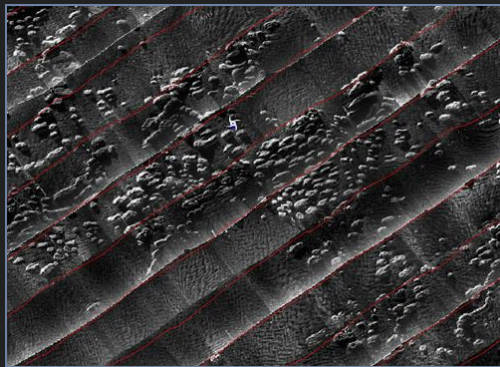


### Seabed Information from Side-Scan Sonar Images

The ability to accurately distinguish different bottom types using side-scan sonar is relevant for many applications. The world's navies can use the information in aid of rapid environmental assessment (REA) and to rapidly create risk maps as certain types of sea floor represent a harder challenge for mine-hunting or diver interdiction. Offshore construction operations carried out by the Oil and Gas and Renewable industries can use the information to accurately determine the most suitable areas to commission the subsea infrastructure. In Inspection, Repair and Maintenance operations of subsea infrastructure analysing changes in the seabed as a result of dynamic processes can highlight areas of concern.

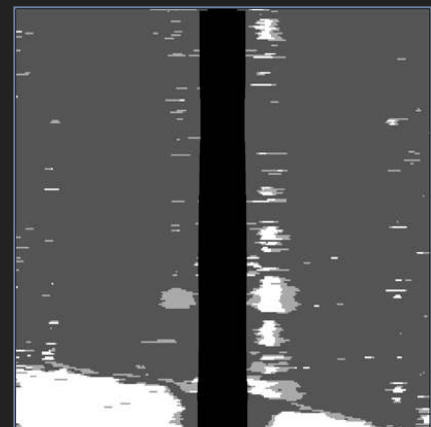


**Side-scan sonar images are hard to interpret but their information is crucial for many subsea operations spanning the military and the commercial**

The SeeTrack Seabed Classification module has been designed to address the needs of the inexperienced and experienced users. A non-expert can classify the seabed at the touch of a button. The expert user can delve into the process of defining the different types of seabed, but is saved the effort of working on the complex algorithms. Unlike independent software packages, the Seabed Classification module is tightly integrated into SeeTrack and the outputs can be used to create mosaics of the seafloor automatically and display those mosaics on the SeeTrack screen alongside all the other processed data.

### Accurately assess different bottom types

The Seabed Classification module has been designed by leading, published experts in the field and uses the latest image processing techniques. The algorithms extract information from the pixels to make up features. Different seabed types are made up of different feature bundles and the advanced statistical classifiers are used to group the seabeds according to the measured features. The process has been rigorously developed, groundtruthed and tested with real and simulated data to ensure that the result is an accurate picture of the seabed.



### Geo-reference Results

Creating mosaics from classified data is a complex process requiring accurate classification results, accurate navigation information and statistical formulae to fuse the data. This is because a side-scan sonar survey may contain sections where the data from one run overlaps the data from a single or multiple previous runs. As the classification results and navigation are never perfectly accurate a single point in the world might be assigned more than one single seabed type. To resolve this conflict the Seabed Classification module automatically extracts information from the surrounding area and uses the information held by the classifiers to classify that region into the most likely seabed type.



The result of the Seabed Classification module is a very accurate geo-referenced mosaic of seabed types. This mosaic can also highlight regions of the seabed that have not been measured by the survey.

### Designed with the User in Mind

The seabed classification uses the data from the side-scan sonar and does not require expensive hardware or groundtruth operations. The software is currently compatible with some of the world's leading side-scan sonars and it has been designed so that the users can add new sensors themselves through a simple process of defining seabed types. The only requirement is that the sonar is supported by SeeTrack.

### Further Details

The Seabed Classification module requires SeeTrack Military or SeeTrack Professional. Further technical details and specifications are available on request.

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