



NORTH ATLANTIC COUNCIL
CONSEIL DE L'ATLANTIQUE NORD

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08 April 2021

NOTICE
NIAG-N(2021)0012

NATO INDUSTRIAL ADVISORY GROUP (NIAG)

NIAG study on Platform Interface Standards for Maritime Unmanned Systems
Exploratory Group meeting to be held virtually on 18 May 2021 starting at 14:30 and
estimated to conclude by 16:30

Calling notice

1. A NIAG Exploratory Group meeting to address Platform Interface Standards for Maritime Unmanned Systems will be held on 18 May 2021. In light of the continued COVID-19 crisis, this meeting will be held virtually (more information to follow), starting at 14:30 and estimated to conclude by 16:30.
2. An agenda for the meeting is available at Annex 1.
3. The administrative arrangements for the meeting are set out below; the information describing the aim and the objectives of the study is available in Annex 2 (Steps 1 and 2).

REGISTRATION FOR THE MEETING

4. Industry representatives willing to take part in this study (further called Participants) are invited to contact their NIAG delegation prior to registering for this study.
5. Participants (even if unable to connect to the meeting) are invited to complete two registration processes:
 - 5.1. A registration for the meeting, via the DI portal at <https://diweb.hq.nato.int/>
 - a) Once on the DI Portal, please go to NIAG, then “events registration” located underneath the NIAG logo in the centre of the screen. This will point you to a page listing upcoming events. Click on the event you wish to register for – open the terms and conditions and complete the questionnaire.
 - b) **Please ensure that you complete the registration for the meeting by 11 May 2021.**

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5.2. A registration to the NIAG Portal, for the newcomers (not being in possession of credentials to NIAG portal), in order to be granted access to the documents prepared for this study.

- a) This registration requires you to fill in the form that opens at <https://diweb.hq.nato.int/> on the top-right hand side of the page, **Register yourself**. Make sure you **select NIAG as community of interest** (a field towards the end of the registration form).
- b) After you click the 'Submit' button at the end of the registration form, a notification will be sent automatically to our office. The NIAG staff will then approve your access in the following days.
- c) This registration shall also be finalised by 11 May 2021 the latest, in order to allow us time to approve your access to the documentation, in order for you to prepare for the meeting. Please note that the first registration (paragraph 5.1.) does not automatically grant you access to documentation.

SECURITY CLEARANCE

- 6. The Exploratory Group meeting will be held virtually at unclassified level.
- 7. The study will be open to industries from NATO and Partner nations within the Interoperability Platform (IP) format, and conducted at 'NATO Unclassified releasable to IP' level.

USEFUL INFORMATION FOR THE VIRTUAL MEETING

- 8. Documents/presentations will be posted on the Defence Investment Portal. **Participants need to ensure that they have access to this website prior to the meeting.** (See the registration process described in paragraph 5.2.)
- 9. All participants having registered for this study will receive in due time:
 - 9.1. Connection details for this meeting (landline number to dial in Belgium, the costs for the phone call being borne by participants);
 - 9.2. A link to the collaboration site created for this study where the documentation to be used during the teleconference will be posted;
 - 9.3. A link to an electronic survey that will present the volunteers for the study Management Team and be used to vote.

STUDY ORGANISATION

10. Industry representatives are invited to consider volunteering for Chairman, Vice-Chairman and Rapporteur roles, which represent the Management Team of the Study Group, and communicate their option to the NIAG Secretary prior to the meeting. A brief description of the management team's role and of the Quick Reaction Team role is available at Annex 3.

11. An election for the Management Team will be held under agenda item 5. Only industry participants are entitled to vote, by following the rule of one vote per company and per country.

