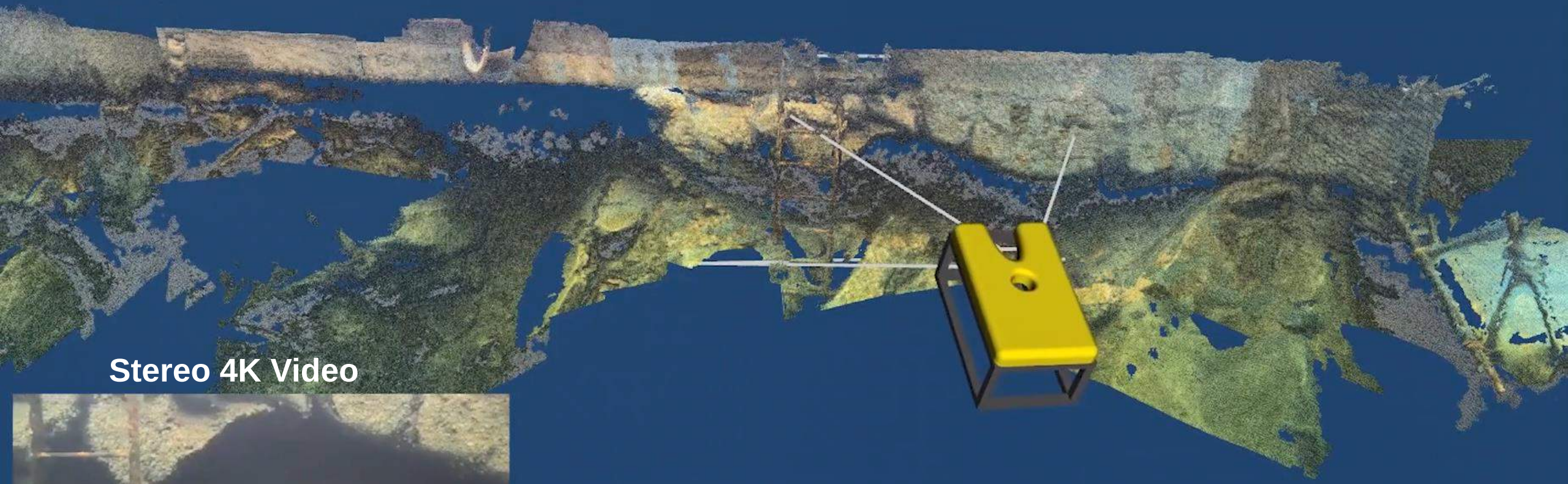
A Technical Road Map to Our Autonomous Future

Joe Tidball, Survey Manager

joe.tidball@rovco.com

Future - Live 3D Computer Vision

ROVCO OCEAN INSIGHT



Stereo 4K Video

To view video, click here.

