UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Mobile & Marine Robotics
Research Centre
www.ROVLatis.ie

ROV Latis

Dr. Daniel Toal
Director - Mobile Marine Robotics Research Centre

ROV Latis *(Smart ROV)*

- Designed and Built at UL ~ €1m
- Flexible: surface, inshore and deep ops to 1,000m
- 6 DOF motion with redundancy, and fault tolerance
- *State of the Art* Fibre Gyro based INS – Precision navigation
- *State of the Art* imaging sonar,
- *Beyond the state of the art* control & Autopilot
- Hardware-in-the-loop test prior to mission
- Simulation, development, planning, control and off shore operations tools – Integrated as one**.**
- Open architecture, multiple fibre passes enables integration of high bandwidth third party instruments onto platform with precision flight control

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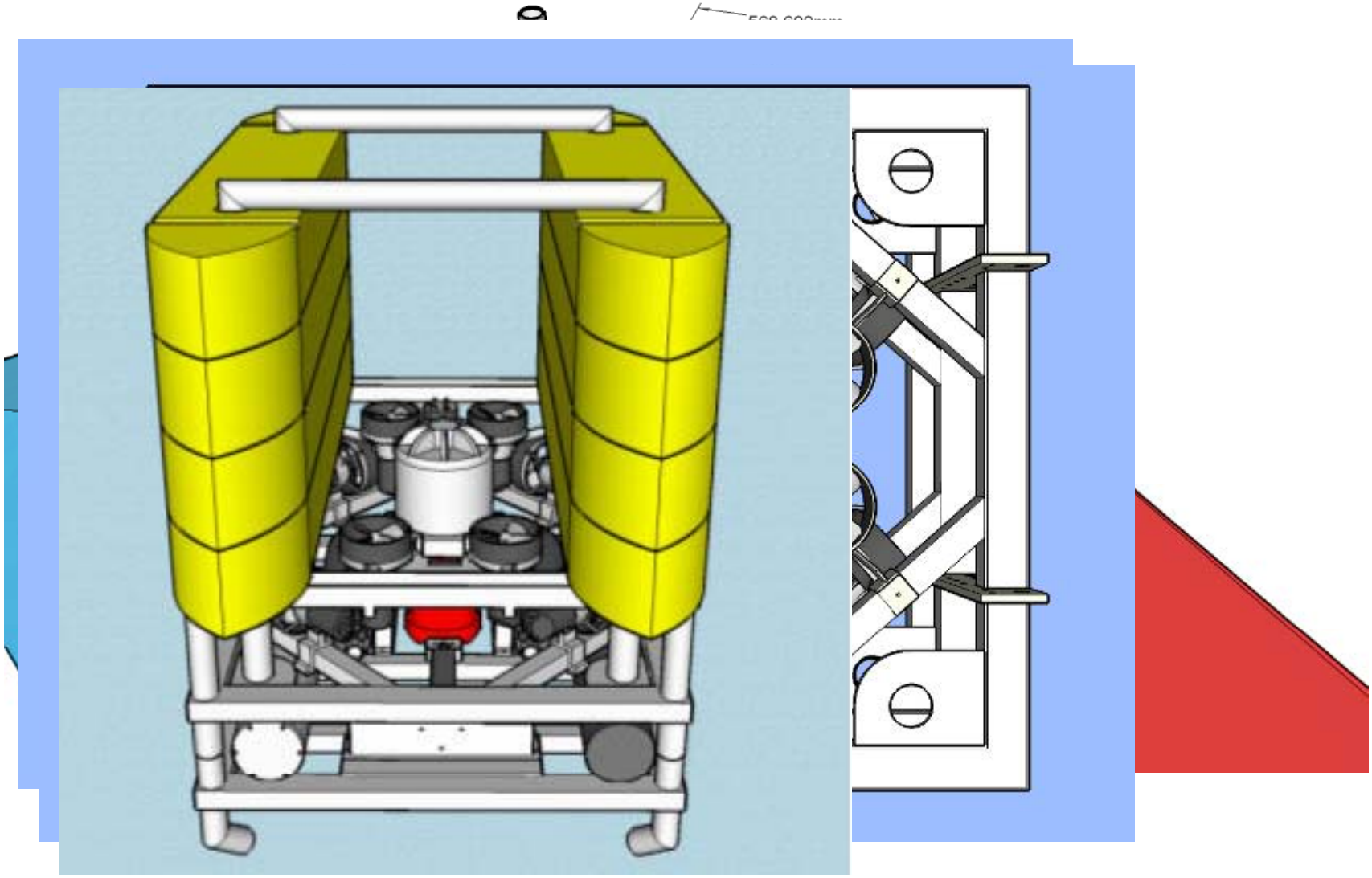
ROV LATIS

