

Headquarters Supreme Allied Commander Transformation

STATEMENT OF WORK

For

Concept Development / Technical Study / Capability Analysis:

**NATO Cyberspace Operations Mission Engineering and Mission
Threads**

in support of Headquarters Supreme Allied Commander Transformation (HQ SACT),
Cyberspace Branch

RB-ACT-SACT-22-90

07 June 2022

Introduction

- 1 Allied Command Transformation (ACT) is the NATO warfare development command. The cyberspace branch is responsible, among others, for developing appropriate cyberspace warfare products such as strategic outlook analysis, horizon scanning, research and feasibility studies. The outcomes of those products inform ACT's activities in the area of concept definition & experimentation, and are often the source for development of forward looking cyberspace capabilities in support of NATO operations and missions.
- 2 The exploitation of cyberspace as a domain of operations presents an increasingly growing challenge for the Alliance, requiring of new strategies, concepts, architectures, processes and capabilities to enable NATO to defend on cyberspace as it does in the physical domains. In an attempt to establish synergies with industry and academia, make existing and under-development knowledge more widely available, and shorten the time it takes to develop new cyber capabilities, ACT regularly conducts Requests for Information (RFI) on cyberspace operations concept and capabilities (RFI-ACT-SACT-22-22), and awards a number of studies in support of (cyberspace) concept development, technical studies and capability analysis.
- 3 This Statement of Work (SoW) seeks industry support for the analysis, development and description of NATO-tailored cyberspace mission threads.

Background

- 4 A mission can be defined as the task, together with the purpose, that clearly indicates the action to be taken and the reason thereby. Mission Integration Management (MIM)

is defined as a core activity within the acquisition, engineering, and operational communities to focus on the integration of elements that are all centered around the mission. Mission Engineering (ME), in turn, is a technical sub-element of MIM as a means to provide engineered mission-based outputs to the requirements process, guide prototypes, provide design options, and inform investment decisions. ME can be defined as the deliberate planning, analyzing, organizing, and integrating of current and emerging operational and system capabilities to achieve desired warfighting mission effects.

- 5 Mission architectures are a result of the ME process. Mission architectures can be seen as “business models” for the conduct of the mission. A Mission Architecture is a conceptual modeling of concepts, approaches, and systems of systems that enables details of the process flow, timing, interactions, data, capabilities, and performance to be examined in relation to the other processes, entities, and systems that contribute to achieving the mission objective. It enables organized information sharing across the organizational units.
- 6 Mission Threads (MTs) are sub elements of a mission architecture. MTs include the tasks to be executed to conduct or carry out the mission to satisfy a defined objective. Threads define the sequence of end-to-end activities and events presented as a series of steps that accomplish the execution of one or more capabilities to achieve mission objective(s). Mission threads can be classified as:
 - 6.1 Operational mission threads. Describe how nodes (and perhaps the systems within the nodes) react to operational stimulus. The operational mission thread is presented as an end-to-end sequence of steps (external events, operator activities, and automated activities) that take place over a time period. For example, an operational mission thread for command-and-control system might begin with threat detection followed by a number of steps to determine the intent of the threat, make decisions to counter the threat, apply the counter measures, and finally document the commander's assessment of damage after completion.
 - 6.2 Development mission threads. Focus on development activities including adding new capabilities, technology refreshment, integration, test, certification, and release.
 - 6.3 Sustainment mission threads. Focus on deployment, installation, sustainment, or maintenance. A sustainment mission thread describes how the nodes operate together to sustain the mission.

Aim and Scope

- 7 This SoW seeks industry support for the development and description of generic operational type Mission Threads (MTs) applicable to a generic NATO mission in or through cyberspace. The development of the MTs will involve a number of mission engineering activities, which will be conducted in accordance with a well-recognized methodology, preferably the US DoD Mission Engineering Guide¹.
- 8 The project shall deliver a technical report containing an engineering analysis of NATO missions in cyberspace, including at least:
 - 8.1 High level mission definition and characterization, including mission scenarios and vignettes.
 - 8.2 Use cases.
 - 8.3 Mission metrics (Measures of Success and Effectiveness).
 - 8.4 High level mission architecture.
 - 8.5 Identification and description of Mission Threads (MTs), to include, at least:
 - 8.5.1 Cybersecurity operations.
 - 8.5.2 Cyberspace Intelligence, Surveillance and Reconnaissance (ISR).
 - 8.5.3 Defensive Cyberspace Operations (DCO).
 - 8.5.4 Offensive Cyberspace Operations² (OCO).
- 9 Provided analysis and descriptions specifications shall be cognizant (and reuse, to the extent possible) of previous work done by NATO, nations and other international organizations.
- 10 In accordance with best practices, the resulting analysis and description shall be product, solution and technology-agnostic.
- 11 Mission definition, metrics, architecture and threads shall be described in a manner that allows:

¹ Mission Engineering Guide. Office of the Deputy Director for Engineering. Office of the Under Secretary of Defense for Research and Engineering. Washington, D.C., November 2020 (attached to the SoW).

