# Echoscope® Software: Underwater Survey Explorer

The Underwater Survey Explorer (USE) software runs on the top-end PC or 3-DPS and is used to visualise the 3D sonar imagery generated by the Echoscope®. It will also combine the information with inputs from positioning and attitude systems allowing you to position it in real-world space.

USE is extremely intuitive and easy to operate. For added ease of use and object detection, or recognition, we have created a data view using edge detection algorithms that effectively transform the 3D dataset into a 2D view. This helps the user detect objects both in real time and in replay mode.

Amongst a host of different features in the software is the ability to quickly add target locations to the 3D view, and to colour the data according to the relative height to this target. This makes work involving lowering objects into place much easier, as the colour of the object will change when it is in the correct location and orientation.

Within the 3D view, the user is able to quickly rotate the viewpoint around the 3D data world, and can make simple but accurate on-screen measurements.

The following screenshots help to describe the real-time software views supplied to the operator.
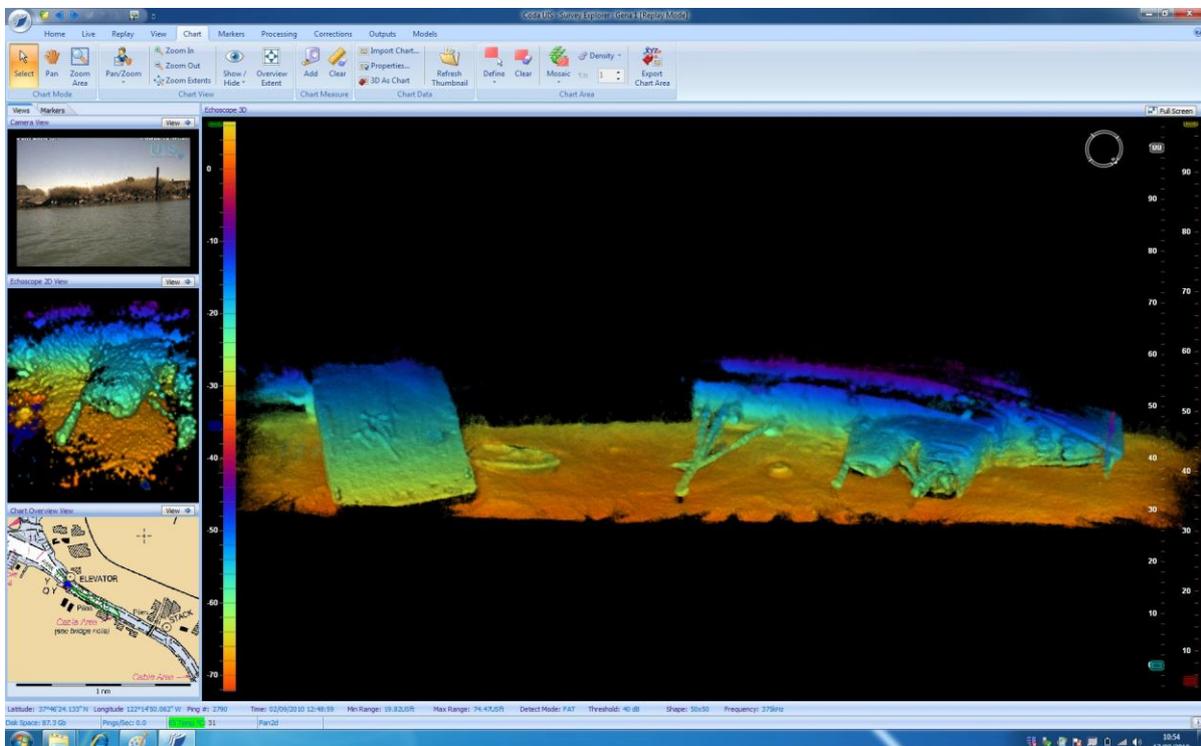
Survey Explorer software screenshot showing real-time 3D sonar image of ship wreck along with camera, 2D and chart views.

