



Press release
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JANUS, the CMRE underwater communication protocol, becomes a NATO Standard

First time ever for a digital underwater communication protocol to be recognised at international level

NATO Nations recently agreed that JANUS is the NATO Standard for digital underwater communications. The protocol opens the way for a standardised Internet of Underwater Things

Aerial and terrestrial communication methods do not work well underwater. Therefore, none of the available communication protocols could be easily exported under the sea surface to work with and enhance capabilities of new game-changing robotic technologies. That is why the NATO STO Centre for Maritime Research and Experimentation (CMRE), based in La Spezia (Italy), has started about ten years ago to develop a digital underwater coding standard aimed at providing a baseline common denominator for underwater acoustic communications. It is called JANUS and it has been now recognised as a NATO standard, called a STANAG for Standardisation Agreement, by all the NATO Nations. This marks the first time ever for a digital underwater communication protocol to be acknowledged at international level, and it opens the way for a standardised Internet of Underwater Things.

The protocol is a way of encoding information into sound simple enough that existing and new equipment can be brought into compliance with the standard relatively easily. It is named after JANUS, the Roman God of openings and gateways, because it opens the portal between different operating paradigms. In practice, it works like a Lingua Franca, and it can make military and civilian, NATO and non-NATO devices fully interoperable. As it happened not many years ago with the Wi-Fi protocol above the water, JANUS has a huge potential to leverage technological investments and create a lot more value under the water, making all compliant assets (and networks of those) able to cooperate with a robust signalling method.

Adopted globally, JANUS is aimed at stopping the current underwater “Tower of Babel” between modems and systems of different manufacturers and nations. For that reason the JANUS developing process has been, since the beginning, as inclusive as possible, involving academia, industry, governmental agencies, and subject matter experts in the Nations. Support to CMRE for these activities was provided by the Future Solutions Branch of the Capability Development Directorate of the NATO Allied Command Transformation in Norfolk, VA (USA). Tests of JANUS at sea have been conducted in the last years by CMRE on board the NATO Research Vessel Alliance, and using the innovative CMRE Littoral Ocean Observatory Network (LOON), which facilitates experimentation of marine robots’ mission-base teams by creating a monitoring acoustic network with tripods of underwater communications equipment sitting on the seabed but accessible by users across the world via web.

About CMRE. The STO CMRE (Science and Technology Organization – Centre for Maritime Research and Experimentation) is located in La Spezia, Italy. The Centre focuses on research, innovation and technology in areas such as defence of maritime forces and installations against terrorism and piracy, secure networks, development of the common operational picture, the maritime component of expeditionary operations, mine countermeasure systems, non-lethal protection for ports and harbours, anti-submarine warfare, modelling and simulation, and marine mammal risk mitigation. CMRE operates two ships, NATO Research Vessel *Alliance*, a 93-meter 3,180-ton open-ocean research vessel, and Coastal Research Vessel *Leonardo*, a smaller ship designed for coastal operations. In addition to its laboratories the Centre is equipped with a fleet of autonomous underwater and surface vehicles and a world-class inventory of seagoing sensors.

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