² While current NATO policy on cyberspace does not include OCOs, their understanding and description is necessary in order to enable proper mission planning and execution.

- 11.1 Describing a generic NATO mission in cyberspace.
- 11.2 Deriving a generic functional analysis of NATO cyberspace missions.
- 11.3 Deriving processes and Standing Operating Procedures (SOPs).
- 11.4 Identifying required capabilities.
- 11.5 Defining performances, including mission assurance impacts.

Activities and results

12 The selected provider shall:

- 12.1 Conduct a literature review of existing mission threads description in support of cyberspace operations, with particular emphasis in reusing existing work from nations, NATO and other military organizations.
- 12.2 Understand the different scope of NATO vs national missions, and ensure that (cyberspace) mission engineering activities and mission threads map NATO's scope of responsibility and expected roles and responsibilities.
- 12.3 Develop and discuss with the NATO project sponsor the technical report containing the mission engineering analysis and resulting mission threads.
- 12.4 Participate in technical discussions, as needed, notably with ACT Cyberspace Subject Matter Experts (SMEs) and NATO's operational and technical communities, as required.

13 The deliverables shall include:

- 13.1 Technical report containing a NATO-tailored cyberspace mission engineering analysis.
- 13.2 References and any additional documentation required to support the study.

14 All deliverables shall be provided in Microsoft Office, editable source formats.

15 All products delivered by the provider must be fully releasable to NATO and all NATO nations.

16 Unless otherwise agreed by ACT, all products released by the provider shall be unclassified.

Milestones

- 17 Contract award (T0): c.a. 11 July 2022.
- 18 Project kick-off meeting and technical discussion with ACT and other relevant stakeholders (as needed): T0+1 week, location ACT, Norfolk, or remotely via VTC should the works permit.
- 19 Progress meeting and review of draft #1: T0+4 weeks, location ACT, Norfolk, or remotely via VTC should the works permit.
- 20 Progress meeting and review of draft #2: T0+10 weeks, location ACT, Norfolk, or remotely via VTC should the works permit.
- 21 Delivery of final study: T0+16 weeks, location ACT, Norfolk, or remotely via VTC should the works permit.
- 22 Above milestones will be subject to analysis and revision during project kick-off-meeting.

Estimated Effort

- 23 The estimation of effort required to complete the works in the scope of this SoW is the sole responsibility of the bidding contractors. However, to facilitate understanding of ACT expectations, the following assumptions are shared by the ACT project sponsor:
 - 23.1 Necessary effort of about seven and a half (7.5) person-month of senior engineer.
- 24 It must be noted that the above estimate assumes provider's team pre-existing expertise on mission engineering activities and, in particular, development of operational use cases and mission threads. Familiarity with NATO organization, roles and responsibilities will reduce the effort to ensure NATO-focused analysis.

Essential Qualifications

- 25 To increase the likelihood of success, the provider shall meet or exceed the following essential requirements:
 - 25.1 Demonstrable, recent (less than four year-old, at the time of bidding) company references in the analysis and development of use cases and mission threads, preferably in the area of military operations.

- 25.2 Demonstrable, very recent (less than two year-old, at the time of bidding) company references in the analysis and description of military cyberspace operations and missions.
- 25.3 Have the clearances (team member(s) with appropriate NATO or national Personnel Security Clearance (PSC) and contractor NATO or national Facilities Security Clearance (FSC) necessary to work with documentation up to NATO RESTRICTED.