2D view in edge detection mode

3D real-time data
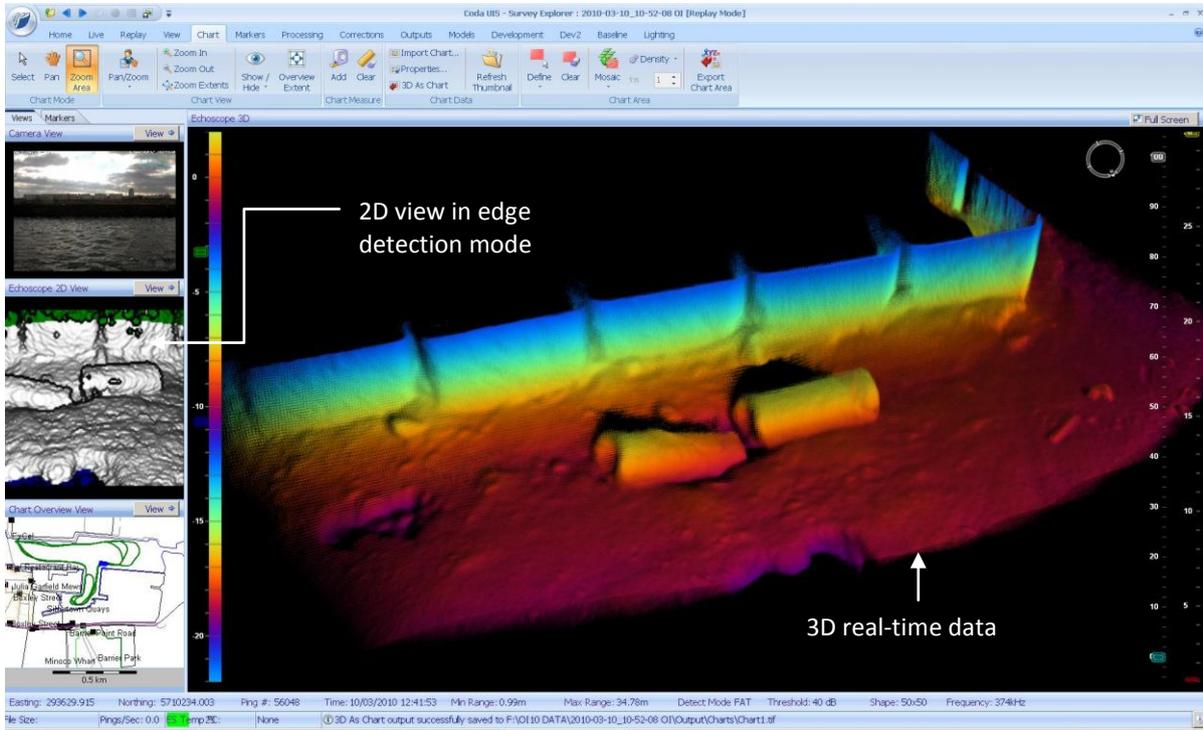
Real-time 3D sonar screenshot of pipe sections adjacent to a quay wall. The 2D Echoscope® view is displaying edge detection mode.

