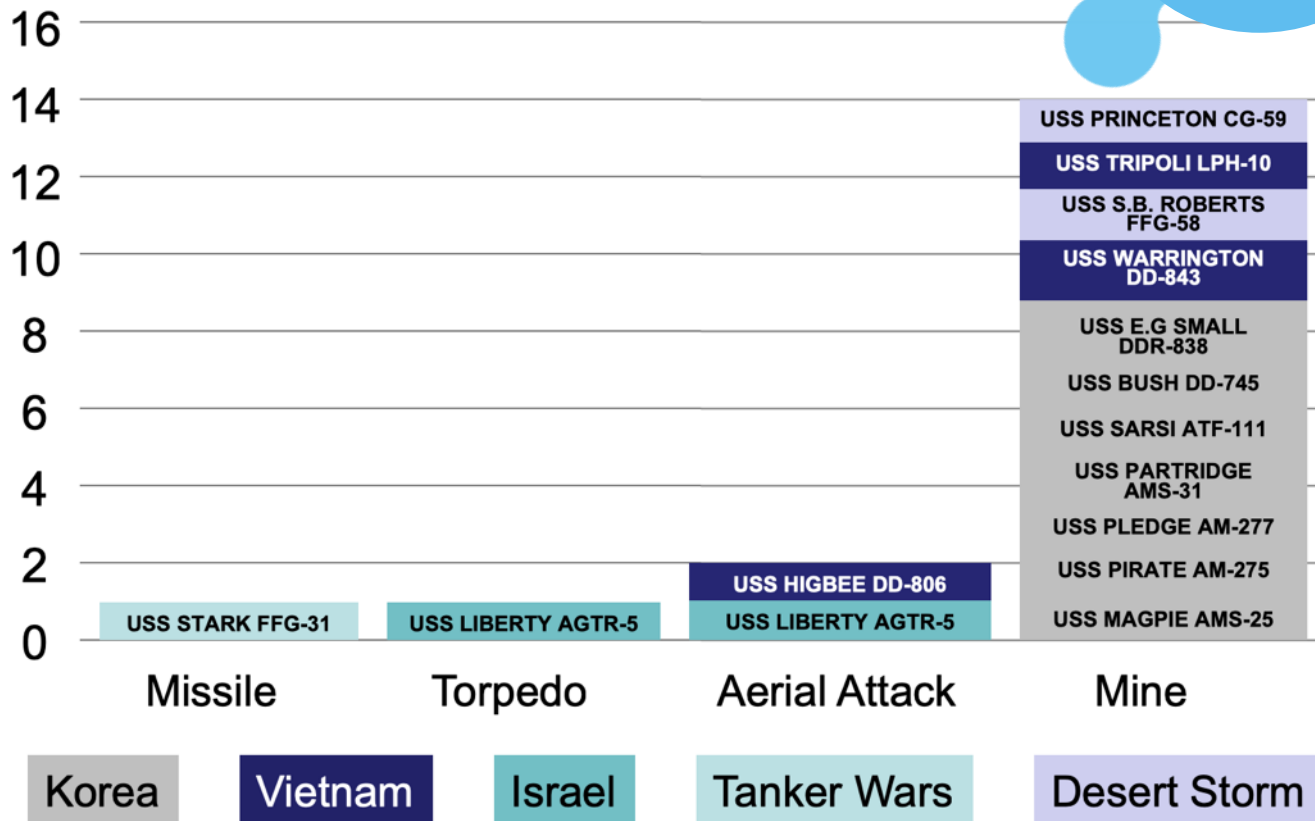
DRONE STRIKES

Enemies' lack of ethics a threat, says army chief





ASYMETRIC THREATS



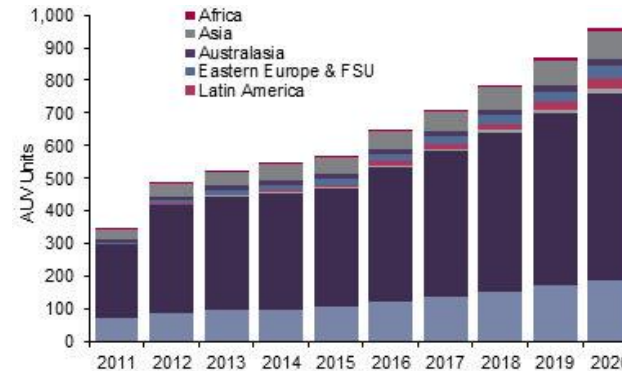
USN Ship
Casualties
1950 - 1994



FUTURE SUBMARINE & UNMANNED SYSTEMS

1988 COLLINS Design - few AUV at sea

2018



2038?



*Build
experience now
Design for the
future*

TRENDS &
DRIVERS

 **blue zone**
GROUP
AHEAD OF THE TIDE



INDUSTRY & DEFENCE EXPERIENCE

- Defence CRC Trusted Autonomous Systems
- Investment in game changing technology
- \$8 million funding and \$50 million over 7 years