Other Considerations

- 26 The following tools will be used to ensure project execution compliance with NATO requirements and continuous inter-organization alignment, while limiting the risk of the execution:
 - 26.1 Formal appointment of a Project Manager (PM) from both ACT and the provider, as the single PoC for each entity for project scope, management, quality assurance and evaluation.
 - 26.2 At the request of ACT's PM, invitation to other NATO stakeholders representatives (e.g., from the NAO Cyberspace Operations Centre or the NATO Cyber Security Center) to participate in workshops and to discuss supplier products, should those require coherence with those organizations areas of responsibility. This participation could be replaced with a list of questions/comments from those organizations to be discussed during the appropriate technical workshops.
 - 26.3 Formal delivery acceptance, per product and product draft required after each draft as well as prior to project closure.
- 27 The provider may request additional information to be provided by ACT prior to any of the kick-off or progress meetings, which ACT will furnish if adequate and available. The provider may request additional information required for the execution of the activities at any time in between meetings. In these cases, ACT speed of response will be "*best possible*". ACT will supply the relevant documentation and support required to complete the tasks within the agreed deadlines, specifically when it applies to sufficient documentation / support in order to understand the existing requirements and solutions that are in place. Review, feedback and acceptance of all draft and deliverable documents and outputs will be provided in a timely manner, as agreed between the parties during the detailed project plan development at the kick-off-meeting.

- 28 The provider will only use the above documents and information for the purposes of the execution of this contract and will immediately return or destroy all copies of the documentation once this purpose is fulfilled.
- 29 Disclosure of, and access to the above documentation or information to provider's personnel will solely be made on a need-to-know basis.
- 30 The provider and/or their personnel will not, without prior authorization from ACT, release to third parties any of the above documentation or information, its subject matter or any other aspect thereof.
- 31 This provision will remain in effect after the completion of the project and will cease to apply to any particular piece of information or documentation once that information or documentation becomes public knowledge other than through an act, default or omission of the provider.

Type of Contract and Period of Performance

- 32 Type of Contract: This is a firm-fixed-price deliverables contract in accordance with the General Terms and Conditions; as such, all employer responsibilities for the contractor performing under this contract shall lie with the contractor company.
- 33 The Period of Performance extends from contract award date (plus one week) to contract award +17 weeks (estimated 13 July – 07 November), requiring ACT project sponsor approval to deviate from the milestones identified above. Any (no-cost) extension to the period of performance shall be subject to ACT approval after careful consideration of the justification.

Place of Performance

- 34 Place of Performance: Contractors Facility. Location of project meetings shall be in general at ACT HQ in Norfolk, VA, unless prior agreement is reached to conduct them in a different location or (classification permitting) via VTC.
- 35 No infrastructure or NATO furnished equipment shall be provided to the provider, which will be responsible for all necessary tools and logistics necessary to execute the work, including handling of NATO documentation up to the classification of NATO RESTRICTED.

Information Security

- 36 The provider will have access and work with not classified, NATO unclassified and NATO RESTRICTED documentation, only. Personnel allocated to the activities in this SoW are required to have NATO RESTRICTED or national equivalent clearances at

the time of bidding. The provider shall comply with NATO policy when handling any NATO furnished information.

Intellectual Property Rights

- 37 Specific information to IPR is articulated in the General and Special Terms and Conditions that support this contract. All furnished materials, associated assets and documents (Intellectual Property) will be the property of ACT unless otherwise agreed in writing with the parties.

Releasability and Export Control

- 38 The products or services under this SOW will need to be releasable NATO. The provider will make all required efforts to obtain necessary authorizations from Government, Industry or any other owner of the information to disclose. Nothing herein requires the provider to provide information to ACT that is subject to Export Control Laws, IPRs or any other constraints prior to receiving the applicable authorizations.

ANNEX A

Statement of Work for Cyberspace Operations Situational Awareness Capability Specification

Contractor's technical proposals will be assessed on the qualifications of the team proposed to perform the work. Individuals' résumés must be provided. The proposed team as a whole will be measured against the criteria specified below in order to ascertain whether the team have the required expertise. (HQ SACT reserves the right to conduct technical discussions of nominated candidates). Examples of how team meets the minimum criteria are required. Ultimately Contractor companies shall clearly demonstrate by providing unequivocal reference to where / how the team meets the criteria set forth in this solicitation (please include page number in proposal and/or reference to CV).

Bidder Name _____

Candidates Name _____

Item	Compliant	Non-compliant
Demonstrable, recent (less than four year-old, at the time of bidding) company references in the analysis and development of use cases and mission threads, preferably in the area of military operations.		
Demonstrable, very recent (less than two year-old, at the time of bidding) company references in the analysis and description of military cyberspace operations and missions.		
Contractor has NATO or national Facilities Security Clearance and infrastructure necessary to work with documentation up to NATO RESTRICTED.		
Proposed team members have an active NATO or National RESTRICTED security clearance or higher.		