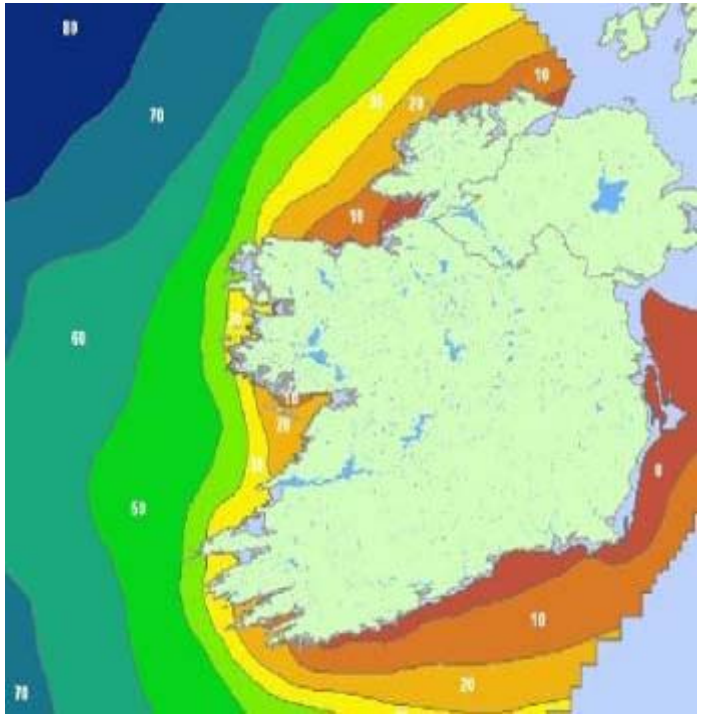


ROV LATIS

– Large seabed territories

– Best Wind and Wave Resource

– ROV Latis – *Ops from the beach to 1,000m*
Can access most of Irish seabed zone.



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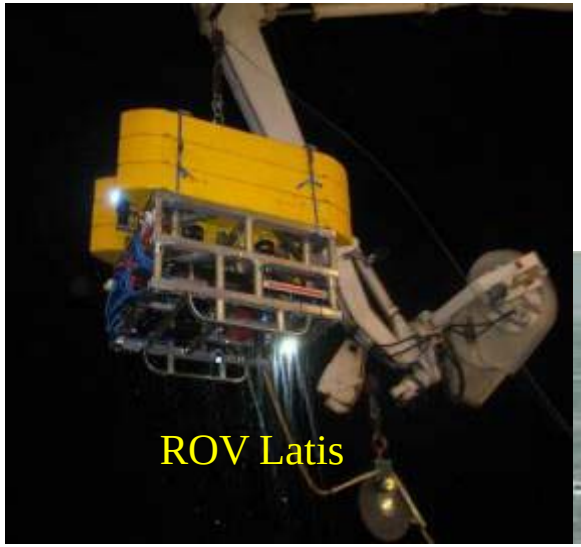
ROV Latis designed for flexible deployment on large Research Vessels and Smaller Inshore Boats.


