

Solutions for Expeditionary MCM

Facing the mine threat

The concept of Mine Counter-Measures (MCM) has been traced as far back as the German use of Minenraummutterschiffes for Minesweeping during World War One, where Battleships were converted for use as mine-sweeping ships to gain access through the Atlantic's 'North Sea Mine Brigade' planted by the British and Americans. Naturally, western technology has progressed significantly since the days of wood-constructed pre-dreadnought battleships, and MCM missions are now conducted globally using state of the art hardware and advanced planning methods. However, the threat of mine warfare is now more prominent than ever, and with 95% of the world's commerce moving by sea and 95% of commercial cargo travelling through the littorals, the security of our waters, coastlines and military personnel remains a key issue for navies. Therefore, ensuring the availability of the best and most efficient equipment is imperative.

Current MCM capabilities

Currently, navies are investing heavily in Unmanned Underwater Vehicles (UUV) to conduct surveillance, localization and identification missions in challenging conditions in support of their MCM and Explosive Ordnance Disposal (EOD) teams. The traditional method for conducting MCM missions was through the use of manned ships and divers, which was a costly, time-consuming and dangerous procedure, putting expensive equipment and personnel at risk. By introducing the use of UUVs equipped with high resolution sonars and other advanced sensors, these issues are mitigated.



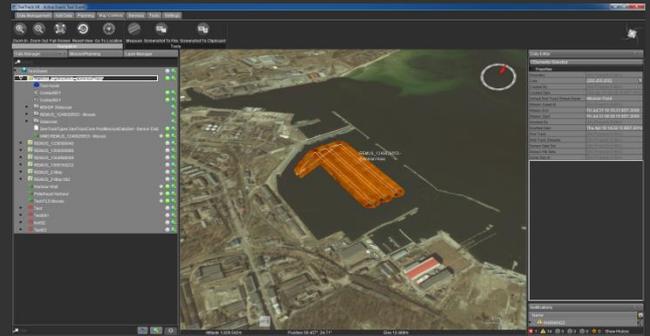
In today's austere fiscal environment, measures must be taken to ensure that MCM investments in equipment and personnel are sensible. Autonomous Underwater Vehicle's (AUV) are automated in their operation, in that they conduct a mission without an operator in the loop, but in reality they are often used for nothing more than data collection. At present, the procedures for conducting an AUV MCM mission are highly operator dependent. Operators are expected to possess the skills required to expertly control all hardware involved in each mission. With an abundance of new hardware making its way into fleets and with routine personnel policies, ensuring adequate operator skill-sets is proving a costly and time-consuming expense.

seebyte

www.seebyte.com

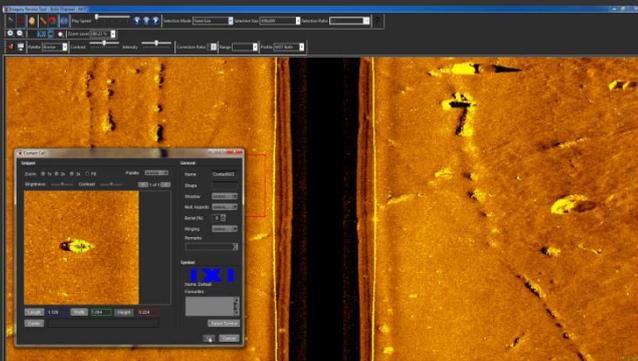
Software solutions to meet the new technology challenge

Considering the capital investments nations are making in MCM hardware, investment in software is the answer to increasing the capabilities of that hardware and the efficient utilization of UUVs and off-board assets in the MCM domain. SeeByte has created a variety of product offerings to help manage MCM assets, ultimately providing situational awareness across all assets and within the battlespace for MCM and EOD Operators.



SeeTrack is currently the chosen MCM software solution for nineteen of the world's navies. At its core, SeeTrack is a mission planning, monitoring, post processing and reporting tool for rapid on-site analysis and data fusion. It is used to operate leading brand AUVs, Gliders, ROVs and Diver Handheld Navigation systems, and can process large amounts of sensor data, including bathy, side-scan, imaging sonar and video. The latest generation of SeeTrack also includes support for modern high-bandwidth sensor suites, including Synthetic Aperture Sonar (SAS). SeeTrack allows operators to plan, execute and assess an MCM mission in a fraction of the time and with fewer false alarms than would be possible with conventional tools.