(signed) Nathalie Van Donghen

**AGENDA for the VIRTUAL Exploratory Group meeting on Platform Interface
Standards for Maritime Unmanned Systems**

*(all items in italic will be considered as consulted by participants **prior** to the
teleconference – only questions and clarifications regarding these will be taken at the
meeting, as necessary)*

1. OPENING REMARKS AND INTRODUCTION

NIAG Vice-Chairman, and Chairman of the meeting: Mr. Pablo Gonzalez (Indra, Spain)

2. INTRODUCTION TO NIAG STUDY PROCEDURES

(presentation to be posted on the NIAG portal, to be consulted by participants prior to the meeting)

3. BACKGROUND AND OBJECTIVES OF PROPOSED STUDY

Briefing by the Sponsor, NNAG/SDCG

(the briefing will be available on the NIAG portal, to be consulted by participants prior to the meeting. However, the sponsor will brief during the teleconference)

4. REVIEW OF DOCUMENTATION REQUIRED FOR THE STUDY

Document to be discussed during the meeting, defining the study objectives. This document will be amended during the meeting to include industry views and reactions to the 'sponsor' briefing, and when agreed, will represent the basis for CNAD approval of the study. *The initial draft will be uploaded on the collaboration site.*

NIAG Coordinating Officer, Mr. Jean-Sébastien Vautier

Participants are invited to read this document prior to the meeting to come ready to discuss and exchange under this agenda item.

5. NIAG STUDY GROUP MANAGEMENT – ROLES AND RESPONSIBILITIES

(presentation to be posted on the NIAG portal, to be consulted by all participants prior to the meeting)

6. ELECTION OF STUDY CHAIR, DEPUTY CHAIR AND RAPPORTEUR

(the list of participants will be uploaded, with the volunteers for management positions highlighted in yellow)

Voting will be done electronically during the meeting, only by those being connected at the link to be provided prior to the meeting:

- Participants are allowed to vote only once
- Only one vote per company per nation

7. STUDY CONTRACTING ARRANGEMENTS, BUDGET & ADMINISTRATION –

(presentation to be posted on the NIAG portal, to be consulted by participants prior to the meeting)

8. STUDY REPORTING REQUIREMENTS

(presentation to be posted on the NIAG portal, to be consulted by participants prior to the meeting)

9. DATE OF KICK-OFF MEETING OF STUDY GROUP

STUDY REQUEST – STEP 1

1. Title of Proposed Study: Platform Interface Standards for Maritime Unmanned Systems

2. Brief Description of Proposed Study:

Working in support of the NATO Naval Armaments Group (NNAG) Ship Design Capability Group (SDCG) and the NATO Maritime Unmanned Systems Innovation and Coordination Cell (MUSIC²) the study will seek to develop platform interface standards for the carriage, deployment and recovery of Maritime Unmanned Systems. The standard will be a key enabler in the development and deployment of NATO maritime unmanned systems, as well as enabling interoperability of systems between nations.

3. Background:

Many NATO Navies are developing and fielding a range of Maritime Unmanned Systems (MUS) intended to deploy advanced capability at sea. MUS systems offer additional capability and mass at potentially lower cost whilst reducing the risks to military personnel. A number of systems are intended for deployment from frigates, destroyers, mine warfare craft and patrol vessels.

NATO has established the Maritime Unmanned Systems Innovation and Coordination Cell (MUSIC²) to coordinate and support the work of the multinational MUS Initiative (MUSI). MUSI and the NNAG SDCG have identified a need to consider interface standards for MUS in order to support the designers of MUS and the platforms from which they operate.

The Joint Industry Project LAURA (JIP LAURA) was established in 2011 and has developed a set of guidelines and outline requirements for launch and recovery systems. In the final stages of the project it was determined that rigid requirements in these areas would excessively limit development and innovation in what is a rapidly developing area of technology both in the military and civilian environments. The expectation is that civilian development will lead the sector rather than pure military development due to the scale of funding and scope of systems under development across the entire maritime enterprise. As such the intention is to publish the outcome of the JIP LAURA studies as an ANEP under cover of a Standardised Recommendation (STANREC).

Notwithstanding this conclusion, there remains a requirement for the development and implementation of interface standards that cover purely military aspects of MUS carriage, deployment and recovery. The creation of such a standard would be essential to the development and deployment of MUS which were truly interoperable between nations.