ROV Latis

INFOMAR RV Keary


P&O Offshore Wind Service Cat

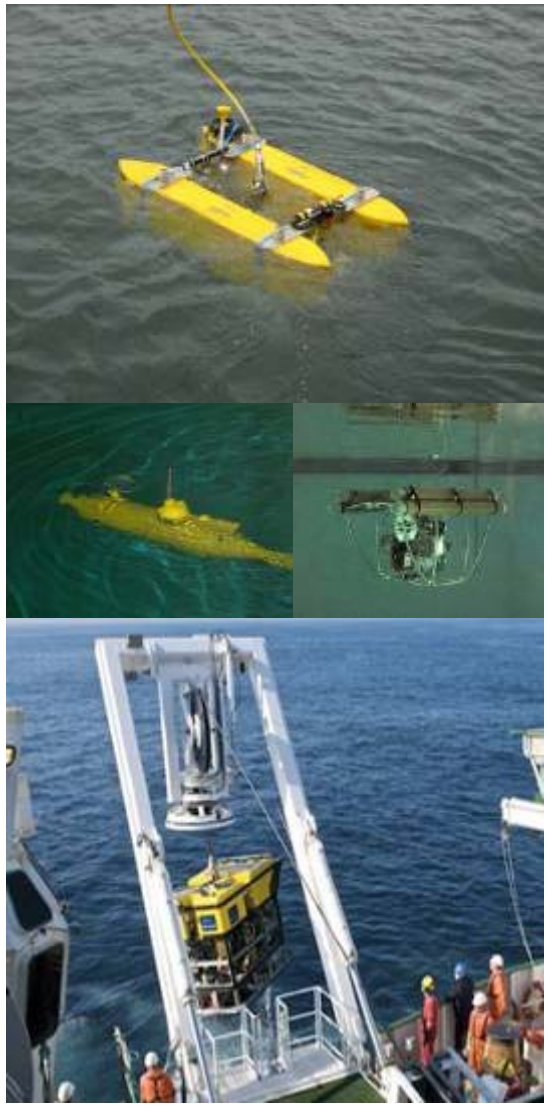

Multi Cat Shannon One


RV Voyager & Explorer

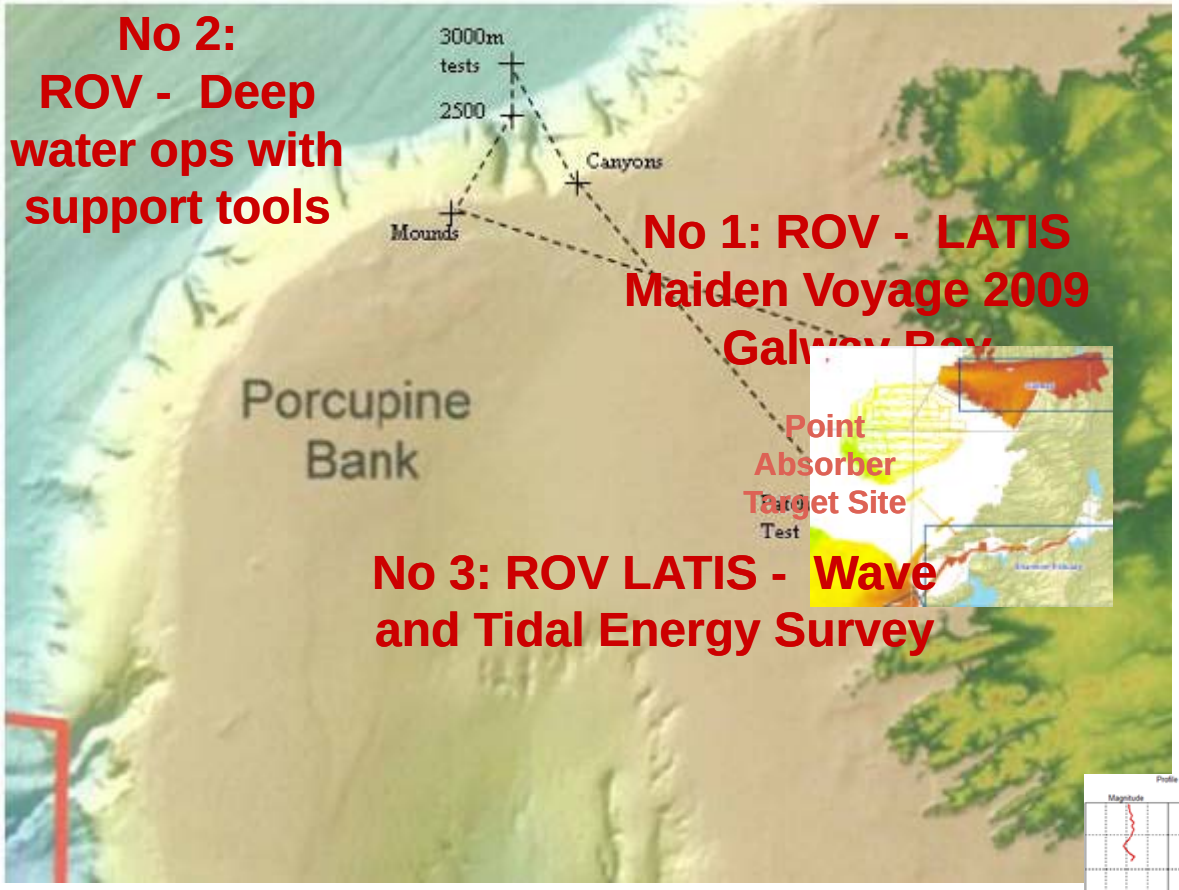
Marine Robotics Research Centre

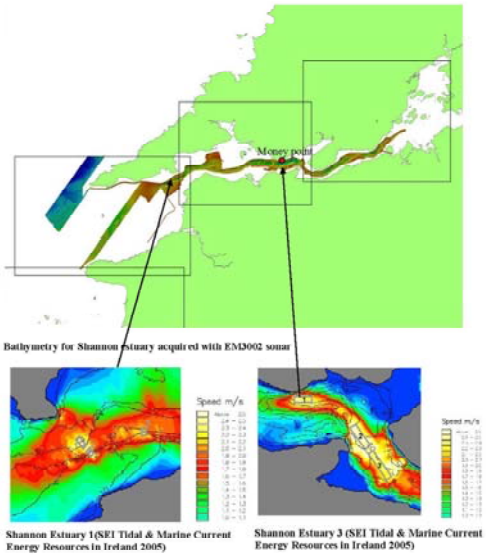
Control & Instrumentation Engineering
Focus for Ocean Engineering and Offshore Ops.

