

NATO MULTINATIONAL CAPABILITY COOPERATION UNIT
NATO MARITIME UNMANNED SYSTEMS (MUS) SYMPOSIUM

NATO HQ BRUSSELS 4-5th DEC 19

INVITATION FOR INDUSTRY PARTICIPATION

Reference: MUS Decision Sheet - DI(STR-MCC)(2019)0002 dated 07 Jul 19

1. At the 2018 NATO Brussels Summit, Nations agreed to reinforce the Alliance's Maritime Posture and address, as a priority, known shortfall areas. Maritime Unmanned Systems (MUS) technology was identified as an integral element of any future NATO warfighting solution and as such will feature prominently in capability development strategies.
2. The NATO Maritime Unmanned Systems Initiative (MUSI) was formed under a Declaration of Intent signed by 14 NATO maritime nations to promote collaboration and interoperability in MUS development.
3. The MUSI Steering Board has recognised the pre-eminent role of industry in developing MUS capability and in driving interoperable solutions. At their last meeting the board directed the MUSI to engage with industry at the earliest opportunity in order to forge a mutually beneficial partnership. As a starting point for that relationship the MUSI would like to invite Industry partners, through the auspices of the NATO Industry Advisory Group (NIAG), to a symposium, to be held at the NATO Headquarters in Brussels, 4/5 of December 19, to discuss some of the challenges facing NATO navies in developing MUS solutions.

Symposium Structure

4. The MUSI would like to invite industry to consider the scenarios outlined below, and select one or more of these as the subject of an industry presentation outlining potential solutions for the development of MUS capability to meet the challenge. Presentations will be followed by a Q&A and open discussion period.
5. The symposium will follow an open format with all participating Industry present throughout and taking a full and free part in the discussion periods. There will be an opportunity for a number of industry displays to be set up within the NATO HQ public space.
6. The NATO audience will consist of the members of the NATO MUS Steering Board and national representatives to the NATO HQ. A collection of the senior military and government

representatives from the signatory¹ and observer nations², with responsibility for MUS capability development and acquisition within their Nations. In addition there will be those members from NATO bodies with an interest in MUS development such as the NATO Maritime Command HQ, the NATO maritime Centres of Excellence, The NATO Science and Technology Organisation, Allied Command for Transformation and the Centre for Maritime Research and Experimentation.

Conceptual Scenarios

7. The following four conceptual scenarios will form the basis for the presentations and discussions:

- **ASW CONCEPT: HOLD AT RISK (BARRIER OPS):** This mission envisages a deployable (in the timescale of a few days) barrier approach in which a mix of UxVs are deployed at choke points to detect and classify transiting adversary submarines. Potentially the use of smaller, low power, energy harvesting, long endurance unmanned platforms, with low observability (Acoustic, magnetic, radar, thermal and visual) and long endurance, might provide solutions for this mission. Solutions will need to consider potential launch and recovery challenges associated with deployability in ocean choke points. In this context such MUS might operate alongside conventional assets and act as a cue for other assets to be brought into play, maximising the efficient employment of high end manned assets.
- **ASW CONCEPT: WIDE AREA PERISTENT SURVEILLANCE:** This mission recognises the aspiration, as laid out in NATO's Future ASW Vision Paper, to establish a persistent and effective wide area surveillance and detection capability. Modern submarine threats pose a significant challenge in terms of their stealth and long range offensive capabilities. This drives the need to be able to maintain a surveillance and detection capability over very large areas of ocean for lengthy periods.
- **MCM CONCEPT: OVER THE HORIZON AUTONOMOUS MCM:** This mission focuses on low visibility MCM at distance (>12NM). It encompasses both wide area exploratory operations and more critical focused clearance operations. MUS might be well suited to this task and provide the benefit of keeping valuable surface assets and most importantly people out of danger. Solutions will need to consider key factors such as persistence, speed, endurance, payload, stealth, navigational accuracy, false alarm rates, communication capabilities and trust need to be addressed.
- **MISR CONCEPT: ORGANIC MULTI DOMAIN ISR – EXTENDING REACH:** This concept looks to the potential use of unmanned system to extend the Intelligence collection, surveillance and reconnaissance capabilities of maritime units by extending the reach of organic sensors, increasing Maritime Situational Awareness, extending identification, tracking and targeting options and increasing the persistence and

¹ Signatory Nations: Belgium, Denmark, France, Germany, Greece, Italy, The Netherlands, Norway, Portugal, Poland, Spain, Turkey, UK, USA

² Observer Nations: Australia, Bulgaria, Romania

agility of response to particular ISR requirements. This concept will include solutions in all domains potentially utilising UUVs, USVs and / or UAVs acting independently or as part of a cross domain network. UUVs for collecting acoustic intelligence, generating Indication and Warning (I&W) signals thorough acoustic sensing (passive and active) and focusing on oceanographic sensing (temperature, salinity, density, pressure) for characterizing the environment. USVs to extend the range of surface sensors, passive and active and to act as network nodes for the underwater domain. UAVs to maximise the speed of response and to provide a wide area surveillance capability to increase situational awareness and to increase the fidelity of the Recognised Maritime Picture. In addition the potential contribution of UAS to enhance ISR commas and data networks might be considered. As this approach matures there might be the possibility to exploit autonomy through automatic target recognition, anomaly detection, for example establishing "Patterns of Life"

8. In considering the scenarios the MUSI would be particularly keen to hear from industry how they would overcome key challenges, which include among others, cross domain command and control, stealth, payload capacity, endurance, persistence, maintenance, self-protection and physical security, launch and recovery, underwater comms and data network solutions, cyber resilience and data fusion. In addition the MUSI would be keen to hear industry views on the opportunities created by the use of increased autonomy and AI.

Outline Programme

9. This meeting will be held in the NATO Headquarters in Brussels, Belgium. The rough schedule of events will be as follows:

Wednesday 4th Dec 19

- Welcome to industry.
- Industry partner presentations to the NATO MUSI community including time for questions and discussion.
- Evening social and networking function at a local venue in Brussels

Thursday 5th Dec 19

- Industry partner presentations to the NATO MUSI community including time for questions and discussion.
- Farewell drinks with Industry partners

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ANNEX 1
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10. Industry is invited to express their interest in attending, where possible with a simple outline proposal of the presentation material they would like to deliver, through their national NIAG representatives, or directly to the NATO MUS Innovation and Coordination cell POCs in the NATO HQ by the 15 Oct 18.

- Cdr Ian Danbury GBRN – Danbury.ian@hq.nato.int Tel: +32 2707 1138
- Ms Lindsay MacRae - Lindsay.Macrae@cmre.nato.int Tel: +32 2707 5589

11. Full Administrative Instructions regarding the NATO HQ, recommended hotels, local information and social events for the meeting will follow receipt of intent to participate.

(Signed) Kevin Moyer
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