Scan Eagles 2007-2012 in
Afghanistan
6,200 missions and 32,000hrs

Patricks: “AutoStrads”
Developed by Australian Centre for
Field Robotics (ACFR)

Rio Tinto: cableless drill, driverless
trucks, driverless train (ACFR)



TRENDS &
DRIVERS

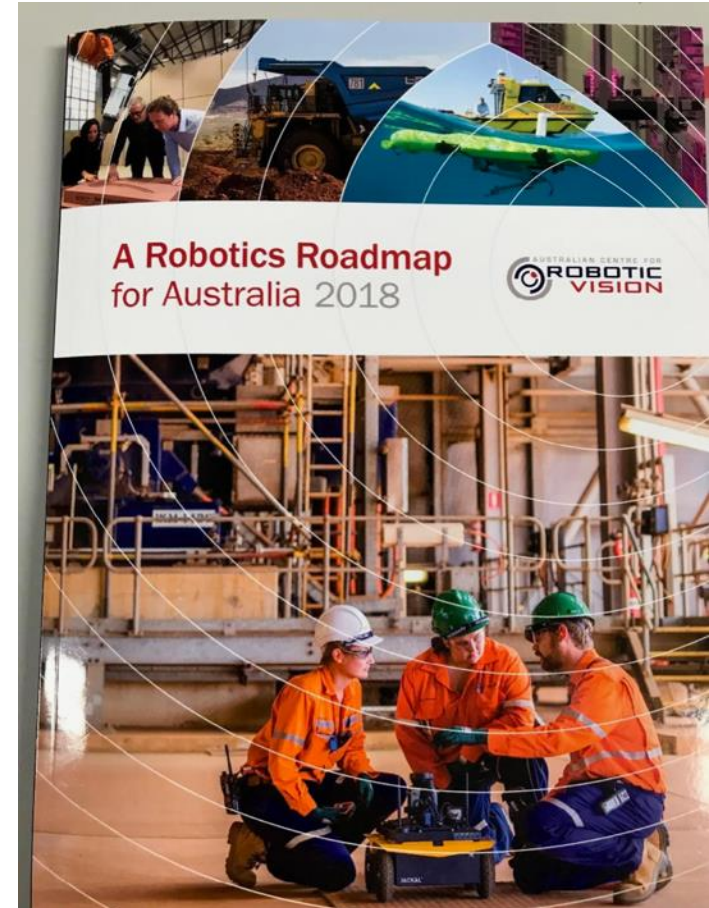


ROBOTICS ROADMAP

- Big island, Small population
- Enhance, Not Replace
- Conditions
- Balanced Human Intelligence + Artificial Intelligence
- Dull (Long ISR)
- Dangerous (e.g. MCM, Amphibious)
- Dirty (e.g. CBRN)
- Distributed effects (Swarm attack / Convoy)
- Deep (diving, sub ops)