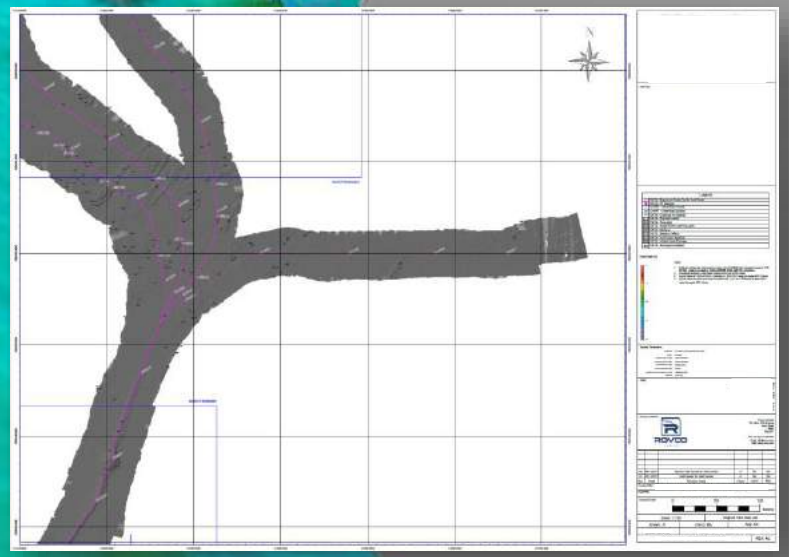
Introducing Rovco

22 Staff based in Bristol, UK

5 ROVs – Survey Class

Hydrographic Survey & ROV

Joe Tidball
Survey Manager
MSc Hydrography
Cat A Hydrographic Surveyor



3 month project, in S. America. ROV, USBL, habitat mapping with 3D

3 year framework agreement, Gwynt Y Mor windfarm, ROV, cable survey, 3D

ROVCO
OCEAN INSIGHT

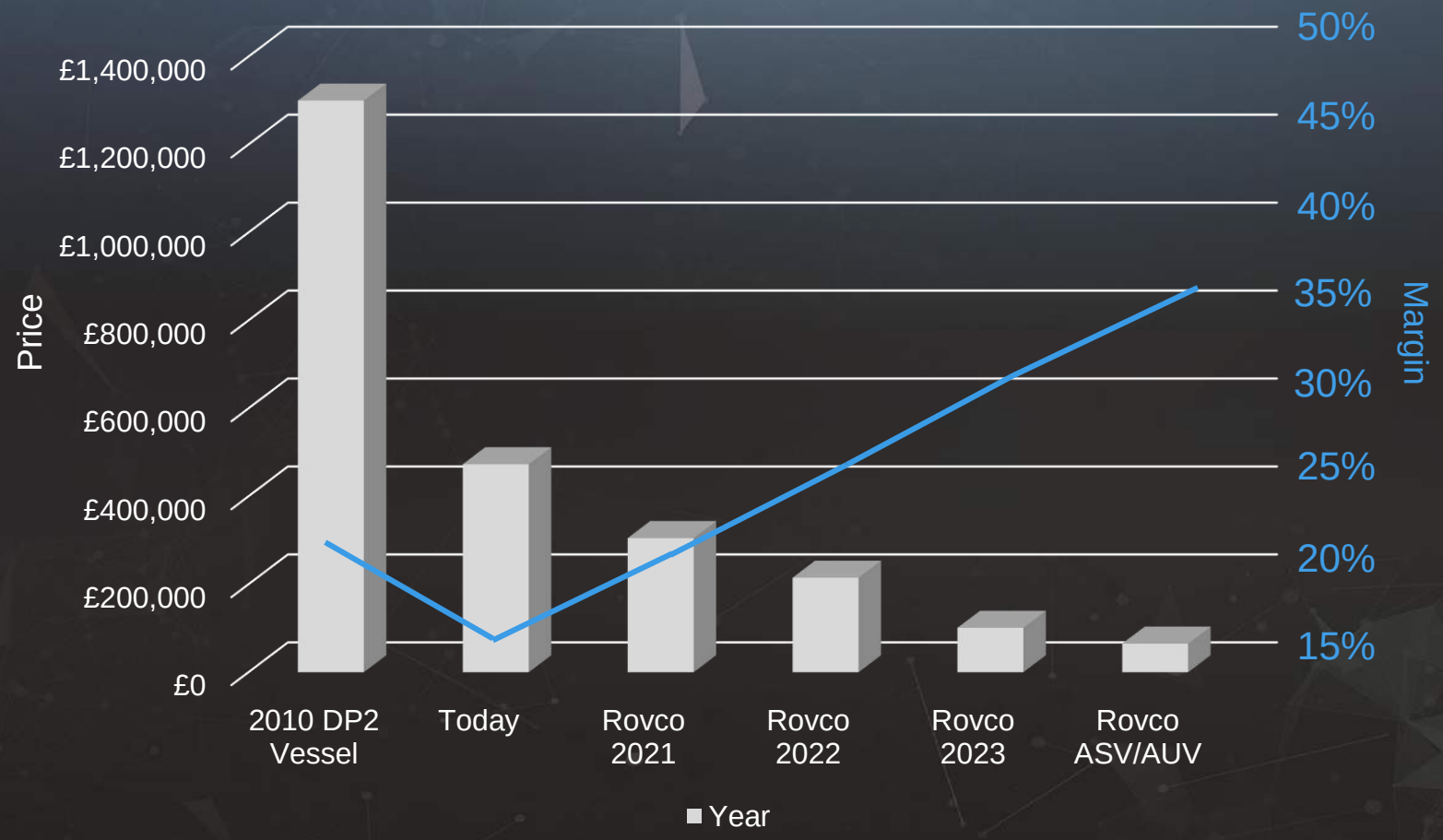
Initial Decommissioning Survey. low cost spot market DP 2 Vessel, low cost spread

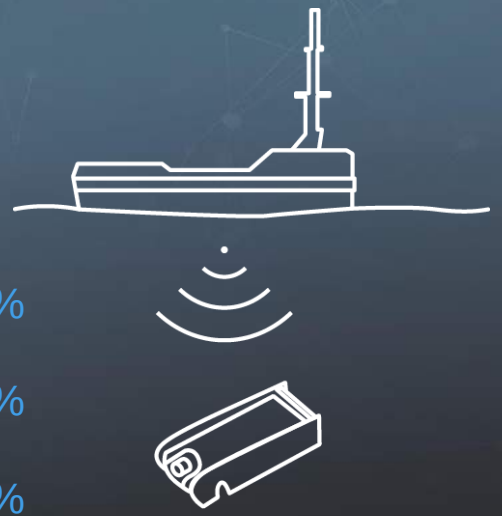
ROVCO
OCEAN INSIGHT

Reduced cost of survey

£6500/km

Example 200km Pipe or Cable Survey





£330/km

SubSLAM X1 Smart Camera

The building block in our autonomous future

ROVCO
OCEAN INSIGHT

Patent Pending EP Patent Application Number 18192388.9 UK Patent Application Number 1814314.9

Intelligent Inspection Vehicle

2019 – Rovco purchasing first AUV (Oct 19)
2020 – Integration with SubSLAM mapping system
2021 – Delivering AUV surveys + AI integration
2022 – Delivering IIV surveys + ASV integration
2023 – ASV + Intelligent Inspection Vehicle

