



TO INFINITY AND BEYOND

DAN HOOK

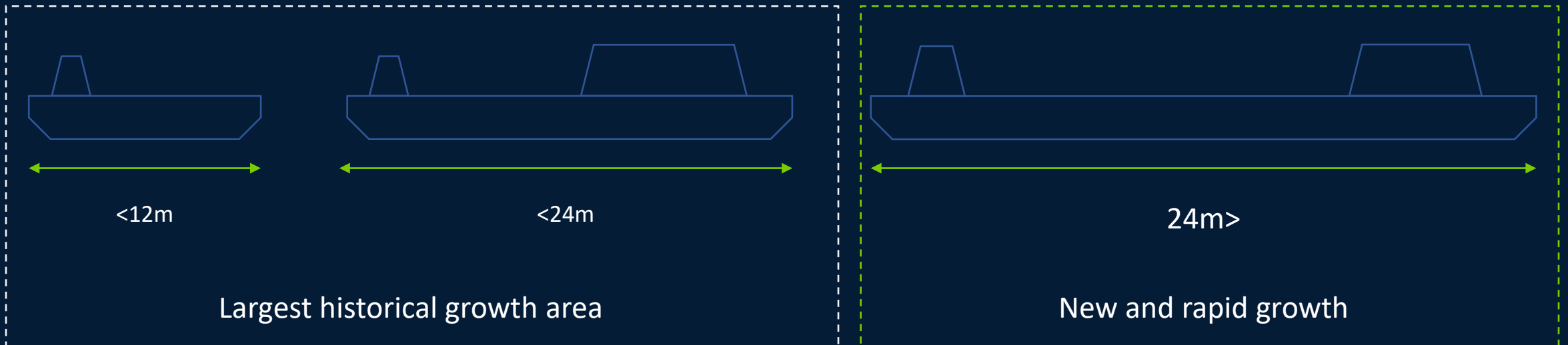
JANUARY, 2021

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- The Remote Control Centres
- Operational Safety and Efficiency
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INTRODUCTION

- Continued global progress for the development and deployment of USVs.



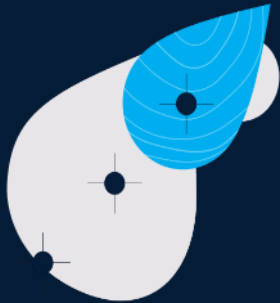
- 2020 certainly saw a growth in interest in robotics, remote working and sustainable industries
- Uncrewed and lean crewed vessels have certainly continued to gain momentum, investment. Real projects not just articles.
- Commercial and defence experience of USVs growing at a similar rate.
- Safe operations remains paramount and many of us are grateful to the ongoing work of MASRWG.



ABOUT OCEAN INFINITY

- Ocean Infinity exists to transform operations at sea by:
 - Minimising CO2 emissions,
 - Reducing offshore HSE exposure
 - Provide operational excellence in efficiency and quality
- Using the latest marine robotic technology we will provide services to all corners of the maritime industry.

MAP



Safely completing detailed and precise mapping and survey tasks.

INSPECT



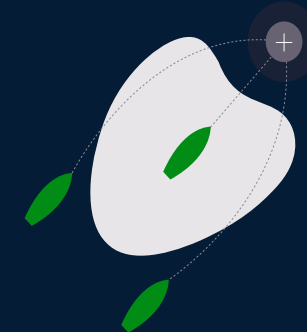
Analysing seabed assets to provide accurate and detailed information.

LOCATE



World leaders in seabed search, salvage and subsea security.

SHUTTLE



Movement of goods with zero people required at sea.



THE ARMADA FLEET

- Safe and sustainable marine operations at a new scale
 - Uncrewed and lean crewed vessels
 - Highly efficient electric vessels (large battery capacity, generator and fuel cell hybrids)
 - Carbon offset programmes
- Services will be available to a variety of sectors including offshore energy, subsea cables, construction and governments, for tasks such as:



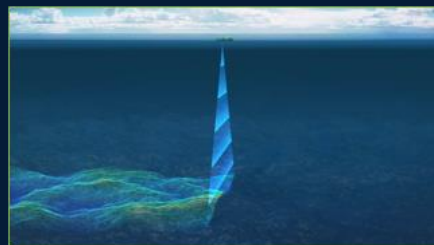
Subsea IRM



Shipping/Logistics



Geotechnical surveys



Geophysical surveys



Defence



THE ARMADA FLEET

- 3 new classes of vessel: 21m, 36m and 78m.