GLOBAL
TRENDS

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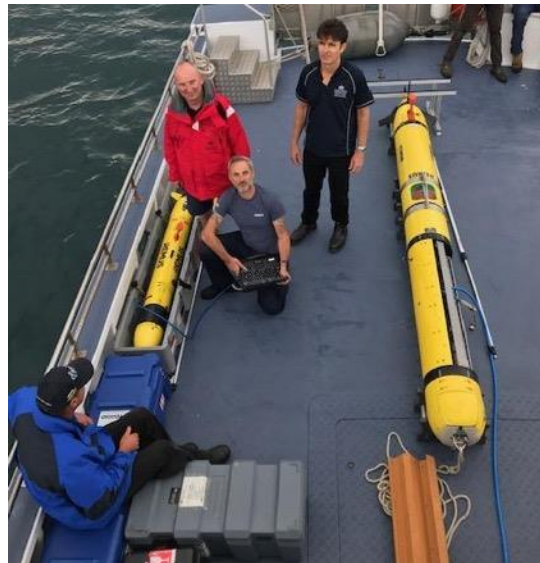
CONCLUSION



MARITIME
ROBOTICS IN
DEFENCE

AUTONOMOUS WARRIOR 2018

- Future of robotic & autonomous systems
- 450 people from 42 organisations
- UxV in maritime warfare and joint operations





SEA1179

MINEHUNTER COASTAL LIFE EXTENSION

- Ships in service to 2035
- Securing Navy MCM capability
- Autonomous: Search, Identify, Classify
- **ROV: Destroy**
- Double Eagle has the “power under the hood” for Australian conditions
- Saab Seaeye satellite link control

MARITIME
ROBOTICS IN
DEFENCE

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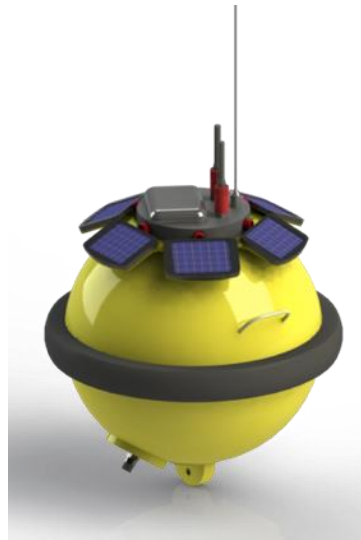




SEA1770

RAPID ENVIRONMENTAL ASSESSMENT

- Deployable Geospatial Survey Teams (DGST)
- Environmental & survey sensors
- Communications and data transmission systems
- Real time data from sea



MARITIME
ROBOTICS IN
DEFENCE





SEA2400 HYDROGRAPHIC DATA COLLECTION CAPABILITY

- Current fleet of two large and four smaller ADF hydrographic survey vessels retired
- Military & commercial
- Hydrographic & oceanographic
- Modular systems for Rapid Environmental Assessment