- Electrical Engineering
- Control Engineering
- Instrumentation
- Modelling
- Ocean Engineering
- ROV Operations Offshore
- Offshore Support Tools

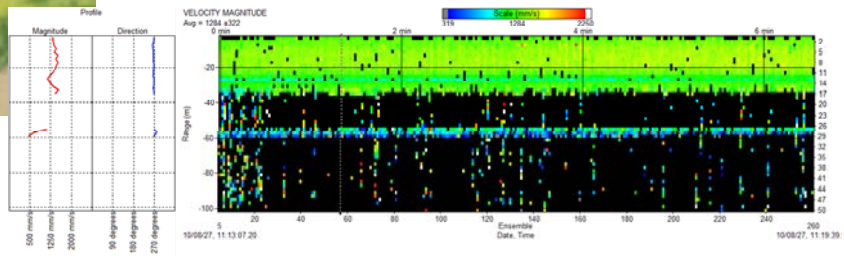


Three Recent Ocean Energy ROV Surveys

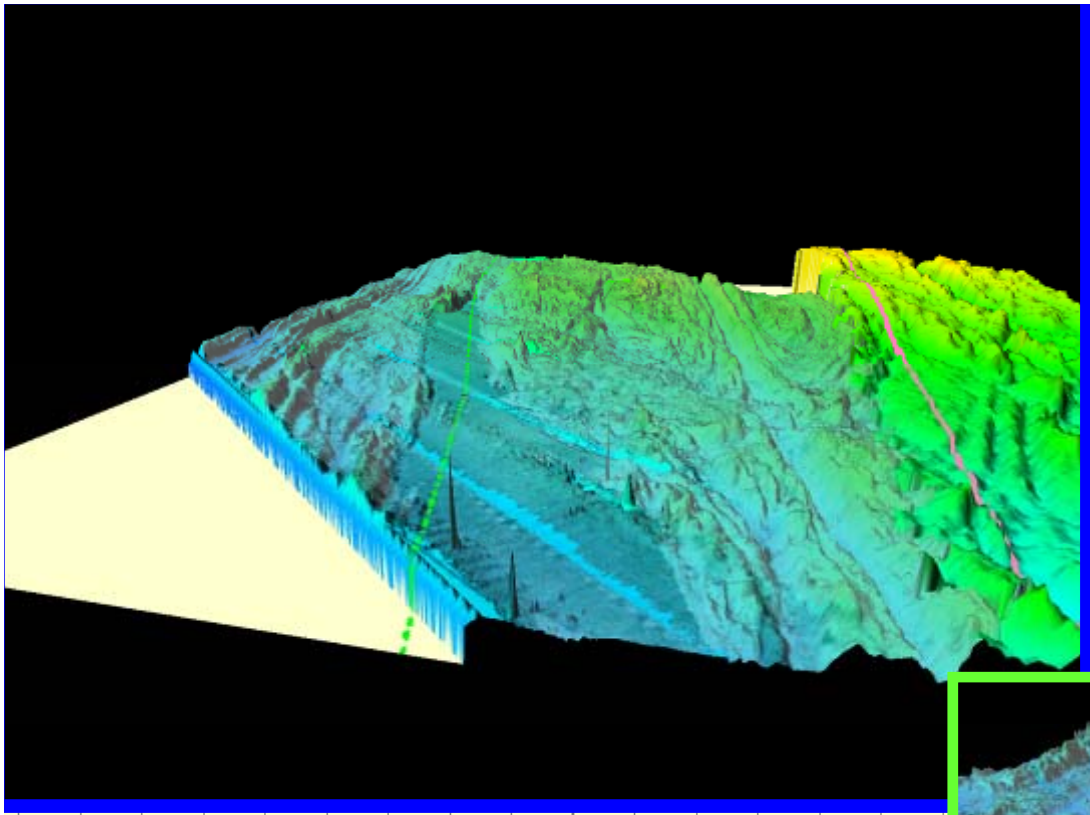


