XOCEAN
Ocean data, delivered.
We operate the **largest fleet of survey class USVs**

**OPERATIONS**
- 130,000 hours of operation
- 1,085 missions completed
- 20 jurisdictions in 4 continents
- 30th USV hull in production

**PEOPLE**
- 224 people including 52 STCW USV Pilots
- 31% female seafarer gender balance
- Global virtual team across 15 jurisdictions
**XOCEAN XO-450 USV**

- Cameras, Antennas, Radar Reflector, Navigation Lights, Weather Station
- Control Module: PLC, Industrial PC, Autopilot
- X Band Radar, Class B AIS, VHF Radio
- Dual Satellite Transceivers
- Sensor Bay: SVP, ADCP, Modem
- Catamaran Hulls: Wave Piercing Axe-Bow Type
- Bow Thrusters
- Sonar Post, Multibeam and Sub-bottom
- Hybrid Power System: Lithium-Ion Battery, Charge Controller, Micro Generator
- Twin Electric Thrusters
- Side Scan Sonar Towfish
- Magnetometer
LEVEL 3 AUTONOMY

- Remotely operated; persistent orders “follow route”
- USV Pilot monitors execution

SAFE BEHAVIOURS

- Heartbeat for USV Pilot connection
- Imminent grounding and collision

REMOTE ENGINEERING

- 3,000 monitored indications
- Redundant critical systems
- Automated checks and trends
MASS Regulatory Framework

CURRENT STATE

- Regulatory requirements vary by individual coastal states
- Most are ad hoc risk based, some cross-jurisdiction recognition

CHALLENGES

- Inconsistent and unpredictable
- Ship-scale risks applied to small USVs

FOR IMO MS CONSIDERATION

- Size and speed differentiation
- Compatibility and reciprocity
- Role of IMO for small USVs