Live 3D Computer Vision

ROVCO OCEAN INSIGHT

Live 3D Transmission

Autonomous Survey

Subsea Metrology

X=15.15m

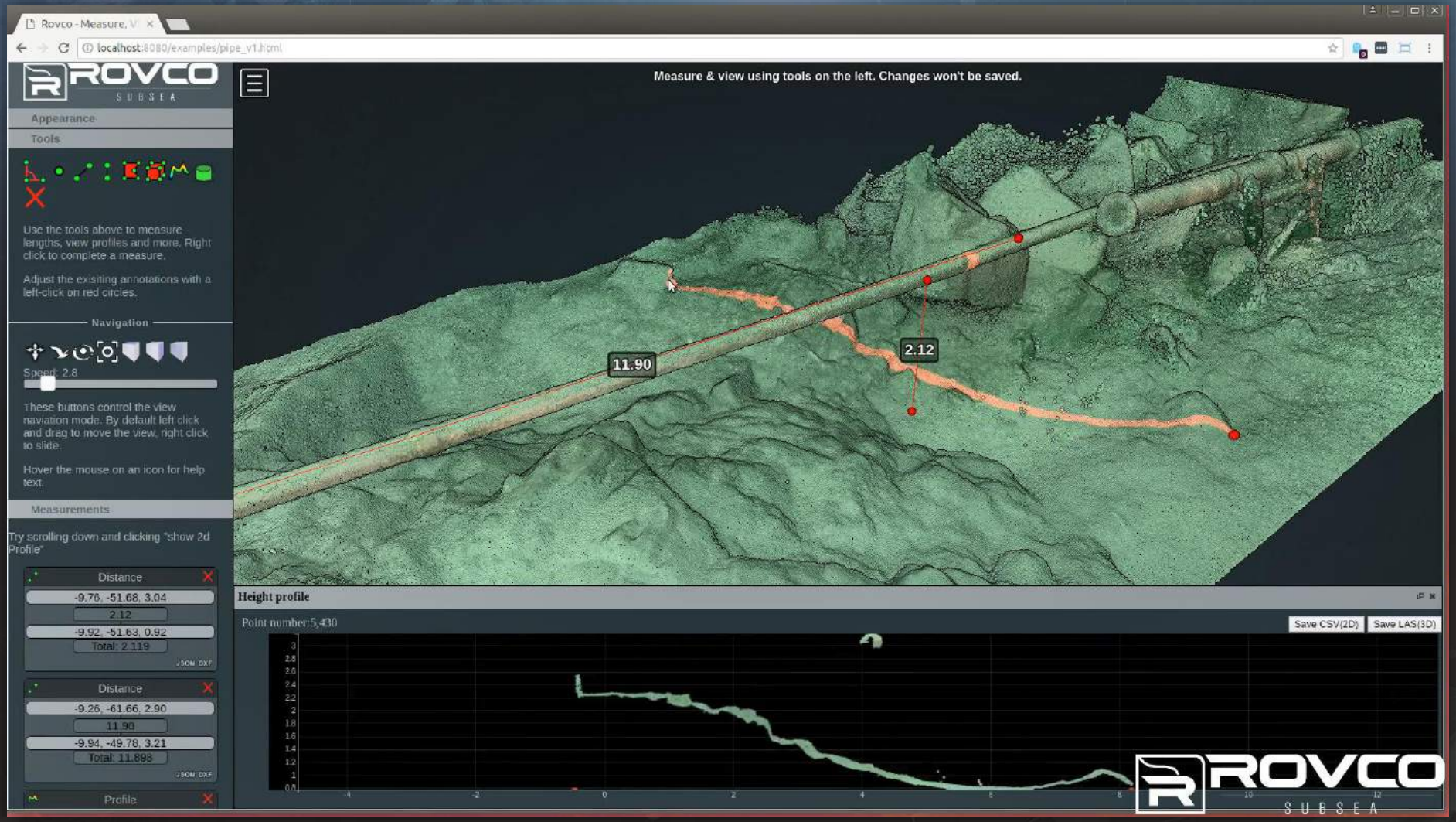