4. Objectives of the study and what is expected to be delivered in the final study report:

The objectives of the study are to:

- Review and determine the likely trajectory of MUS deployment in military use platforms.
- Identify the deltas in MUS embarkation, carriage, deployment and recovery, between military and civil operations, for example requirements to operate across extremes of weather, sea state and temperatures, deployment and/or recovery of ordnance, and in a range of specialist military hulls, where operation of MUS competes with other potentially interfering military requirements.
- Review the proposed draft ANEP produced by the JIP LAURA and make recommendations to improve it for use as a STANREC for NATO MUS Launch and Recovery systems.
- Identify issues in MUS embarkation, carriage, deployment and recovery operations where interoperability of systems between nations would be at risk in the absence of effective interface requirements. For example, data transfer, provision of fuel, provision of electrical power for battery recharge, battery handling, etc.
- To consider the cyber security issues associated with the MUS interfaces, both in terms of data security and physical cyber resilience.
- Where they exist, to identify existing military or civilian standards that could be used to cover military delta and interoperability requirements.
- Where existing standards do not exist, to propose candidate standards or to scope work programmes to develop these standards.
- Deliver a comprehensive report on the work of the study, including material that would be suitable for inclusion in a draft standard that covers the preceding two points.

5. NATO Priority (e.g. applicable NDPP target, Smart Defence (SD), CFI...)

- NATO Defence Planning priorities as follows:
 - Anti-Submarine Warfare
 - Naval Mine Warfare
 - Maritime Engagement
- SDI Project 1.41 - MCM Mission Modularity
- SDI Project 1.44 – FITFORCSW
- SDI Project 1.1271 Deployable ASW Barrier

- NDPP Targets:
 - M7203N Anti-Submarine Warfare; Improve ASW capability.
 - M6204N Naval Mine Warfare – Mine Counter Measures.
 - M7203N Improved submarine surveillance, detection, classification and neutralization.
 - M7204N Maritime Situational Awareness (MSA).
 - M3201N Above Water Warfare

6. Intended follow-on to the study:

Publication of a standard covering military delta aspects MUS operations in support of MUSI and SDCG activities and ship / system design in nations.

Execution of programmes to develop necessary interoperability standards following the recommended scopes of work developed through this project.

7. Are any other NATO bodies involved in the related area of work?

NATO sponsors could include: NATO MUSI, NNAG SDCG, STO CMRE, ACT, UWWCG, COE CSW & NMW COE

8. Is there any current industrial involvement in the area of work?

No; the closest equivalent activity is JIP LAURA and this proposed study is intended to go beyond the work of that project. Nations are currently working with industry to develop unmanned systems either individually or in small groups, with significant risk to interoperability for NATO forces.

9. Proposed start date: 2021

10. Desired completion date: 2022

11. Study classification level: NATO Unclassified

12. Study open to Partners? Yes

13. Sponsoring group point of contact and IS point of contact:

Mr David Manley, UK Ministry of Defence, Head of UK delegation to NNAG/Ship Design Capability Group
Tel: +44 30 679 35056
david.manley641@mod.gov.uk:

Cdr Ian Danbury (GBR(N))
Deputy Director Maritime Unmanned Systems Innovation and Coordination Cell (MUSIC^2)
Tel: +32 (0)2707 1138
Danbury.ian@hq.nato.int

IS point of contact: Mr. Gregory Ivey (NATO IS/DI), ILM Section Head
ivey.gregory@hq.nato.int

STEP 2

1. Title of the Proposed Study: Platform Interface Standards for Maritime Unmanned Systems

1. Study Objective: The objectives of the study are as follows:

- a. To review and determine the likely trajectory of MUS deployment in military use platforms, addressing the deltas between military and commercial use of uncrewed systems, cyber aspects of MUS operation, and challenges to interoperability;
- b. To review existing commercial and military standards, assessing their applicability and advising on areas for development. In particular to review the draft ANEP 103 produced from the JIP LAURA studies and report, and making recommendations to improve it for use as a guide under a STANREC for NATO MUS Launch and Recovery systems;
- c. To identify the need to develop additional military specific standards in support of general MUS operations and to facilitate interoperability between nations.
- d. To determine the scope for standardisation to support the seven areas of cooperation in the MUS Initiative:
 - i. Information Sharing.
 - ii. Policy.
 - iii. Standardisation:
 - iv. Doctrine Development:
 - v. Research & Operational Experimentation:
 - vi. Logistics, Support and Training:
 - vii. Acquisition and Industry Engagement:

https://www.nato.int/nato_static_fl2014/assets/pdf/2020/11/pdf/2011-factheet-mus.pdf

