



NCIA/ACQ/2024/06737
17 April 2024

Market Survey

DELIVERY OF COUNTER UNMANNED AIRCRAFT SYSTEMS (C-UAS) EQUIPMENT

NCI Agency Reference: MS-CO-423252-C-UAS

The NATO Communications and Information Agency is seeking information from Nations and their Industry regarding the availability, pricing and delivery timeline of C-UAS equipment within all NATO Nations.

NCI Agency Point of Contact

Contracting Officer: Mr Radu Munteanu

E-mail: Radu.Munteanu@ncia.nato.int

To : Distribution List (Annex A)

Subject : **NCI Agency Market Survey MS-CO-423252-C-UAS**

1. Through issuance of this notice, the NCI Agency seeks to identify the availability and technical capability of all qualified NATO nation businesses that believe they can provide the services described in this announcement.
2. This is a Market Survey (MS). It is NOT a solicitation for proposals nor a pre-solicitation notice.
3. This MS is being issued to identify potential solutions, to calibrate requirements and identify possible suppliers.
4. The broadest possible dissemination by Nations of this Market Survey Request to their qualified and interested industrial base is requested.
5. A summary of the requirements is set forth in the Annex B attached hereto. Respondents are requested to reply via the questionnaire at Annex C. Other supporting information and documentation (technical data sheets, marketing brochures, catalogue price lists, descriptions of existing installations, etc.) are also desired.
6. The NCI Agency reference for this Market Survey - Request for Information is **MS-CO-423252-C-UAS**, and all correspondence and submissions concerning this matter should reference this number.
7. Respondents are invited to carefully review the requirements in Annex B.
8. Responses may be issued to NCI Agency directly from Nations or from their Industry to the Point of Contact indicated at Paragraph 12 below. Respondents are invited to carefully review the requirements in Annex B.

NATO Communications and Information Agency
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1110 Brussels
Belgium
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9. Responses shall in all cases include the name of the firm, telephone number, e-mail address, designated Point of Contact, and a NATO UNCLASSIFIED description of the capability available and its functionalities. This shall include any restrictions (e.g. export controls) for direct procurement of the various capabilities by NCI Agency. Non-binding pricing information is also requested as called out in Annex C.
10. Responses are due back to NCI Agency no later than **23:59 hours Central European Time (CET) on 15 May 2024.**
11. Clarification requests can be submitted no later than 10 calendar days prior the MS closing date.
12. Please send all responses, via email, referencing MS-CO-423252-C-UAS in the title of the email to: Radu.Munteanu@ncia.nato.int.
13. Product demonstrations are not foreseen during this initial stage. At this stage, clarification requests or any further questions are not accepted in return. NCI Agency reserves the right to invite respondents to discuss their response.
14. Respondents are requested to await further instructions after their submissions and are requested not to contact directly any NCI Agency staff other than the POC identified above in Paragraph 12.
15. The NCI Agency may seek additional clarification from respondents.
16. Any response to this request shall be provided on a cost-free and voluntary basis. Not responding will not prejudice or cause the exclusion of companies from any future procurement that may arise from this Market Survey.
17. Responses to this request, and any information provided within the context of this survey, including but not limited to pricing, quantities, capabilities, functionalities and requirements will be considered as indicative and informational only and will not be considered as binding on the participant or on NATO within the context of any future acquisition.
18. The NCI Agency is not liable for any expenses incurred by firms in conjunction with their participation in this Market Survey and this Survey shall not be regarded as a commitment of any kind concerning future procurement of the items described therein.

For the Chief of Acquisition:

Radu Munteanu
Contracting Officer

Enclosures:

Annex A (Distribution List)

Annex B (Request for Information - Summary of Requirements)

Annex C (Request for Information - Questionnaire)

ANNEX A
Distribution List for Market Survey

All NATO Delegations (Attn: Investment Adviser)

NATO Members Embassies in Brussels (Attn: Commercial Attaché)

NCI Agency – All NATEXs

NCI Agency – (reserved)

NATO C-UAS Working Group

NATO C-UAS Community of Interest (COI) - NCIA hosted COI Cooperation Portal

ANNEX B

SUMMARY OF REQUIREMENTS

1. Introduction

NCI Agency is performing an Informal Market Survey through this questionnaire. Your responses to the questions are most appreciated. Following the response, we may follow up with additional questions.