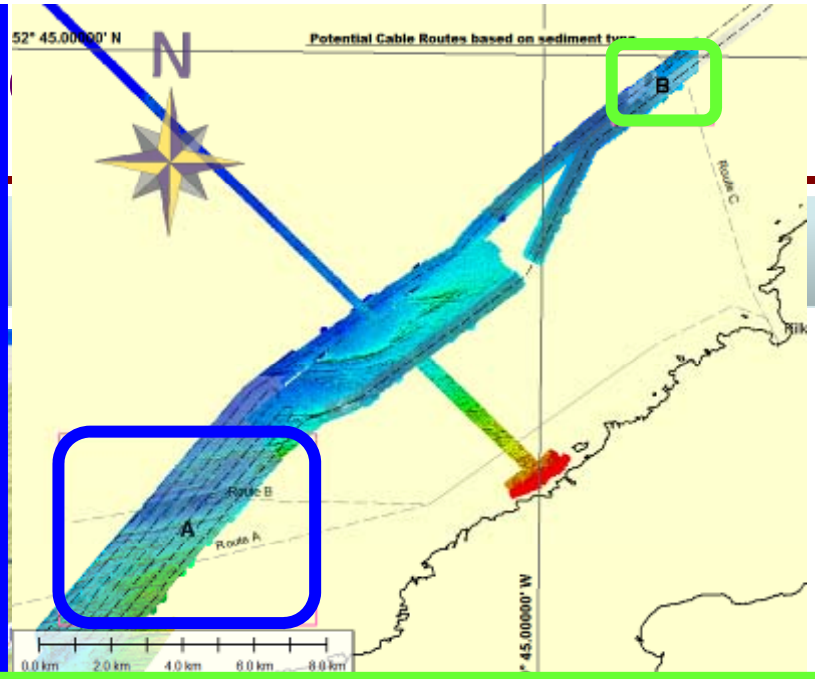


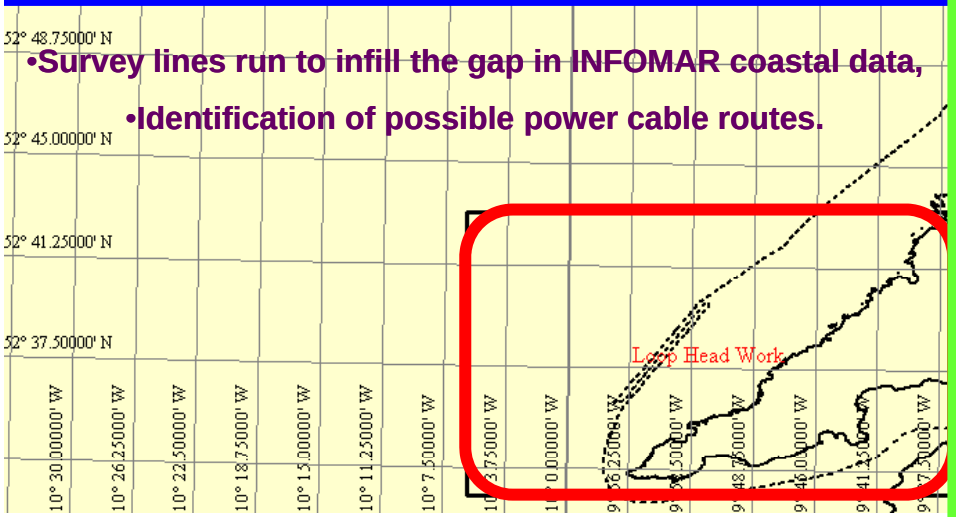
No 3: Tidal Energy Experimentation



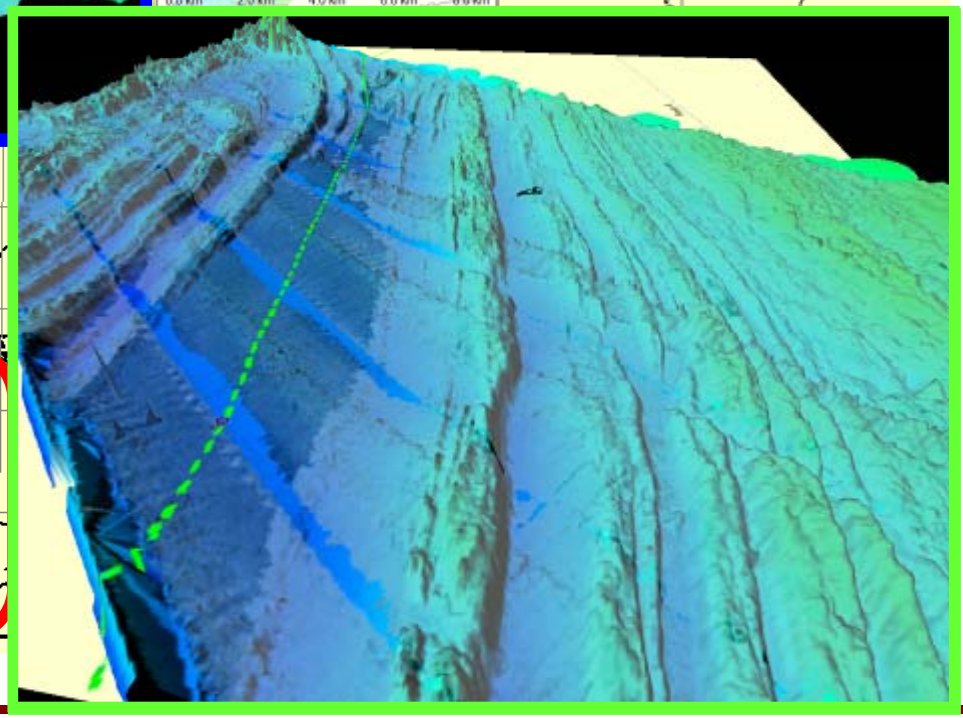
Current profiling, operations in strong currents, cable route – high res bathymetric survey