Replacement USBL / LBL

Artificial Intelligence

Live 3D Transmission

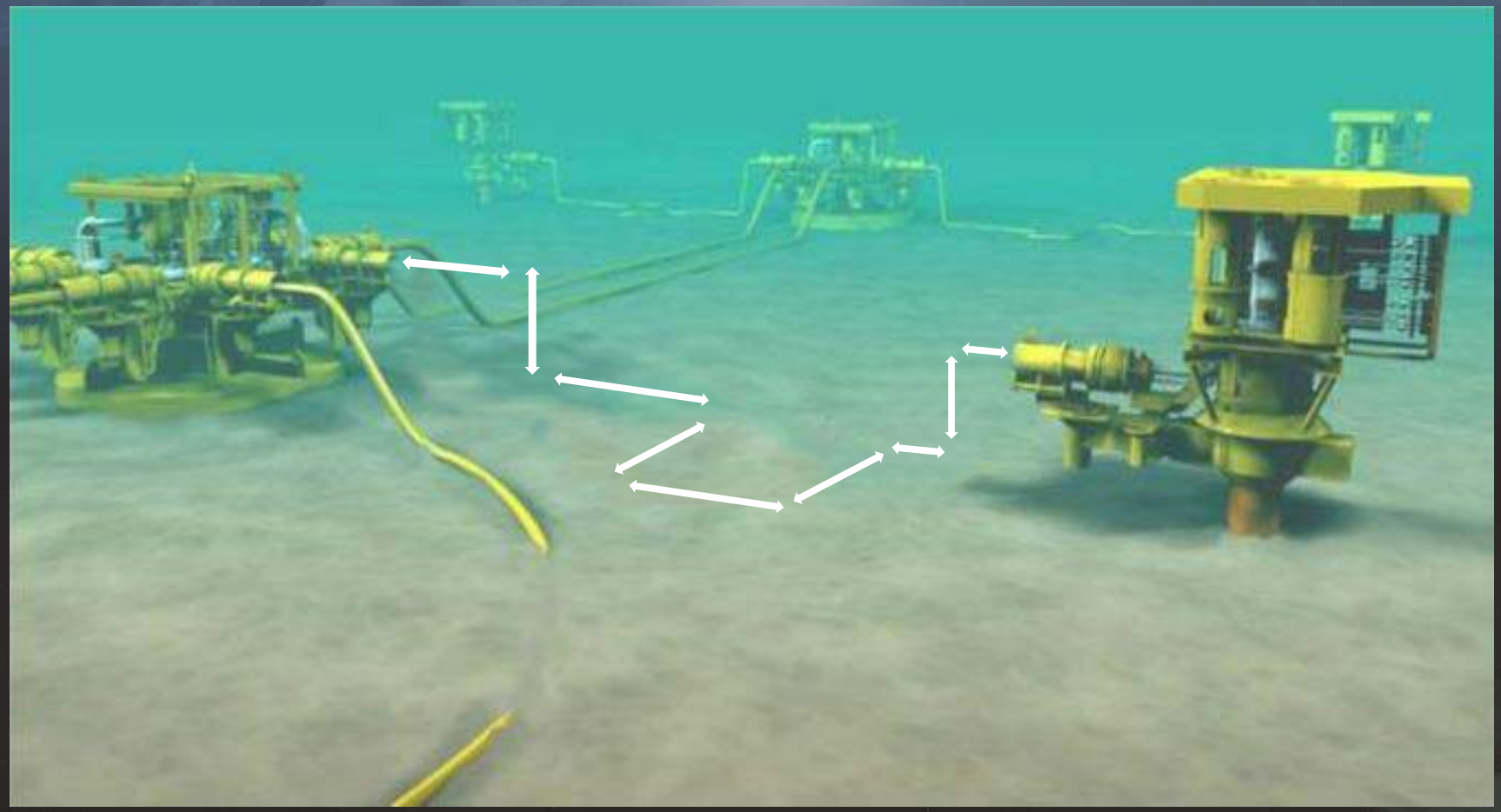
ROVCO
OCEAN INSIGHT

Live 3D Metrics