MARITIME
ROBOTICS IN
DEFENCE



COLLINS & SEA1000 FUTURE SUBMARINE

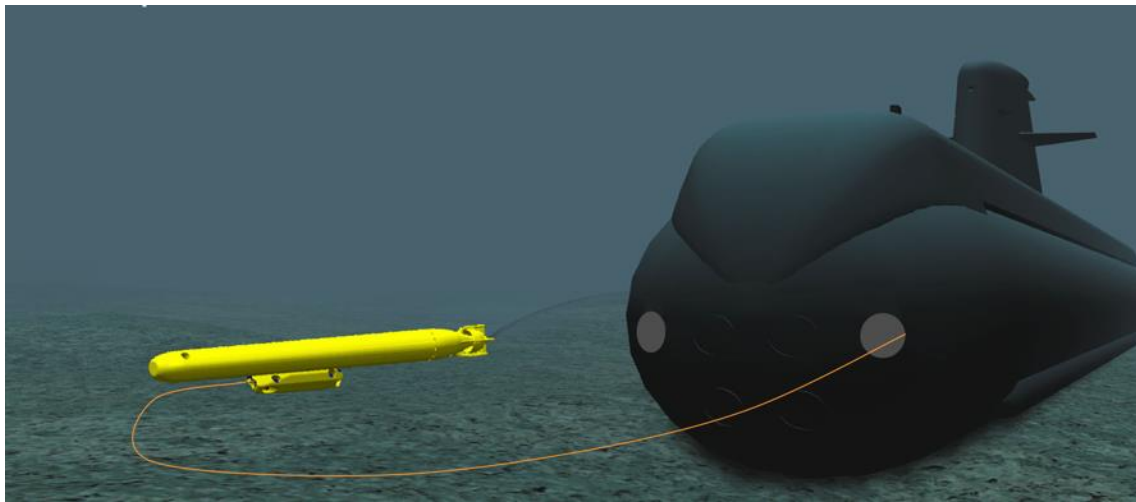
COLLINS in service to 2035

- Testbed for UUV deployment?

Future Submarine

- UUV integration

MARITIME
ROBOTICS IN
DEFENCE





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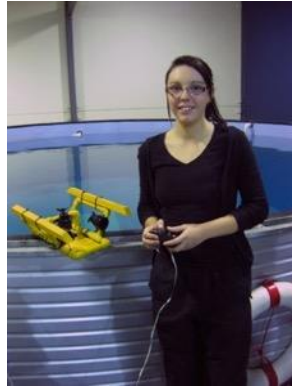
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SKILLS DEVELOPMENT



FORECASTS



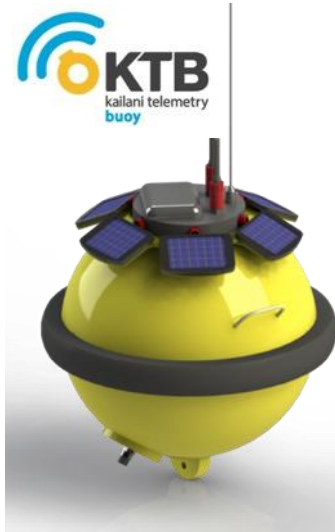
INTERNET OF THINGS @ SEA



- Wave Glider operational support



- Clever Buoy



- Kailani Buoy

FORECASTS



SOVERIEGN INDUSTRY CAPABILITY

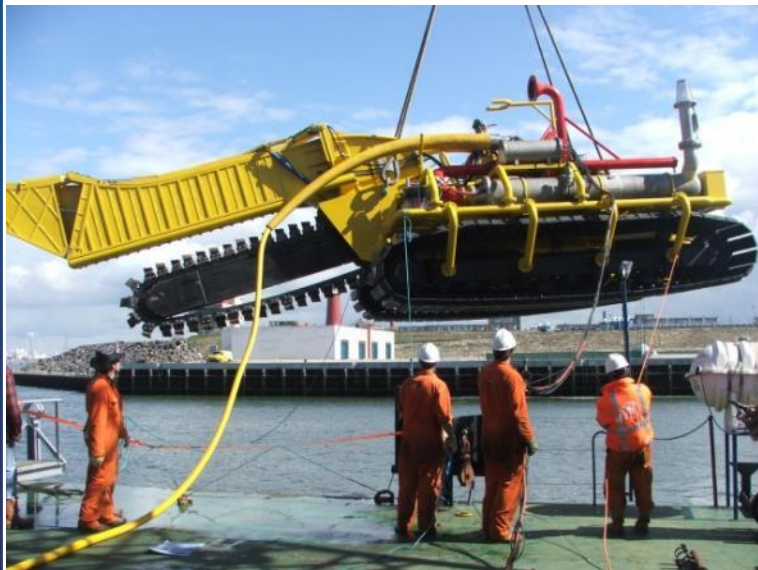


- ROV support for Navy since 2000
- Navy technician training

FORECASTS



COLLABORATION



- Q7 Windfarm
- The Netherlands

SUBTRENCH



- St Petersburg Harbour
- Russia

FORECASTS

INNOVATION

- 5-button chordic Graphical User Interface
- Started in the sea and found land applications
- Full circle?