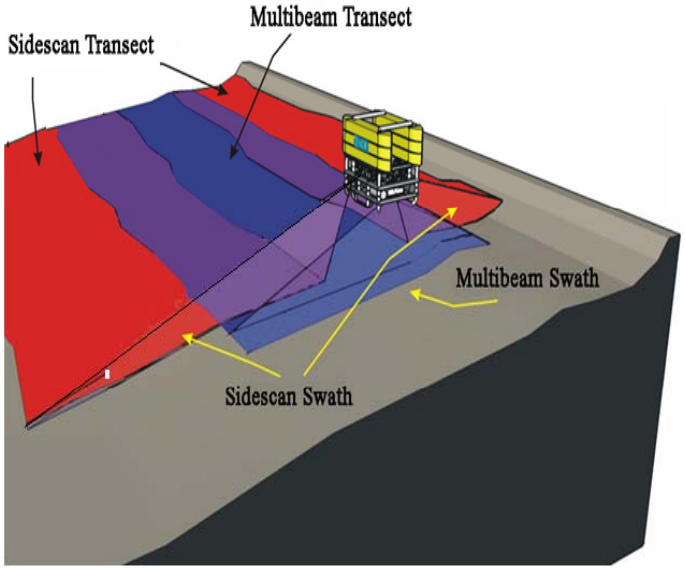
- **Survey lines run to infill the gap in INFOMAR coastal data,**
- **Identification of possible power cable routes.**

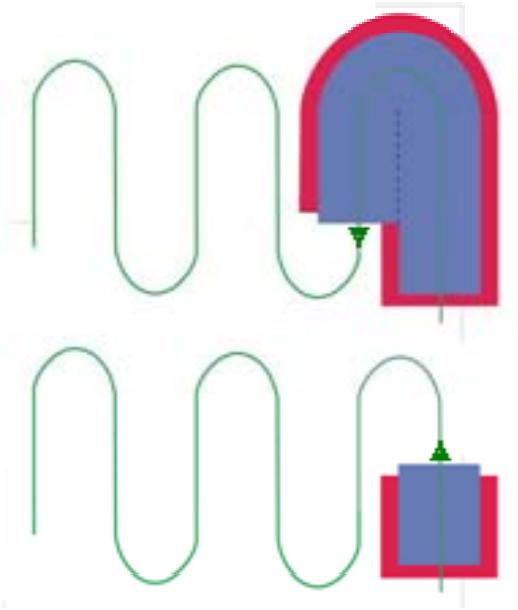


Adaptive Multi-Sonar Controller

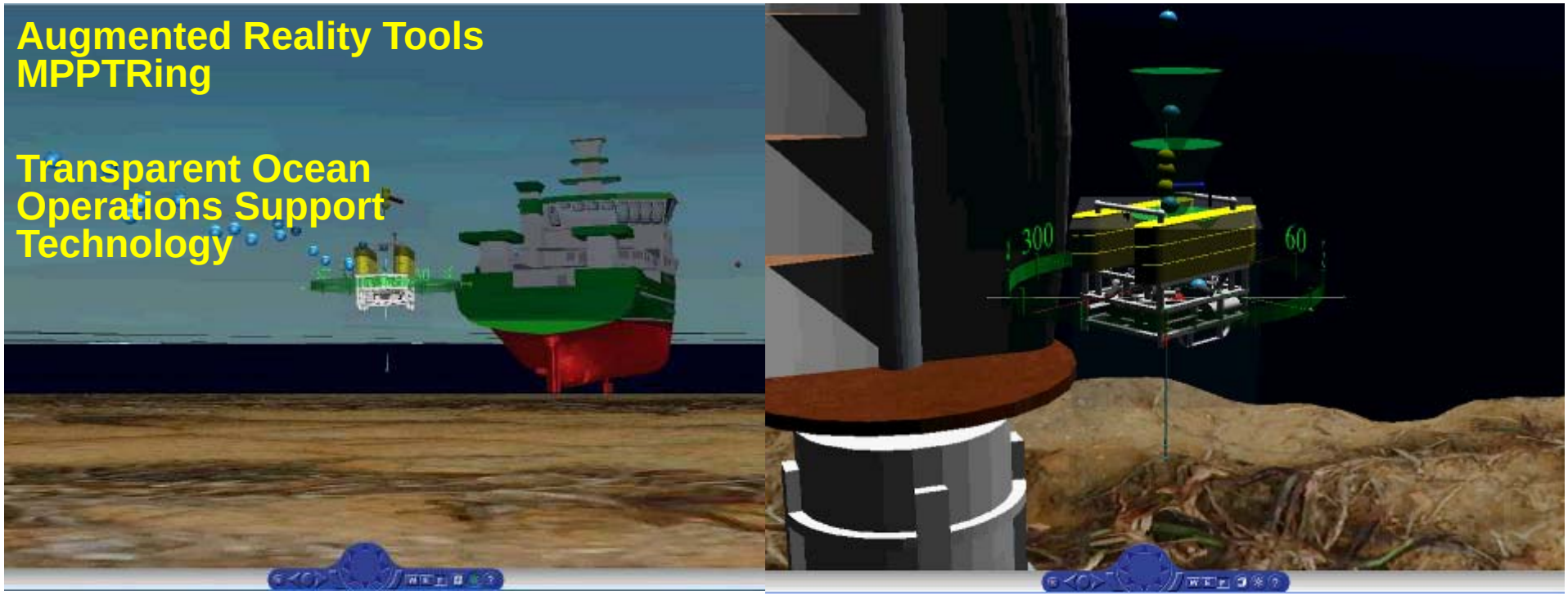
Patented Real-time Terrain Adaptive Ping Controller based on MBES returns.