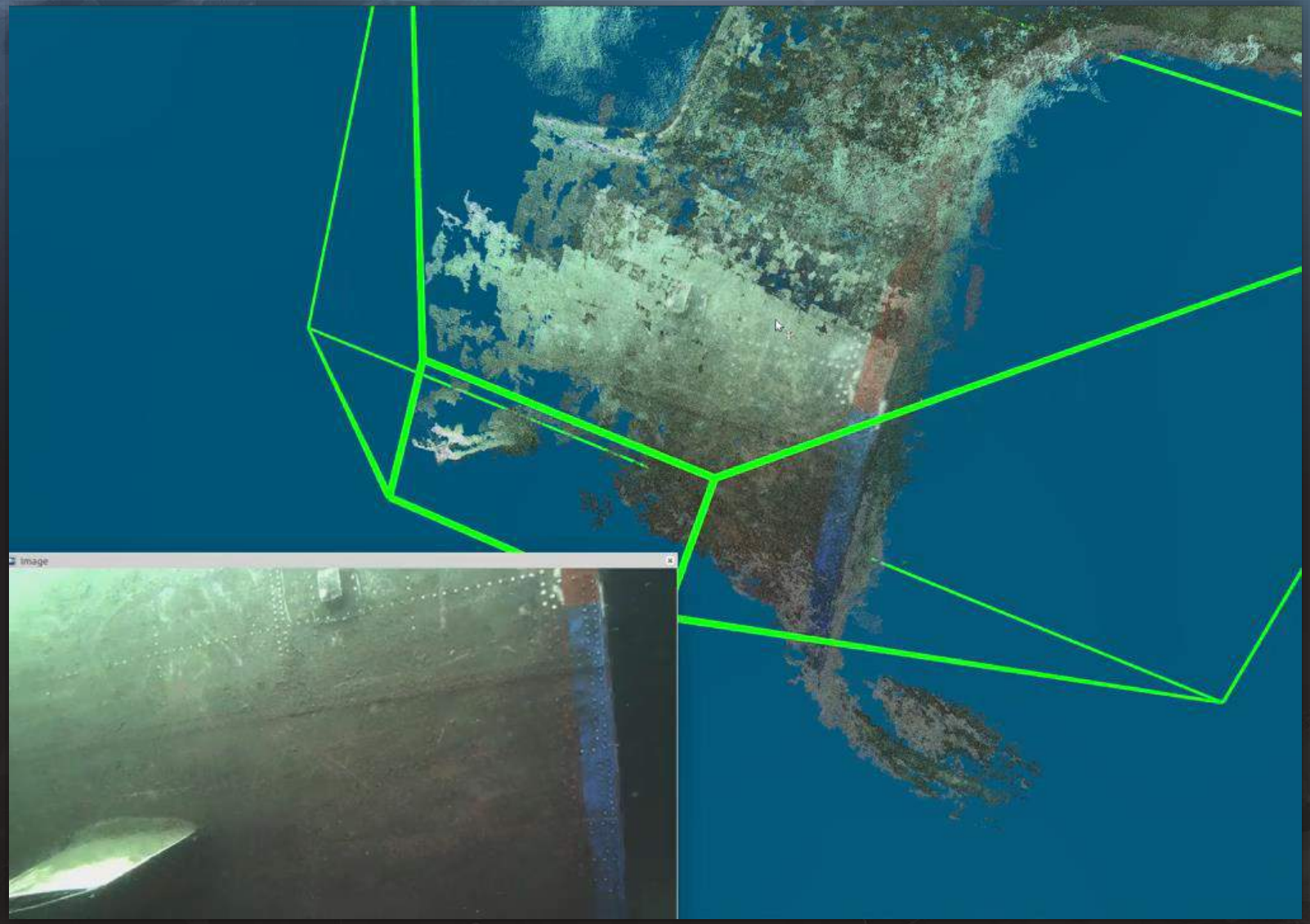


Subsea Metrology

ROVCO
OCEAN INSIGHT



mm perfect live survey



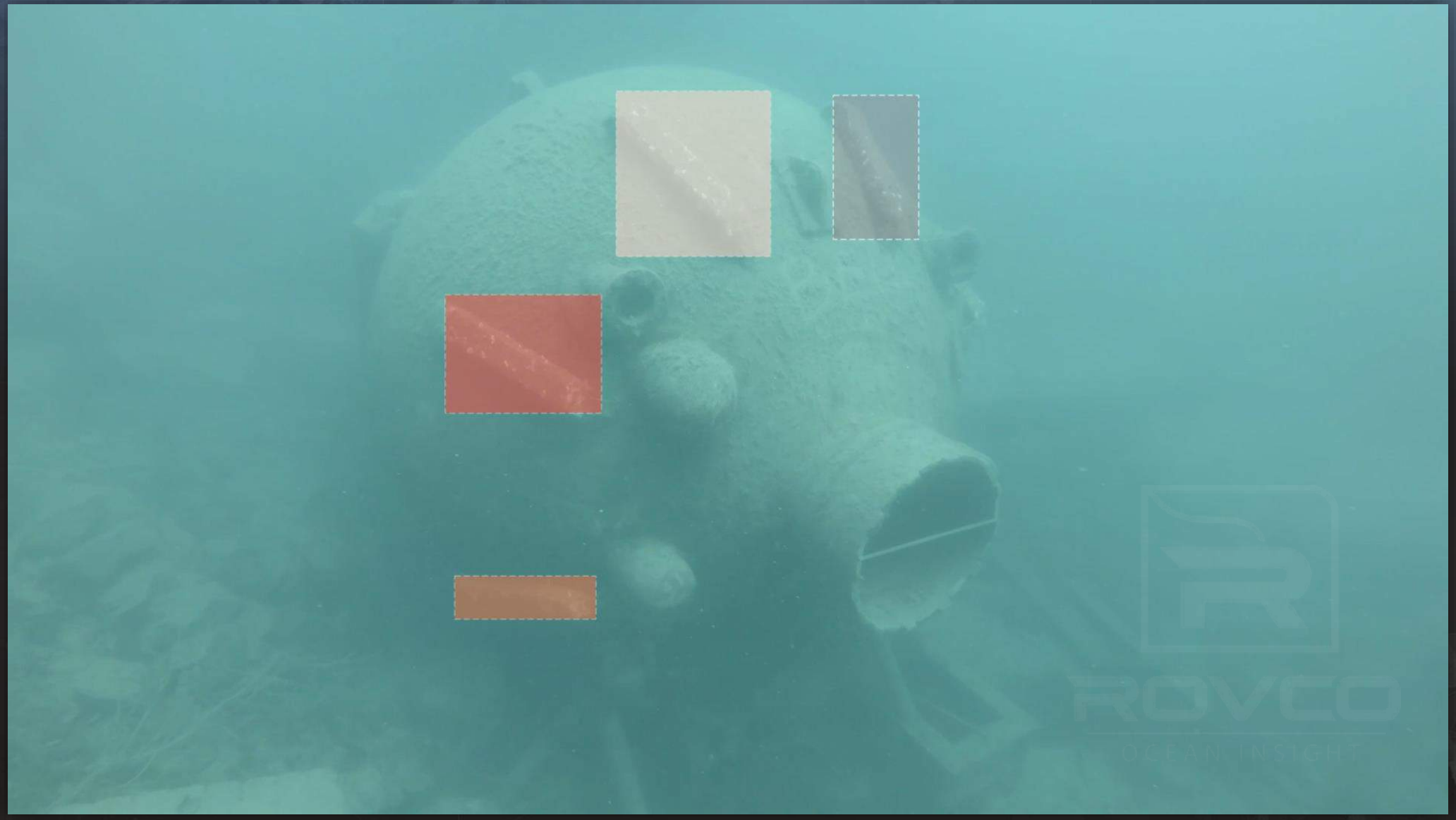
To view video, click here.

