

SUBSEA TECHNOLOGY

Choosing the right marine autonomous system to gather your data

The Future Subsea Digital Toolbox – IMCA / SUT / THSIS Ioseba Tena Aberdeen, October 2019



POSITIONING NAVIGATION COMMUNICATION MONITORING IMAGING

Introduction to Sonardyne

Leading independent provider of underwater acoustic, inertial, optical and sonar technology





Intro

Choosing the right marine autonomous system to gather your data



DATA HOARDERS.

Sound IN DEPTH

Choosing the right marine autonomous system to gather your data

SURVEY WORKSHORSE

Gliders

Choosing the right marine autonomous system to gather your data

T RENOTE FROM HATER

OCEANOGRAPHY

* COUND PLEASE CALL DEGE TOPSES

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Courtesy of Blue Ocean Monitoring







Courtesy of Dana Manalang (APL) and John Delaney (University of Washington)

Long Endurance and Resident Systems









Effective Bandwidth Use

Digital Combine Telemetry & Tracking

15400 bps From 200bps to 9000bps effective bandwidth

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Vessel, USV & AUV Choose the right platform for your

harvest (or hop from shore)



Effective Bandwidth Use

Large Bandwidth

Use optical modulation to enable larger data transfers

600 Mbps 10Mbps at >100m 600Mbps at <7m

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AUV or ROV Choose the right platform for your harvest

Data Harvesting





Offshore Ready

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C-Stat 2 equipped with GyroUSBL: Full ocean depth USBL capable ASV

- Box-in LBL
- Calibrate LBL field
- Track Work-class ROVs
- Harvest data from 6G enabled equipment on the seafloor at all ocean depths
- Length, Beam, Height: 2.7m, 1.44m, 3.5m
- Draft: Min 0.64m
- Weight: 860 kg (plus GyroUSBL)
- Operational speed range: Up to 4.2 knots



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Box-in Examples

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Autonomous vehicles can manoeuvre perfectly therefore optimising data collection

Results:

Beacon BoxIn	Beacon Eastings	Beacon Northings	Beacon Depth
Before	620846.42m	3034293.14m	1300.67m
Calculated	620839.59m	3034287.01m	1304.32m
Calculated Accuracy	0.04m	0.04m	0.14m

Sound in Depth

Centimetric box-in positioning is therefore achievable



Autonomous future

The Wave Glider platform has been well proven over the last 11 years. Sonardyne has been integrated with their systems since 2010 for acoustic data harvesting. The new GPS-A payload allows for even more flexibility.

Know where you are

High accuracy GNSS and the option for GPS derived heading which is fully compatible with major correction services.

Will it fit your vehicle?

GPS-A is compatible with the Wave Glider SV3 variant onwards (also SV2 compatible).

6G as standard

Utilising the Sonardyne Acoustic Communications Module, the system is fully 6G capable. Standard fitting

The GPS-A module drybox takes advantage of the standard 3MPU LRI enclosure.

Simple data access

With both Ethernet and Wi-Fi onboard, accessing system data without opening the payload is both efficient and simple.

High performance, low power computing

Powered by a dual core ARM A7 + single core M4 processor provides plenty of grunt for onboard processing with dual redundant 128GB of data storage.



All Ocean Depths

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Case Study: Precision acoustics for persistent subsea observations



GPS-A is also being applied to oilfield asset monitoring. For example, if a pipeline is suspected of creeping due to axial strain

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Imagine using AMTs deployed on and near the pipe communicating with a GPS-A Wave Glider patrolling above, enabling asset teams thousands of miles away to be alerted to movement in real-time.





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Large Volume Data

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CELLULA

IMOTUS - T



CLOSE & IMPERSONAL

MOTALA UIDTM Subsea Docking Station

Saab live demonstration









MIDDAY 10M DEPTH 7M RANGE

Seismic Nodes





Cellula Robotics XLUUV



Combined Optical & Acoustics for wireless control

















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Thank you for your time today Any questions?

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