- 2. Operational Scenarios:** For surface and underwater MUS the study should build on, but not be limited to, operational scenarios used in the JIP LAURA studies, augmented to consider launch and recover of crewed and uncrewed surface and underwater vehicles. Operations in cold weather and icing conditions should be considered. For airborne MUS scenarios are to cover small and medium sized MUS engaged in ISTAR, logistics and active engagement of appropriate threats using embarked weapons.
- 3. Scope of the Study:** The scope of the NIAG Study is to focus in depth on interface standards required to enable effective operation of MUS in military roles and

environments, in particular with respect to enabling interoperability of systems (e.g. a MUS from a nation being hosted on a platform from another nation).

4. Specific Issues to be Addressed:

- a. Review and determine the likely trajectory of MUS deployment in military use platforms in the maritime environment.
- b. Identify the deltas in MUS embarkation, carriage, deployment and recovery, between military and civil operations, for example requirements to operate across extremes of weather, sea state and temperatures, deployment and/or recovery of ordnance, and in a range of specialist military hulls, where operation of MUS competes with other potentially interfering military requirements.
- c. Review the proposed draft ANEP produced by the JIP LAURA and make recommendations to improve it for use as a STANREC for NATO MUS Launch and Recovery systems.
- d. Review US Navy Design Practices and Criteria manual on launch, recovery, and handling of surface and subsurface vehicles (T9070-BV-DPC-010/583-1) for consideration to support NATO MUS launch and recovery systems.
- e. Identify issues in MUS embarkation, carriage, deployment and recovery operations where interoperability of systems between nations would be at risk in the absence of effective interface requirements. For example, data transfer, provision of fuel, provision of electrical power for battery recharge, battery handling, etc.
- f. Consider the cyber security issues associated with the MUS interfaces, both in terms of data security and physical cyber resilience.
- g. Where they exist, to identify existing military or civilian standards that could be used to cover military delta and interoperability requirements.
- h. Where existing standards do not exist, to propose candidate standards or to scope work programmes to develop these standards.
- i. To consider recommendations on trials and validation of key assumptions as possible events in future - Recognised Environmental Picture Maritime Unmanned Systems - REP(MUS) - exercises.

5. Study Outputs: The specific outputs of the study are:

- a. A final report that documents the industry's MUS interface study findings, to include identified capability gaps and issues, with the proposed mitigation thereof.
- b. Delivery of proposed amendments to ANEP-103 covering MUS launch and recovery standards.

SHORT DESCRIPTION OF THE NIAG STUDY GROUP MANAGEMENT TEAM ROLES
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1. The **Study Group Chairman** is responsible for the carrying out of the study by the Study Group on behalf of the NIAG and for the presentation of the final report. He/she will formulate and direct the study work plan and oversee the administration of the study. The Study Group Chair may call on the NIAG Vice-Chairman, the NIAG Head of Delegation for his nation and the IS NIAG Coordinating Staff Officer to receive advice and assistance as required.
2. The **Deputy Chairman** will assist the Chairman in the management of the study and provide stand-in for the Chairman when and as required.
3. The **Rapporteur** will act as Secretary to the Study Group, supporting the Chair in the administration of the Study Group activities. Normally this will involve assisting with the meeting arrangements, compiling the records of meetings and disseminating information to the SG members. The Rapporteur will also act as the sole interface for the Study Group members regarding NIAG Study processes and procedures. The rapporteur will further communicate with or escalate any unresolved topic to the NIAG secretary as required.

SHORT DESCRIPTION OF THE QUICK REACTION TEAM'S ROLE
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1. The **Quick Reaction Team** is responsible for assisting the NIAG Study Group in the gathering of information, monitoring the study work, in liaising with other NATO bodies or groups who can provide information and assistance.
2. After delivery of the final report, the Quick Reaction Team is responsible for drafting the "Sponsor Assessment Form" to be considered at the first sponsor group meeting following the final report delivery.
3. This form has then to be provided to the NIAG Coordinating Staff Officer, preferably within 3 months of receipt of the study final report.