Change Detection

Rapid Data Processing with Change Detection

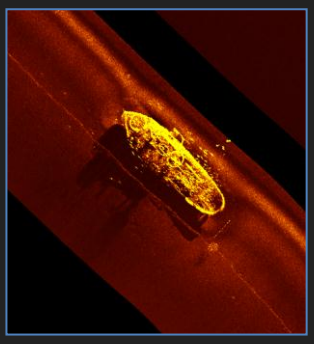
Mine warfare operations rely upon gathering a situational awareness of the battle space in which they operate, by utilizing multiple sensors and platforms to gather information. This information is integrated into a single operating picture to allow tactical decisions to be made. A variety of sensors can provide the information to determine the picture of the seafloor. A major challenge operators are often faced with is detecting any changes, typically against baseline surveys, which may require further investigation.

The data processing challenge for MCM operations

Due to data processing capabilities being portable, operators can work in the field. SeeTrack offers a change detection module that allows operators to rapidly identify changes, even while working in field environments, without the need for laborious side-by-side image comparison of current versus historic data.

Operate at the Contact Level

The SeeTrack Change Detection module can be used to fuse and compare side-scan sonar data to highlight any significant changes. The key to SeeTrack's Change Detection module is that it operates at the *contact* level. The standard approach, operating on the raw sonar image, requires running the same vehicle and sonar setup through exactly the same mission plan. This is highly susceptible to any change in the environment and requires a level of navigational accuracy which is difficult to guarantee. In contrast SeeTrack considers the *contact* level data and considers the location and spatial distribution of the targets within the surveyed region to flag possible new threats. Operator or Automatic Target Recognition selected contacts may also be used in the process.



SeeByte Ltd
Registered in Scotland Number: SC194014
Registered Office: Orchard Brae House, Edinburgh, EH4 2HS
VAT Registration Number: 783656681

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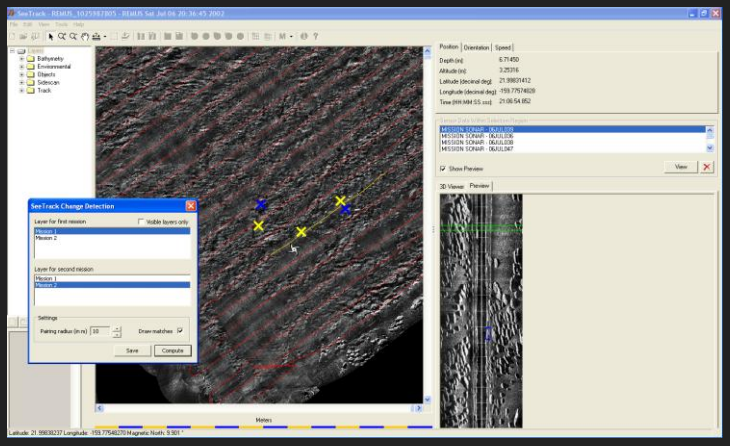
Different Vehicle, Different Sonar

By carrying out the change detection at the *contact* level data it is possible to compare data sets that have been collected with different assets or different sensors. Any sensor or vehicle which is compatible with SeeTrack can contribute to the change detection process. Fusing data in this manner removes the need for the same vehicles to swim in exactly the same manner with the same sensor because data is not being compared from the raw sonar image. This provides the operator with greater flexibility, allows the use of a wide range of assets and allows the mission to be planned based on the daily scenario.

In Operation



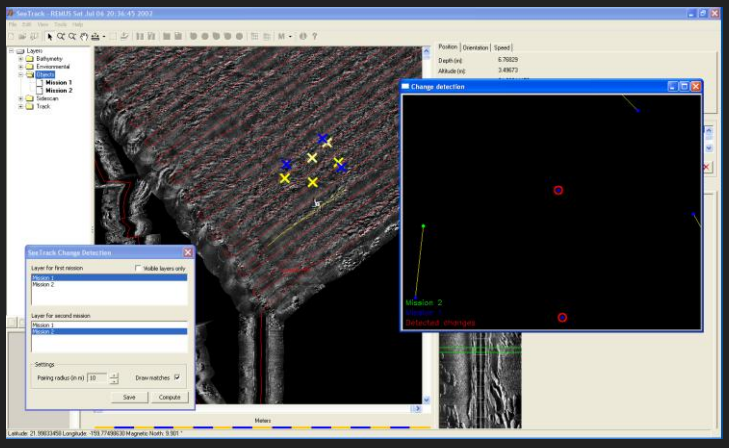
Contacts identified in separate mission are marked with different coloured symbols.

Mission 1 – Blue Cross
Mission 2 – Yellow Cross

The new target (central yellow) is reviewed in the side-scan waterfall display on the right.

The automatic grouping tool allows grouping ranges to be set to account for navigation error.

In this example the 10m range correctly groups three contacts, leaving two new contacts clearly marked.



Further Details

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

Email: sales@seebyte.com
Telephone: +44 (0) 131 447 4200

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