Quaywall

Frame

Mattress

Seabed
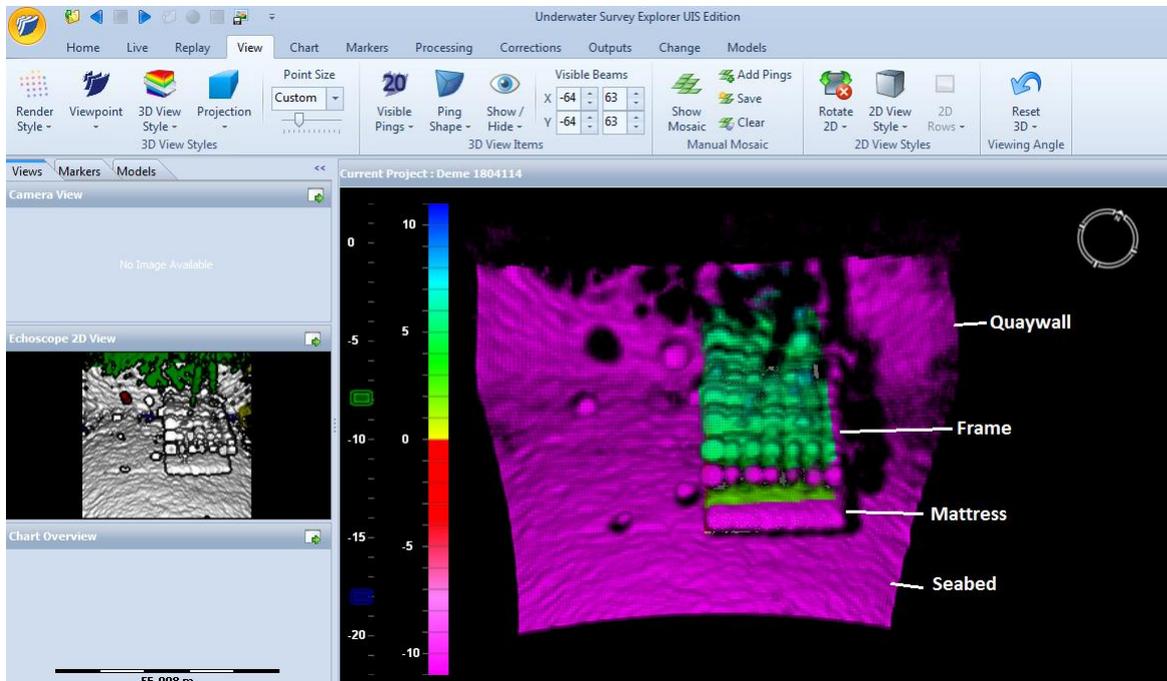
Real-time 3D view during of mattress laying operation. The mattress' target location has been loaded into the software, and the software configured to colour the data relative to this location, making it very clear when the mattress is in the correct location and orientation.

Underwater Survey Explorer™ (USE) Software Editions

CodaOctopus® Underwater Survey Explorer™ is available in various software Editions where an Edition determines the availability of software features.

The following table presents a summary of the different software Editions.

Edition	Description	Product Code
USE Standard	Entry Level Underwater Survey Explorer™ software Edition. Suitable for real-time monitoring and visualisation applications, the 3D and 2D Views are available, as is an on-line Mosaic of up to 20 pings, but larger Mosaics cannot be generated.	3D/USE/HL/STD
USE Advanced	Intermediate Level Underwater Survey Explorer™ software Edition. Larger Mosaics can be generated, and access to additional functionality such as the Chart View, Markers, and a wider range of output options is available.	3D/USE/HL/ADV
USE Pro	Highest Level Underwater Survey Explorer™ software Edition. This software version presents the widest range of functionality, with new tools for mosaicking, data processing and outputting data.	3D/USE/HL/PRO

GEO
Advanced Geophysical Solutions

3D
Real-Time Sonar Solutions

MOTION
Precision Attitude & Positioning

TEAM
24x7 Service & Support

TAP
Technology Access Program

USE Software Modules

A number of software modules are also available that integrate into the Underwater Survey Explorer™ software. These modules expand the basic functionality provided within each of the different editions, to tailor a license for specific applications.

The following table presents a summary of the different modules available.

Module	Description	Product Code
Live Mode	<u>Data Acquisition</u> Module. The Live Mode module, which is provided along with the DIU Software, allows you to use the software license to control the Echoscope® on-line. (A license without the 'Live Mode' module can be used for data replay only.)	3D/USE/HL/LVE
Models	<u>Augmented Reality</u> Module. The Models module expands the functionality around importing 3D models into the display. It allows you to import 3D models in the .X format, and to control their position and attitude independently using motion controller strings.	3D/USE/HL/MOD
Exporting	<u>Data Processing</u> Module. This module expands the range of output options available, including our 3D volumetric binning capabilities, and our geo-referenced SHADED image output.	3D/USE/HL/EXP
Baseline Comparison	<u>Baseline Comparison</u> Module. This module allows you to compare new data with a previously recorded dataset, allowing you easily to detect any objects that may have been placed into an area since the baseline survey was performed, or to see any movement or damage.	3D/USE/HL/BSL

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