PROGRAMME: ENVIRONMENTAL KNOWLEDGE AND OPERATIONAL EFFECTIVENESS

MISSION IN BRIEF

Provide awareness through environmental knowledge and the indication and warning (I&W) of anomalies to support ASW/MCM and other NATO operations in areas that can be disputed and threatened by non-conventional warfare.

OVERVIEW

The Environmental Knowledge and Operational Effectiveness (EKOE) program addresses these NATO challenges by developing concepts, studies and experiments using *disruptive techniques* capable to Gather, Process, Fuse and Exploit environmental knowledge and deliver standards, requirements and prototypes that can be *game changing* in providing information superiority to NATO through the Intelligence Preparation of the Battlespace (IPB) and Interoperability and Information Exploitation (I2X).

Emphasis is placed on:

- Cost-effective, re-locatable, discreet and secure autonomous data collection technologies for Intelligence, Reconnaissance and Surveillance.
- Highly portable and interoperable performance algorithms and stochastic modelling/prediction tools.
- Operational Effectiveness by delivering information to operators and decision aids that can increase the probability of success of the missions and reduce risks.

Results are delivered through Pictures for Environmental Characterization and Situational Awareness that will ultimately provide tactical advantages to the transformed, modern, tightly-connected NATO forces and will enable them to operate together and work with partners in any environment.

The programme is organized into two projects:

Autonomous networks and smart sensing for Maritime ISR. This projects aims to deliver to NATO an experimental concept to collect, process, exploit and disseminate Underwater Intelligence everywhere and under any threat, by conduction research for environmental characterization and situational awareness combining remote sensing and long endurance stealth robotic observation networks (e.g. underwater gliders). The envisioned solutions integrate, evaluate, process and fuse data into knowledge and information from different sources.

Sensing and Predicting Noise using robotic platforms and Forecast Models. This project aims to develop hydrophones and acoustic arrays to equip underwater long endurance discreet autonomous vehicles to monitor the ambient noise environment and deliver warning about unknown sound sources. It also research numerical solutions for ocean-acoustic modelling and data assimilation, to improve ways to forecast underwater acoustic noise by fusing the data collected by the underwater robotic platforms, along with any other underwater observations.

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