Note that since this is an Informal Market Survey, there is no requirement for highly detailed responses or analysis; we are mostly after qualitative information, and where quantitative information is requested, approximations suffice.

2. Purpose

The purpose of the C-UAS equipment is to protect critical infrastructure installations such as ammunition depots. These installations are located in urban as well in rural environments. The project shall deliver military C-UAS capability able to detect, identify and neutralize enemies UAS (drones), flying over restricted military infrastructures.

The Figure 1 shows a hypothetical area that needs to be defended: A circular No-Go zone centred around a point on the area to be protected such that the entire area to be protected falls within the No-Go Zone. Around the centre point, there is another circular area with a larger radius (diameter) where incoming UASs should be neutralized. The zone where UASs must be detected is defined as the largest concentric circular area in Figure 1.

From an operational perspective, the requirement is to detect and deny any commercial UAS, in a zone with minimum 7 km radius. At the technical level, the detection and deny ranges will of course dependent on the target size and environmental conditions. Sensor and effectors specific detection and deny ranges will have to be provided as requested in the questionnaire included in Annex C for different target types and categories. A No-Go zone with a radius of about 500m to 1Km can be considered for analysis purposes. The exact area to be protected will be discussed at a later stage on a case by case basis.

The C-UAS systems shall be seen as an integrated part of a multi-layer defence capability, which includes both passive and active components.

The C2 system shall ensure that all sensors and effectors are fully integrated, and facilitate easy operation (e.g. include manual and automated modes of operation).

The smart mitigation shall include jamming capabilities for both UAS communication channels and GNSS channels.

The capability shall have the possibility to distinguish between Friend or Foe UAS, based on Unmanned Traffic Management (UTM) technologies such as remote drone ID (e.g. compliant with ASTM F3411, ASTM F3548 and ASD-STAN prEN 4709-002 P1).

The project is looking for a field proven solution.

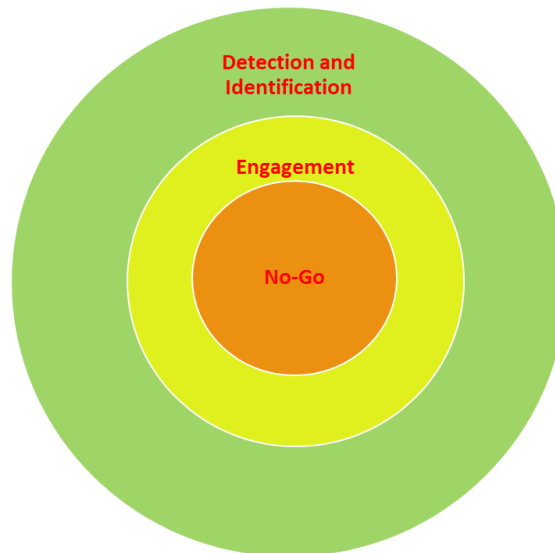


Figure 1 Illustration of the Detection, Identification, Engagement and No Go zones.

3. Project Scope

The initial requirement is for six (6) integrated C-UAS systems composed of (at the minimum):

- radar detection capability,
- electro optical/infrared (EO/IR) camera(s),
- jammer capability, and
- a Command and Control (C2) system (i.e. an operator work post).

The number of components (e.g. radars, cameras and jammers) has to be dimensioned in accordance with the generic scenario presented above. For example, multiple radars may need to be deployed in the No-Go Zone to ensure the full coverage of the detection and identification zone. All components shall be deployed inside of the No-Go zone.

Additional components (e.g. passive detection systems) can be proposed and will be considered within the overall balance between price and capability.