WetPC



KORDDEFENCE





SMALL IS BEAUTIFUL

Army Z-Boats

- Army Innovation Day Sep16
- 3 boats supplied to Army May17

Roles

- River gauging
- Hydrographic Survey
- Surveillance



AUV62 Autonomous Target



SAAB

- Smarter weapons
- Smarter training
- *Train as you Fight*





AGENDA

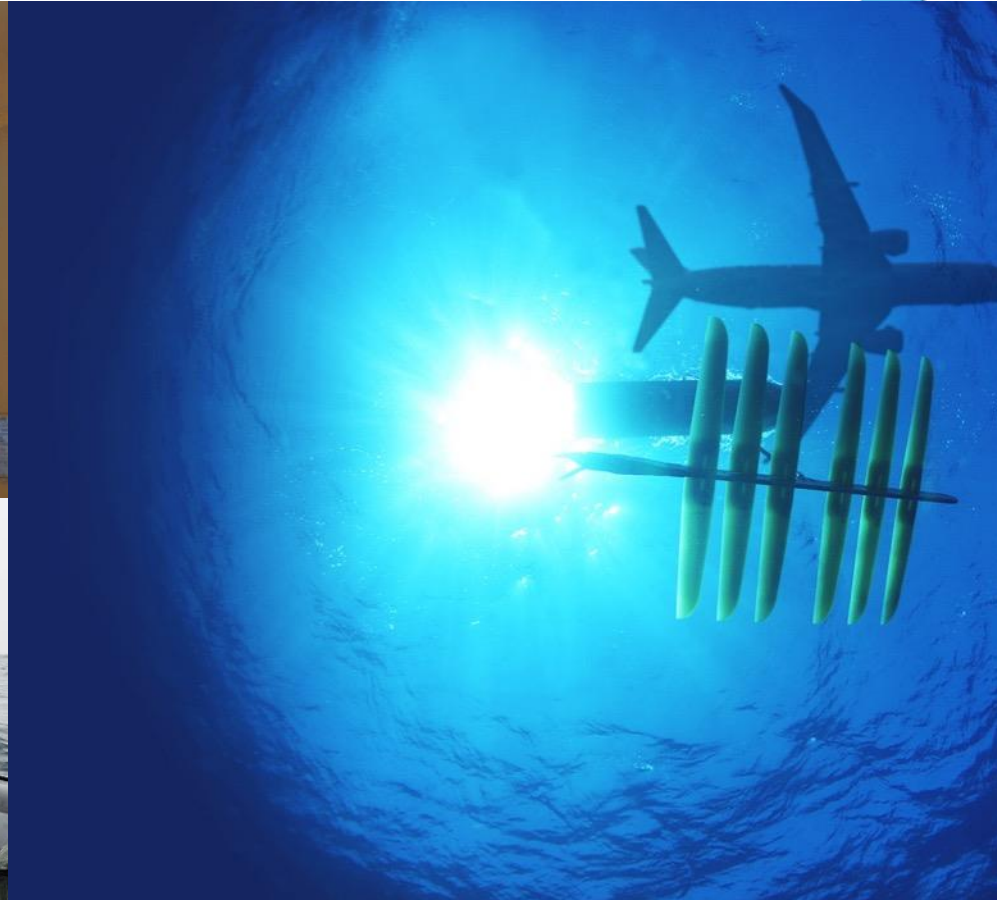
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“if you change your tools you change your world”



FUTURE INNOVATION

- Niche manufacturing
- Robotics engineering & support
- Relentless technology capability development
- More than ever a place for SME





Thank you