Allows simultaneous acquisition from multiple sonar and sidescan. Guaranteed co-registered data sets.





Saves ~ 50% Survey time at > $20k per day for ship.
Saves similar (~50%) in sonar data processing.



3D augmented reality displays of the ROV in the underwater environment provided in real time to the Pilot.

Made possible with:

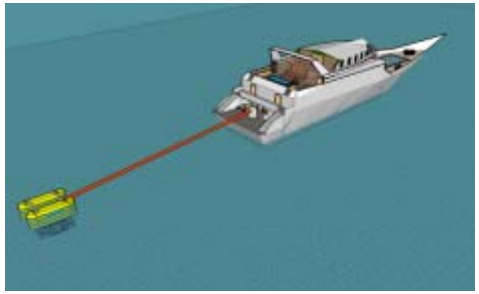
Precision Navigation – Fibre gyro INS aided with: USBL, DVL precision depth, DGPS on surface, etc.

Advanced Autopilot Control, precise auto transect following, station keeping, etc.

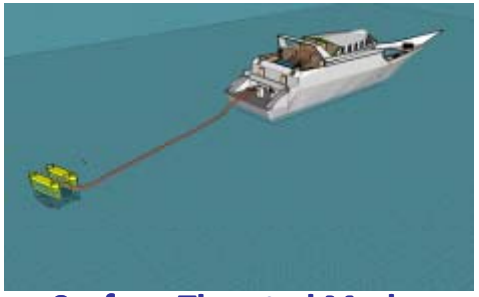
Realtime 3D modelling. Modelling of waves- current, seabed synthesis engineered structures: surface vessels, ROVs, platforms, energy converters, pipes, cables.

Smart ROV$_{LATIS}$

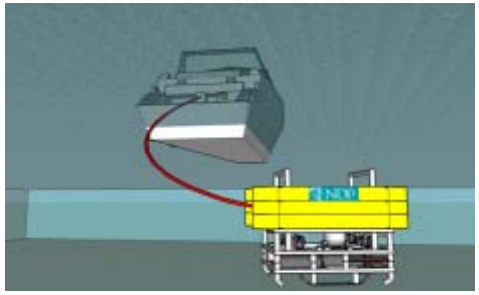
Unique Prototype Platform with Multiple Modes of Operation



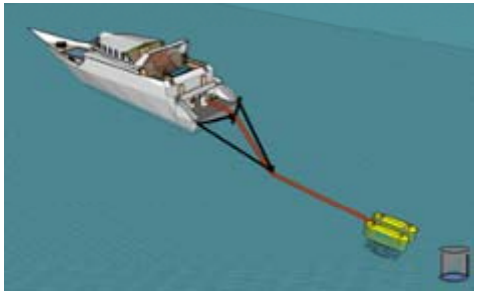
Surface-Tow Mode
Float design for surface waves