The main threat is represented by commercial Class 1 UASs (i.e. <150Kg, see NATO ATP 3.3.8.1) such as, say, DJI Mavic 3, DJI mini 4, Parrot Disco or Scan Eagle. Military and hobby drones falling under the Class 1 definition should be considered as well.

4. Eligibility

Eligible suppliers must be from Participating NATO Nations (ALBANIA, BELGIUM, BULGARIA, CANADA, CROATIA, THE CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MONTENEGRO, THE NETHERLANDS, NORTH MACEDONIA, NORWAY, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, REPUBLIC OF TÜRKIYE, THE UNITED KINGDOM and THE UNITED STATES), unless otherwise specifically authorized by the NCI Agency.

QUESTIONNAIRE

Organisation name:

Contact name & details within organisation:

Notes:

1. Please DO NOT alter the formatting. If you need additional space to complete your text then please use the 'Continuation Sheet' at the end of this Annex and reference the question to which the text relates to.
2. Please feel free to make assumptions, *HOWEVER* you must list your assumptions in the spaces provided.
3. Please DO NOT enter any company marketing or sales material as part of your answers within this market survey. But please submit such material as enclosures with the appropriate references within your replies. If you need additional space, please use the 'Continuation Sheet' at the end of this Annex.
4. Please DO try and answer the relevant questions as comprehensively as possible.
5. All questions within this document should be answered in conjunction with the summary of requirements in **Error! Reference source not found.**
6. All questions apply to Commercial or Government responders as appropriate to their Commercial off the Shelf (COTS) or Government off the Shelf (GOTS) products.
7. Cost details required in the questions refer to Rough Order of Magnitude (ROM) Procurement & Life Cycle cost, including all assumptions the estimate is based upon:
 - Advantages & disadvantages of your service/solution/organisation,
 - Any other supporting information you may deem necessary including any assumptions relied upon.

QUESTIONS

1. Sensors

1.1. Detection and tracking of Class 1 unmanned aerial systems (UAS)

- Do you have an integrated C-UAS capability, which contains the minimum combination of sensors as described in the project scope above (i.e. radar, EO/IR)?
- With reference to Figure 1, can your C-UAS system provide a complete solution, perform (a high probability of) detection and identification in the indicated detection zone, neutralize a UAS in the engagement zone and ensure no unwanted UAS reached the No-Go Zone?
- If yes, please outline what would be a possible configuration of your C-UAS systems/subsystems. (e.g. single system, multiple systems, one central location and distributed sensors, or otherwise.)
- Does your solution have the option to integrate other sensors than radars and EO/IR cameras? If yes, please describe these sensors, the architecture and the interfaces and protocols used.
- Which sensor(s) do you use to detect and track the UAS? Please briefly describe the operation principles of all these sensors.
- What are the estimated ranges for detection and tracking of common Class 1 UASs? Please state the ranges for the following targets (at the minimum):
 - Class 1 UAS, Micro Category (<66 J), such as Black Widow,
 - Class 1 UAS, Mini Category (<15Kg), such as, say, a DJI Mavic 3, or DJI mini 4, Parrot Disco, Raven or Eleron 3SV (typical RCS between 0.001sqm and 0.01sqm),
 - Class 1 UAS, Small Category (>15Kg), such as, say, Scan Eagle, Orlan 10 (typical RCS between 0.01sqm and 1sqm),
 - Person (typical RCS of 1sqm),
 - Vehicle (typical RCS of 10sqm),
 - *Note:* Please include in your response the probability of detection at these ranges (more precisely, also be stated as a certain probability of detection at a certain range, i.e. a 80% detection at 4 km range). Your response may also be separated between detection and tracking if there is a significant difference. Please include the minimum detectable velocity. Please separate the information on each sensing technologies (e.g. radar, EO/IR).
- What is the coverage zone of your detection and tracking system? Please include in your response parameters such as horizontal and vertical coverage and scanning parameters.
- What is the detection and track update rate?
- What is the accuracy of your detection and tracking capability? Please include in your response the accuracy parameters relevant for range, vertical and horizontal angular information, range rate and angular velocity.
- How many UASs can be detected simultaneously in the worse case scenario?
 - Can it track all these UASs?
 - How many tracks can be managed simultaneously?