Positioning Without Surveyors

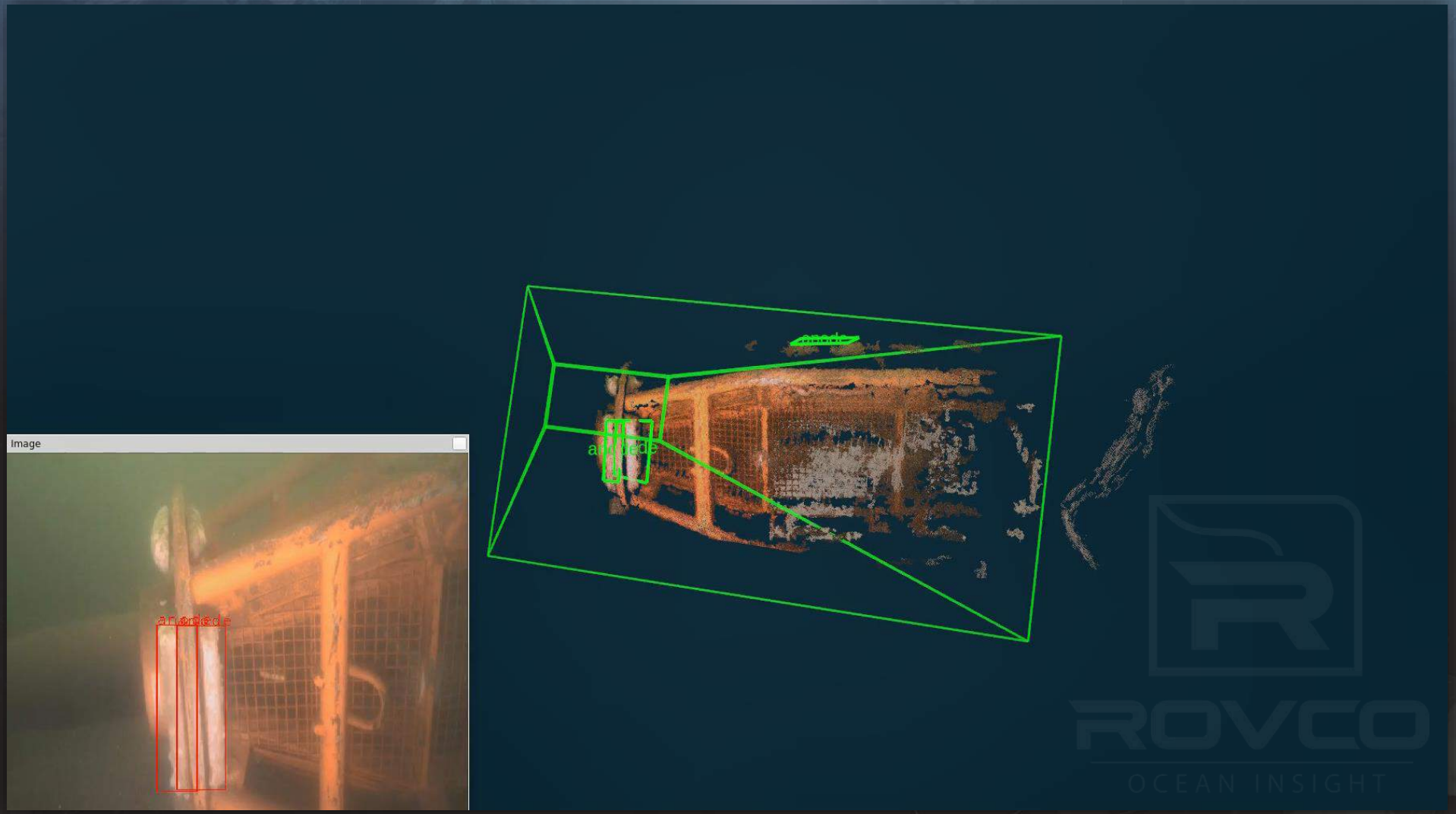
ROVCO
OCEAN INSIGHT

SubSLAM replacing LBL and some USBL

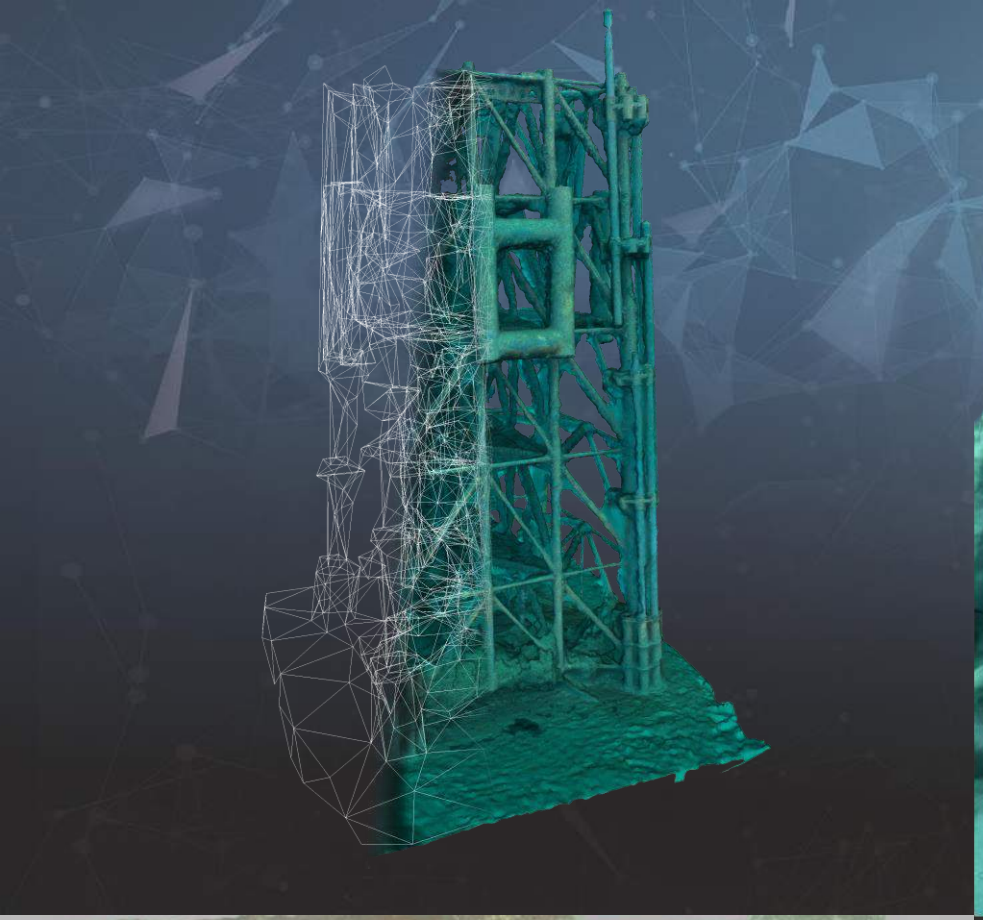
Machine Learning



Artificial Intelligence



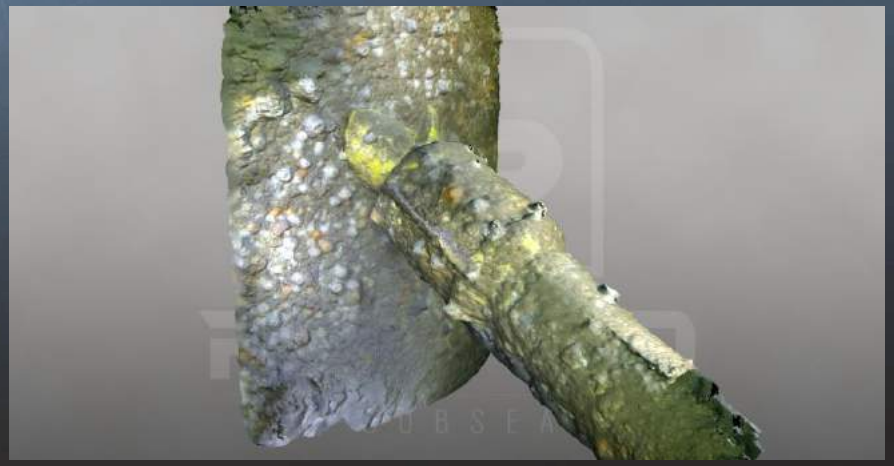
To view video, click here.



ROVCO
OCEAN INSIGHT

World leaders
3D Photogrammetry

3D Photogrammetry



Other Uses?

