

MODELLING & SIMULATION

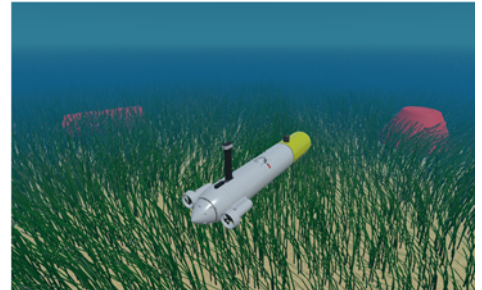
MISSION IN BRIEF

Modelling & Simulation (M&S) is a critical methodology with particular value for the NATO Nations. M&S allows the behaviors of both existing systems and hypothetical future systems to be analysed in a range of simulated environments (Live-Virtual-Constructive). This analysis, traditionally used for training, can be used also to improve the understanding and performance of systems, as well as to develop new concepts and technologies. Current work by the CMRE M&S team is allowing progress on core research and technology for key NATO partners as well as carrying out consultancy work for other beneficiaries such as the NATO Nations.

OVERVIEW

The goal of the **research and technology** work is to carry out studies that will allow the adoption of M&S in all of the life cycle phases of autonomous systems at sea, from the early phases of their development to their usage on different types of missions.

CMRE has been working the development of a multi-layer interoperable High Level Architecture (HLA) federation with live, virtual and constructive systems. The goal is to develop an M&S based capability providing a set of innovative approaches during the whole life cycle of new systems along with ideas that will assist the processes of test and engineering, concept development and experimentation, training and education. Today the HLA federation allows the placement of underwater Robotic Operating System (ROS) hardware and software into a range of virtual environments.



Virtual simulators can be used to display and manage interactions among assets, and federates of the system.

In addition to research that places a simulated environment around hardware and software, work is underway to leverage on synthetic environment to enhance and augment human capabilities. Researches to design and develop innovative Human-Computer Interfaces are on-going by using virtual and augmented reality based approaches. Another research area is devoted to understand the implementation of serious gaming in training, mission rehearsal and in the identification of human capabilities to improve the operational success of current and future systems. CMRE has a great opportunity to take advantage of our varied, multidisciplinary team and environment. The adopted approach is to leverage for the development of simulator conceptual models on both the proximity with the operational community and the knowledge and expertise of the centre in the various R&D and engineering areas of expertise (robotics, environment, communications, and specific warfare areas).

Consultancy work is being carried out to support our customer to identify the future trends for several M&S application areas in NATO: training and education, planning and decision support, and logistics and deployment.

A key factor of the success of the projects in this area has been both the commitment and the solid technical and scientific background of the project team members, mixed with a real spirit of collaboration with the customers. Every day, the CMRE team contributes solutions that bridge any existing gaps between the technical, scientific and operational communities.

CONTACT

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