Using an intuitive user interface the operator can simply plan and save their required mission and run the post-mission analysis for all their off-board assets. With the mission saved though SeeTrack, future repeat missions can be conducted then contrasted simply and efficiently post-mission. Without SeeTrack, an operator has to plan and program the mission with expert knowledge of each piece of hardware and its corresponding software, launch the UUV and, upon its return, individually assess all data gathered during the mission from each sensor and sonar before finally repeating any parts of the mission which were unsuccessful.



As sensor technology continues to advance, SeeTrack has also advanced to handle the next generation of sensor data. Synthetic Aperture Sonar (SAS) produces large volumes of data, even on short missions, and SeeTrack now includes the specialist processing and visualisation tools necessary to deal with the data volumes and the high resolution imagery. The concept of allowing mission-on-mission planning has also been taken even further to support the broader concept of campaign management. The

campaign data manager allows searching by location, date, sensor-type or asset, ensuring that operators can find the data they need quickly and easily and it has been designed to cope with many years of operational usage. This is complemented by a set of contact management and reporting tools that provide the specialist workflow needed by MCM teams.

seebyte

www.seebyte.com

Support for charts

SeeTrack has always provided an extended format for common MCM data and interface formats. This includes S-57, S-63 Encrypted ENC Charts, WMS and AML Small Bottom Objects v3. The addition of S-63 chart support ensures that all users have the widest access to charts, wherever in the world they are currently operating.

Additional MCM modules

The SeeTrack product offers operators many additional MCM specific modules. A robust and trainable ATR (Automatic Target Recognition) module has been developed to automatically highlight potential targets captured within the sensor data, assess how 'mine-like' each target appears to be and present these to the operator for review. This module can also be utilised in tandem with the Performance Analysis and Training Tool which allows simulated mine-like objects to be inserted into real side-scan data, providing an economic way of evaluating the system's performance and training within the operating environment. This provides users information on the MCM systems probability of detection and false alarms for any given survey region.

One software solution to bring all your hardware together

AUVs	Diver Handheld	Towed Side-scan	ROVs
Hydroid REMUS Teledyne Gavia Bluefin Robotics OceanServer Technology	Teledyne Maptac Shark Navigator	EdgeTech LMCS SAS MSHDF L-3 Klein Associates Marine Sonic Technology	SeaTronics Predator VideoRay RI CoPilot

Other assets and sensors may already be supported by SeeTrack, please contact SeeByte for full support specifications.



seebyte

www.seebyte.com

What this means for the user

"By choosing SeeTrack within the COIN application, we have procured a system that allows us to analyse and display all of our underwater and airborne sensors, and to integrate very shallow water mine counter measures with global command and control systems. We can now generate a common picture of our operational environment, share that picture with the warfare commanders and be even more effective with our field operations."

Lieutenant Giani Waghelstein, Platoon Commander and Oceanographer at NSCT ONE, US Navy. The US Navy operates AUVs, Towed Side-scan, Marine Mammals and Diver handheld Systems.



"SeeTrack is well known as the MCM software tool of choice. The technology has provided us with excellent contact management tools over the years. It is fantastic that we have upgraded to the latest version of SeeTrack and will now have the complete support of SeeByte in utilizing SeeTrack to its fullest."

WOCS James Harper, Commanding Officer of the Mine Counter Measures Team of the Royal New Zealand Navy. The Royal Navy, New Zealand operate AUVs, Towed Side-scan and Diver handheld Systems.



"Our navy has used SeeTrack for many years now to assist with mission planning and post processing of data from our REMUS AUVs and our Shark Navigators. We believe that it is a very effective package available to us to help run our MCM and harbour protection missions, and train the operators. SeeByte also offers first rate support, which is one of the reasons why we have chosen to accompany our licence purchase with additional support and maintenance for the next five years."