Smarter robots lead to smaller vessels and fewer people doing more, higher quality work.

- Accurate measurement
- Comparison
- Easy overviews
- Better data delivery
- Pretty pictures

- Repeatable, reliable metrics – measures of risk
- New, more complete metrics
- Higher quality, more reliable assessments of asset condition

ROVCO
OCEAN INSIGHT

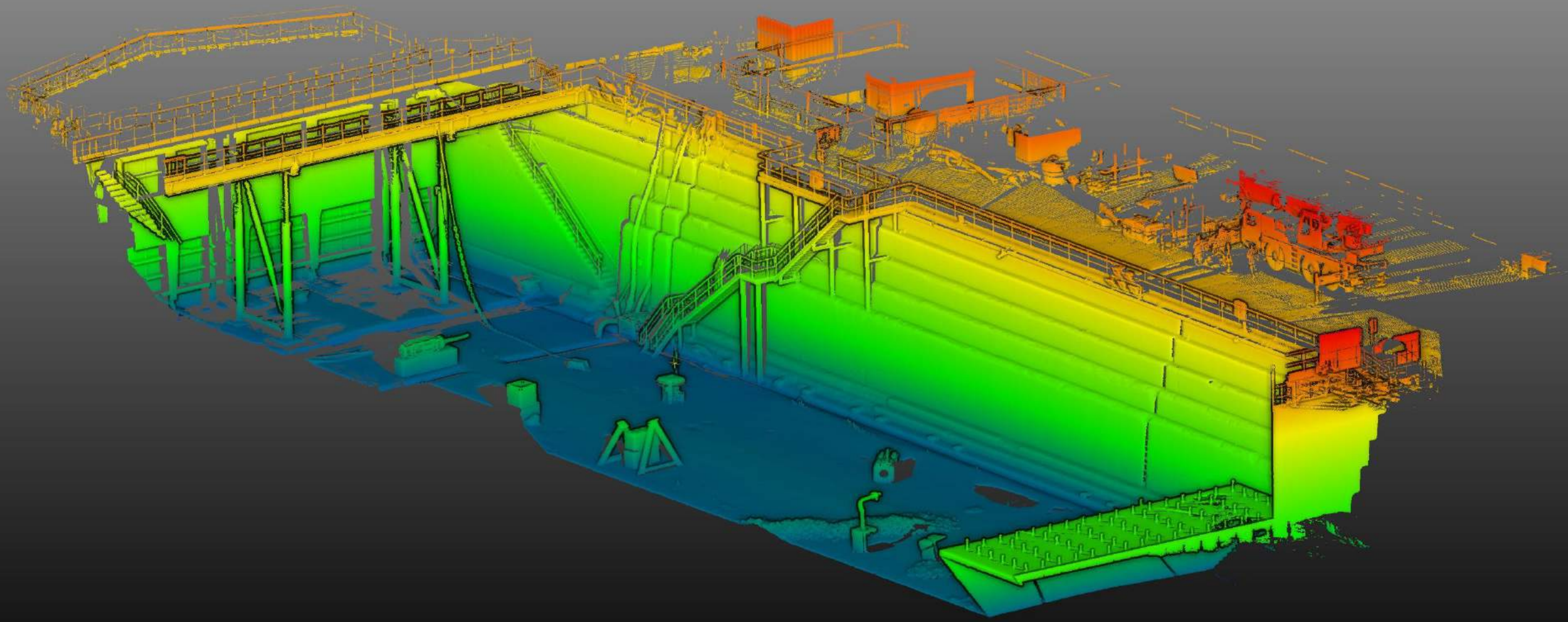
System Accuracy & Testing

ROVCO
OCEAN INSIGHT

Obtaining a Ground Truth

ROVCO
OCEAN INSIGHT

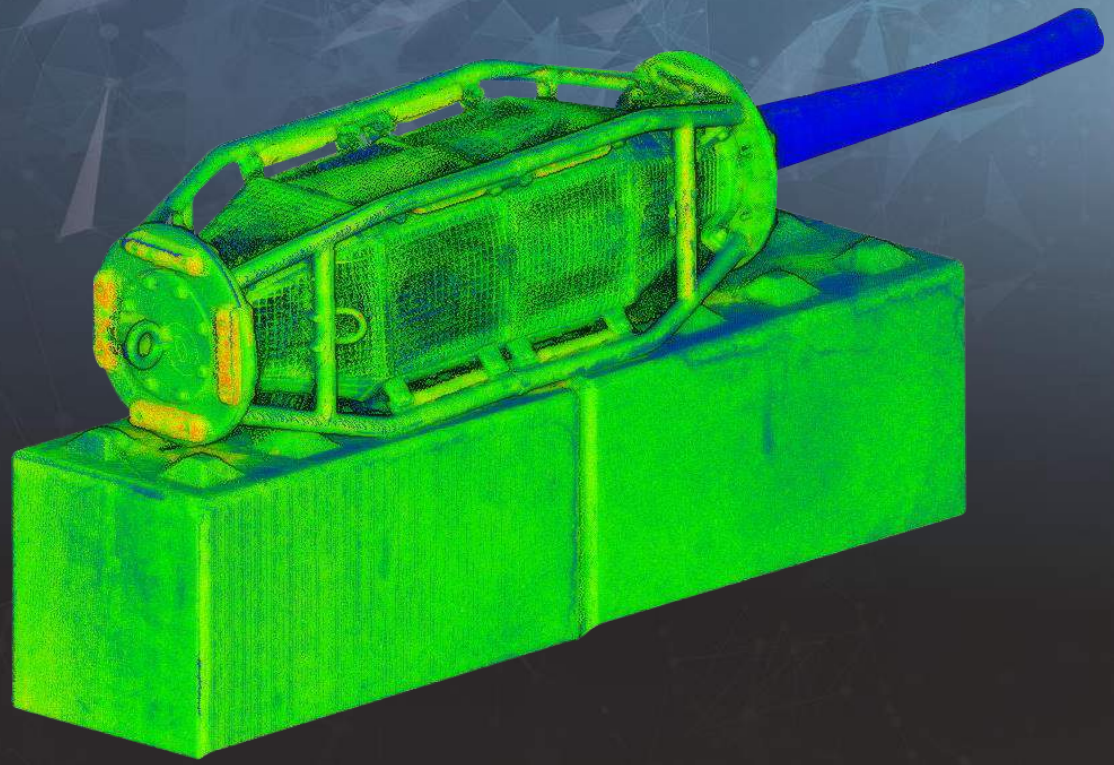
ROVCO
OCEAN INSIGHT



ROVCO
OCEAN INSIGHT

1.2m
VISIBILITY

Accurate Results



Leica P40	System Error	+- 2.3mm	SubSLAM	Point to Point Accuracy	+- 0.07%
	Alignment Error	+- 1.7mm		Error over 1m	+- 0.67mm