Armada 21m



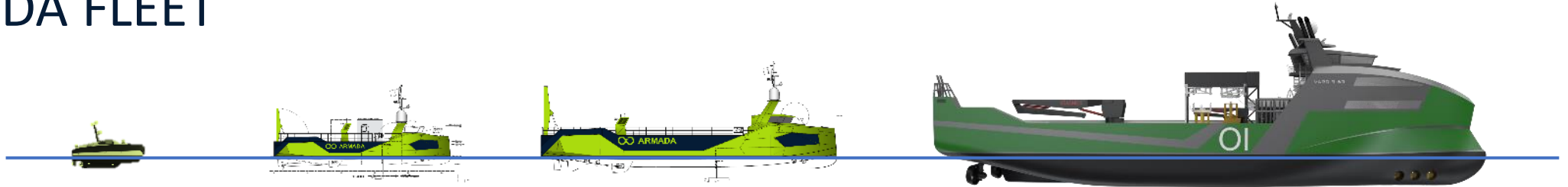
Armada 36m



Armada 78m



THE ARMADA FLEET



Specification	Armada 8	Armada 21	Armada 36	Armada 78
Length (m)	7.7 (25ft)	21 (69ft)	36 (119ft)	~78 (255ft)
Beam (m)	2.14	6.9	11.4	~15
Min. draft (m)	0.99	1.6	2.1	~5
Propulsion type	Diesel mechanical	DP1, Diesel electric battery hybrid	DP2, Diesel electric battery hybrid	DP2, Diesel electric battery hybrid
Max. speed	9	11	12	14
Cruise speed	4	6	8	8-10
Fuel capacity (m ³)	0.6	10	30	300
Moonpool size (m)	0.8 x 0.8	2.5 x 1.5	8 x 3	Two 9 x 4
Deck capacity (Tonnes @ 1m VCG)	NA	13	105	1000+
Regulatory regime	NA	DNV classed hull, MCA workboat code DNV unmanned	Classed IMO (SOLAS, MARPOL) DNV unmanned	Classed IMO (SOLAS, MARPOL) DNV unmanned TBC