Lt Cdr Guido Fretz, representative of the Netherlands Ministry of Defence. The Royal Netherlands Navy operate AUVs, Diver hand-held systems and ROVs.

seebyte

www.seebyte.com

“SeeTrack is more than just mosaics. It is a software that allows us to run our AUV operations, supporting all the mission life-cycle Planning, Execution, Analysis and Data Dissemination. Importantly, the SeeByte software provides functionalities not easy to find as an all-in-one software; the output products coming from SeeTrack increase the interoperability of our MCM Teams with MCM International Community. Our GAVIA systems are currently unique in the international MCM community and with SeeTrack we are able to deliver outputs useful to the wider NATO community.”

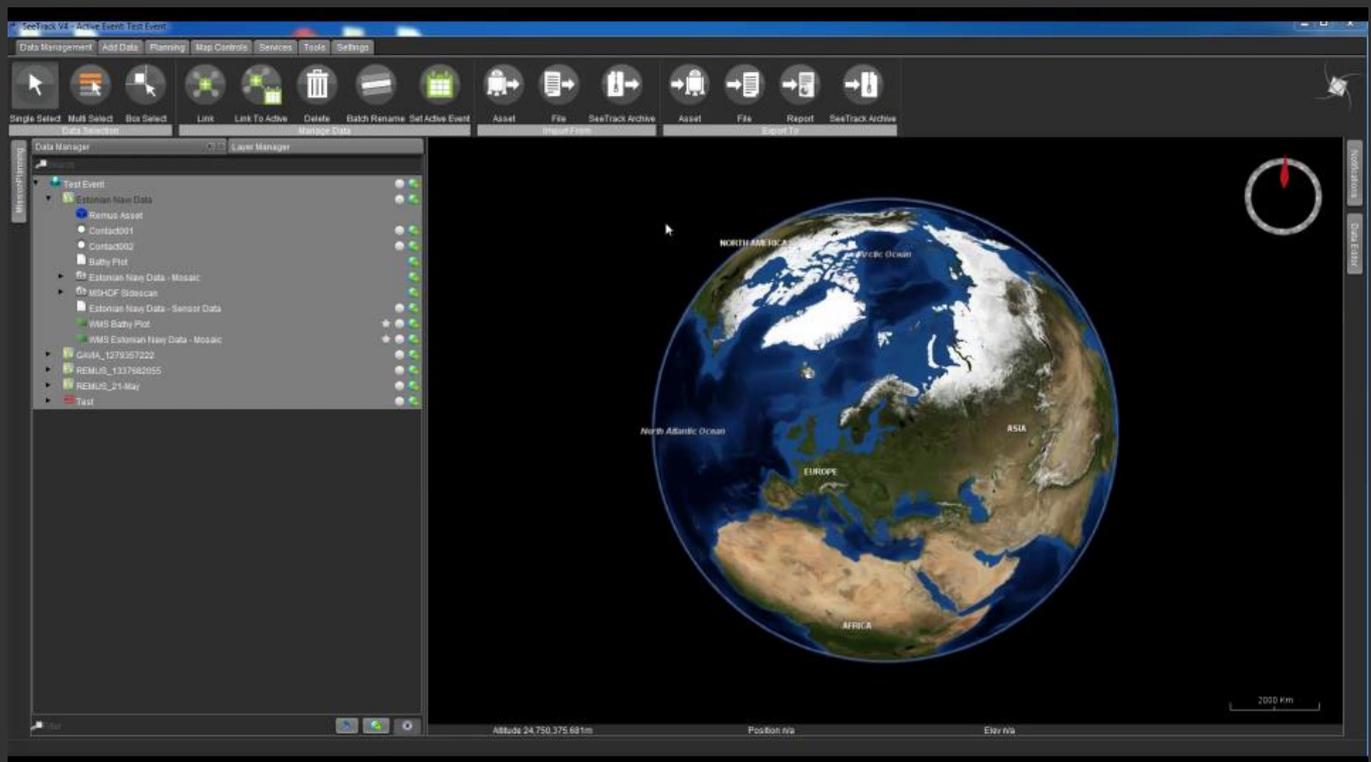


Lieutenant Commander Carlos Afonso, Head of PO Navy MW Department, Portuguese Navy.
The Portuguese Navy operates AUVs.

Contact us today

Email: sales@seebyte.com

Telephone: +44 (0) 131 447 4200



seebyte

www.seebyte.com

SeeByte Ltd

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