	Total Noise (1σ)	+- 4.0mm		Total Noise (1σ)	+- 4.0mm

Scan time 2hrs, stationary multiple scans, in air/good vis

Scan time 2mins, mobile ROV, 1.2m vis

SubSLAM photogrammetry comparison to Laser Scan – Equivalent Accuracy, Better Performance

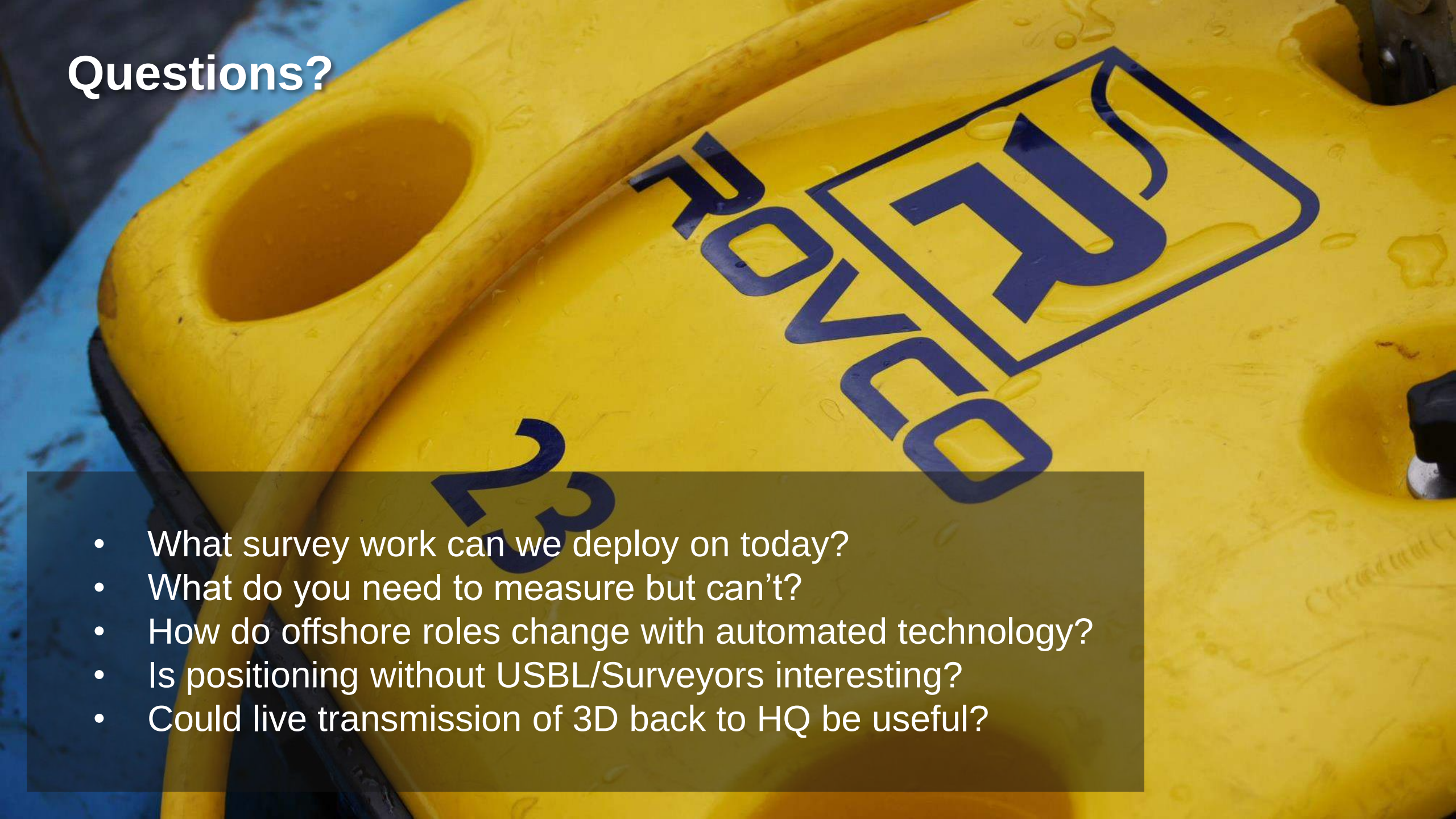
ROVCO
OCEAN INSIGHT

Rovco SubSLAM

Live 3D & Artificial Intelligence for ROVs and AUVs

Joe Tidball, Survey Manager
joe.tidball@rovco.com

Questions?



- What survey work can we deploy on today?
- What do you need to measure but can’t?
- How do offshore roles change with automated technology?
- Is positioning without USBL/Surveyors interesting?
- Could live transmission of 3D back to HQ be useful?