

COMMUNICATIONS AND NETWORKS IN THE MARITIME ENVIRONMENT

MISSION IN BRIEF

This project develops technologies to enable ad-hoc underwater communication networks and the connection of those networks with existing above-water wireless networks.

OVERVIEW

A key to developing autonomous systems for NATO is communication among data gathering platforms below and above the water. Unlike mature network technologies that are used above water, underwater communication is in its nascent stages. The Centre is uniquely positioned to develop the necessary technologies and to help develop and promote the necessary standards and protocols for interoperable communication and networking environments.

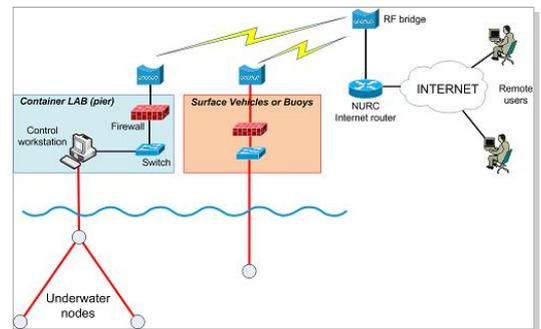
The objectives of this project are being met through a number of initiatives, including the development of:

- Architectures and protocols that enable the creation and management of ad-hoc underwater networks and their connection to above-water networks.
- The Software-Defined Open Architecture Modem (SDOAM) and the creation of a consortium to define standards for interoperable component interfaces.
- JANUS, an underwater digital communication standard that is in process to become a NATO standard and is being promoted in the maritime industry through mechanisms, such as the JANUS wiki website: <http://www.januswiki.org>.
- A semi-permanent “modem farm” connected to the Internet. Known as the Littoral Ocean Observatory Network (LOON) and located next in the Gulf of La Spezia, near the Centre, the facility lets collaborating partners participate in and run their own underwater communication experiments from remote sites around the world.

Network architectures and protocols developed at the Centre are validated during sea trials for the Cooperative Antisubmarine Warfare program. The success of the program depends on autonomous vehicles being able to share information underwater in near real-time.

CONTACT

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Top: A schematic of LOON, which consists of fixed (bottom-mounted) and mobile nodes. Bottom: Some of the nodes used in a CMRE experiment, including the Folaga autonomous underwater vehicles, surface marker buoys, and bottom-mounted tripod modems.