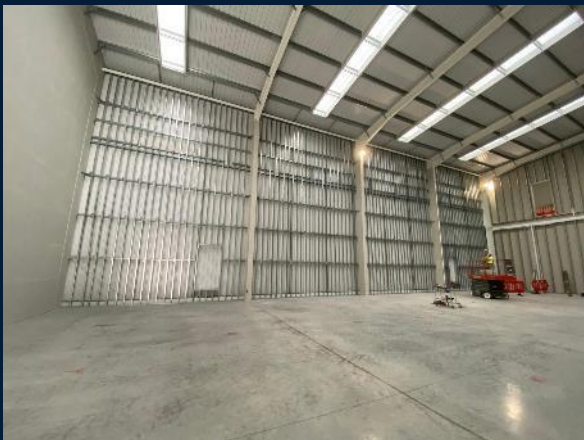


THE ARMADA FLEET IN BUILD

- GMV in Norway and Vard in Vietnam/Norway

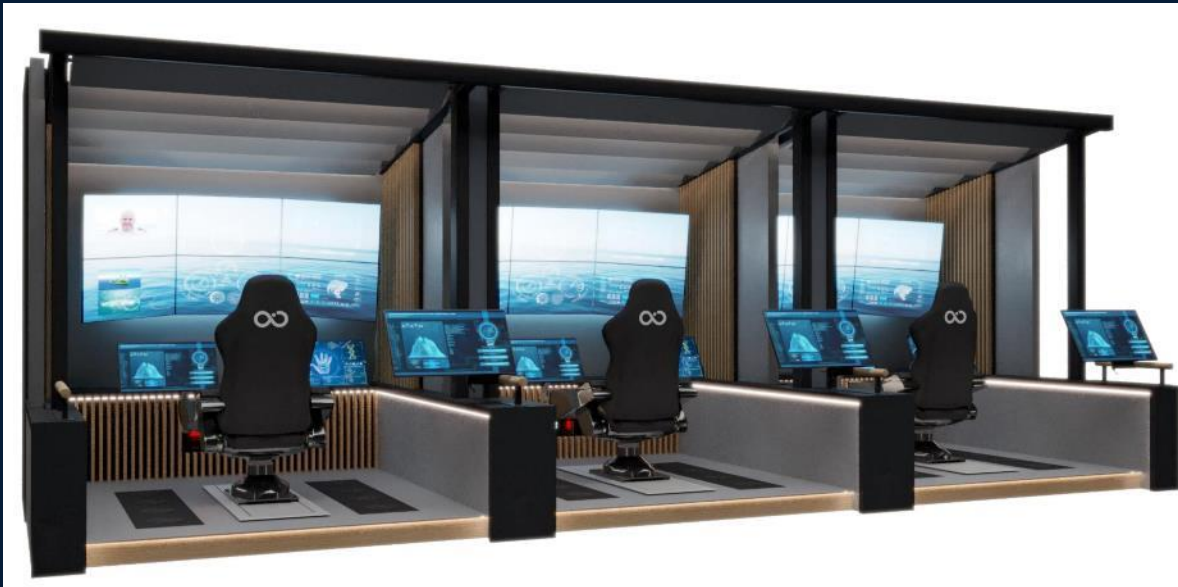


THE ARMADA FLEET REMOTE CONTROL CENTRE



THE ARMADA FLEET REMOTE CONTROL CENTRE

- Building a centre in Southampton with plans for additional centres in Austin and Singapore to facilitate regional support, efficient staffing options and control redundancy for safety and support.
- The centres will facilitate navigation, planning and training for operation of all vessels, ROVs, AUVs, remote geophysical and geotechnical payloads and 3rd party vessels.
- 6 month design process with ergonomics experts, maritime operators from commercial and Navy backgrounds, HSE experts, workflow consultants.



Operational Safety and Efficiency - Setting high standards

- Working with UK MCA, bi-weekly project meetings
- Management system in line with full statutory compliance (e.g. ISM/ISPS/9001) and client assurance (e.g. Oil companies international marine forum OCIMF)
- Operational safety case development and related HAZIDs with DNV GL
- Fleet Director (Andy Holt, Master Mariner with extensive ship management experience)
- Chief Vessel Operator (Ann Till, Master Mariner with OSV experience and operational excellence experience)
- Training and situational awareness skills (statutory + competence approach) – proving competence (scenario planning, simulator training). Dedicated training ship based out of Southampton.
- Initial roles, high level of operator qualification/experience. Initially see it as an evolution of a shore position (alternative career path to the tradition of becoming a marine superintendent, pilot, manager, HSE superintendent etc) seeing lots of people that want to move onshore but not lose the satisfaction of a hands on operational role. Encourages diversity in the sector.



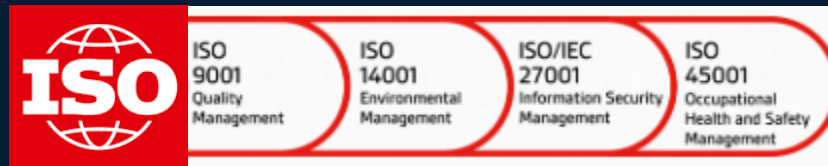
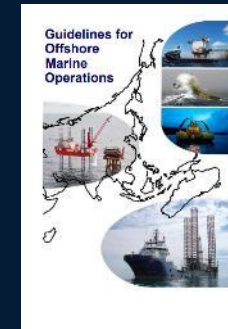
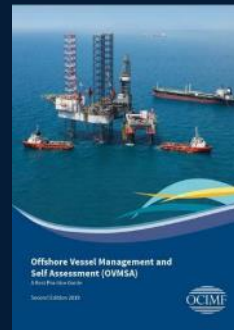
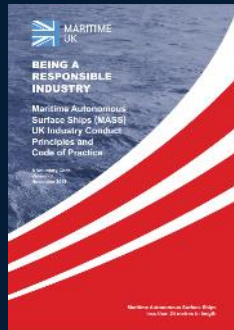
Operational Safety and Efficiency - Setting high standards

- Cyber – recruited lead from USAF, building a team for development, testing and ongoing support to ops and comms
- Systems Engineering (Colin Field) – holistic approach to design, monitoring, maintenance for reliability and predictability.
- Remote Control Centre development (systems engineering, redundancy server rooms, comms links, security etc)
- Crawl, walk, run approach. Plan to use guard vessels, onboard crew as needed but clear goal for an uncrewed future, aided by the 8m, 21m, 36m, 78m steps.
- All these points are summarised by the fact we are putting safety as the number one priority





VOLUNTARY STANDARDS : CONTRIBUTING TO OPERATIONAL SAFETY



NEXT STEPS

- Southampton opens Spring/Summer
- 21m delivers in late April, 36m in late Q3, 78m in 2022
- First deployments booked
- More recruitment
- Operational procedures and simulations
- Discussions with more national bodies
- Logistics (looking at other vessel types)
- Defence (services and technical input)
- Announcing some news on growth and new services





THANK YOU

QUESTIONS?