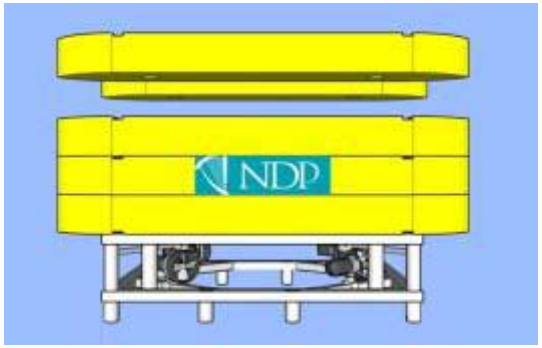
Surface-Thrusted Mode



ROV Operation Mode



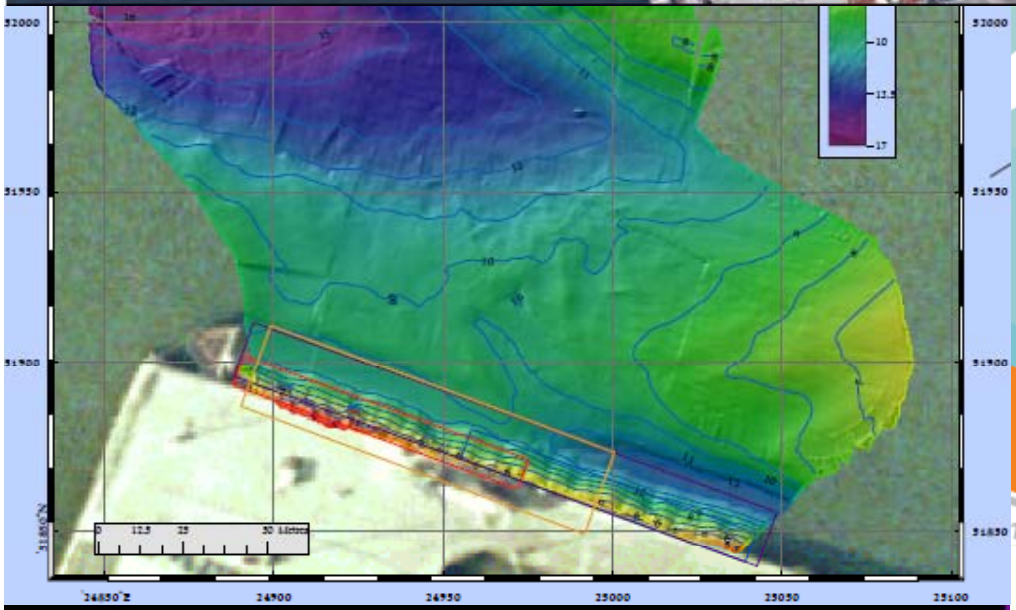
ROV Submerged Tow in
Strong Currents

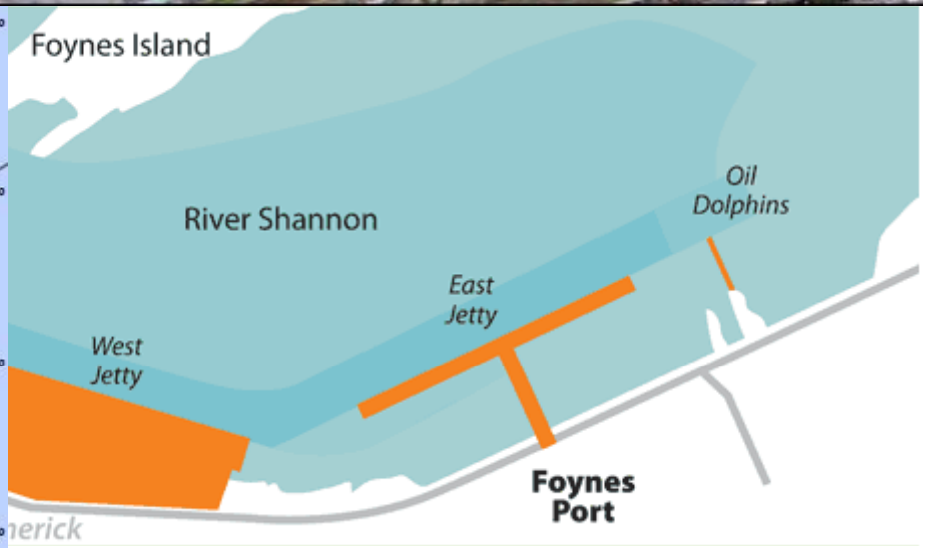


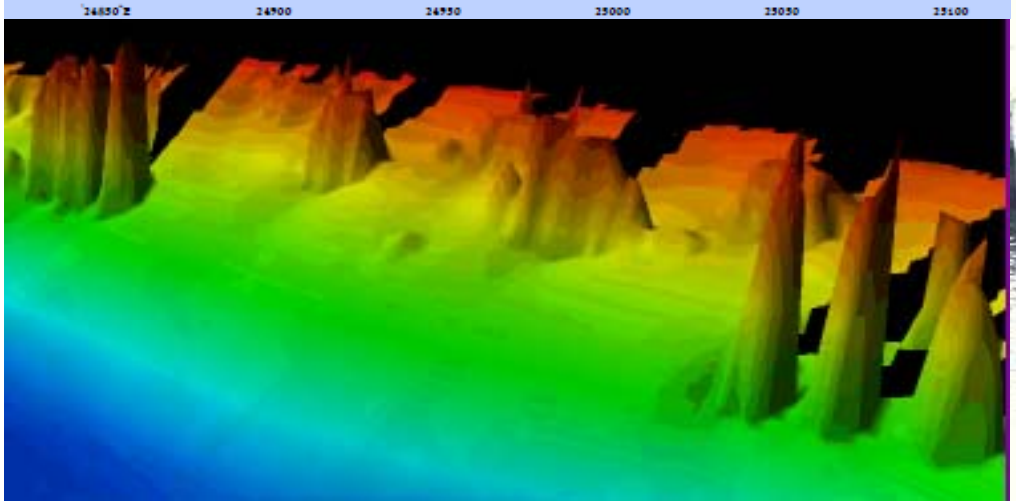
"On the Fly" Reconfiguration

For surface ops or neutral buoyant submerged.

Foynes: main general purpose deepwater facility





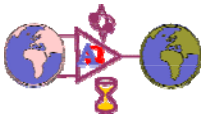


Video

Once ROV Submerges, the Augmented reality views and enhanced plan position views give improved situation awareness to pilot of ROV in the underwater environment.

Note Open Hydro clip – not captured from ROV Latis

Collaboration?
Wish to use ROV Latis in offshore Science or engineering missions?



- Contact us.

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