1.2. Detection/tracking of UAS control system

- If the UAS is remote controlled does your system also allow to detect the controller (i.e. the person that is holding the remote control)?
- Can you locate that person?
- If the person moves with the controller, can you track that person?

1.3. Identification of the UAS

- Does your system allow identification of the UAS?
- If yes, by which categories? For example, small UAS vs large UAS, fixed wing vs multi-copter, threat UAS vs no-threat UAS, specific brand of UAS, etc.
- By which means? For example, radar signature analysis, EO/IR, RF signal analysis, etc.
- Can your system distinguish Friendly UASs from hostile UASs?
- If so what technology is used to achieve this?
- Do you have the possibility to distinguish between friend or foe UAS? If yes, are you using UTM technologies such as remote drone ID (e.g. compliant with ASTM F3411, ASTM F3548 and ASD-STAN prEN 4709-002 P1).? If no, will you be able to implement such functionality and what will be the estimated cost and delivery time.

2. Effectors

- Does your integrated solution include a jammer?
- What are the estimated ranges of your effectors for denying the operation of common Class 1 UASs? Please state the ranges for the following targets (at the minimum):
 - Class 1 UAS, Micro Category (<66 J), such as Black Widow,
 - Class 1 UAS, Mini Category (<15Kg), such as, say, a DJI Mavic 3, or DJI mini 4, Parrot Disco, Raven or Eleron 3SV,
 - Class 1 UAS, Small Category (>15Kg), such as, say, Scan Eagle, Orlan 10.
 - *Note:* Please include in your response the condition on how these ranges were estimated or measured and other relevant figures of merits such as the probability of effectively denying a UAS at these ranges.
- Is your jamming capability integrated with the detection/tracking/identification components of the CUAS system?
- What are the main operation modes of your jammer? For example, directional, omnidirectional, attached to the pan tilt zoom camera etc. Please describe the principle of operation of the jammer.
- What level of operator intervention is required? Can it operate autonomously?
- What are the frequency bands covered by your jammer and at what minimum and maximum power levels?
- Is the waveform of your jammer programmable? Please describe the waveform programming tools delivered with your capability.
- What UAS functionality is disrupted by your jamming solution (e.g. control channel, video link, GNSS, etc.)?

- Do you offer other UAS defeat systems than jamming? If yes, please describe the nature of the defeat system (e.g., hard kill, net, laser, cyber etc.)

3. Command and Control (C2) system

- Does your solution have a C2 capability? If yes, please provide a description of its main functions.
- Does it have the possibility to integrate other sensors and effectors? If yes, what standard/protocols are used?
- Does it enable the operator to control the sensors and the effectors?
- Does it allow the operator to define areas of interest with different levels of alert?
- Is your C2 system capable of distributing the localised C-UAS air picture to other units (e.g. Ground Base Air Protection) of higher echelons? If yes, which architecture, interfaces and protocols are used?

4. Network requirements

- Does your solution require a specific interconnection infrastructure (network)? What are the minimum network requirements (e.g. throughput, delay, etc.)?
- Do you employ any security technologies (e.g. VPN, crypto devices etc.)?
- Does your solution require access to Internet or off-premise cloud infrastructure?
- Do you need specific services on the network for your systems to operate? For example and network time protocol server.
- Are you able to provide the network infrastructure as well?

5. Interoperability

- Do your sub-systems support any interoperability standard to disseminate and receive information? Please briefly describe which data exchange standards are implemented in your solution (e.g. SAPIENT, Link 16, Asterix).
- Is SAPIENT (BSI Flex 335) one of them? Please briefly describe your SAPIENT implementation. Is tasking through SAPIENT also possible?
- Would you be able to update the SAPIENT implementation to the NATO STANREC 4869 when this standard will be available? What are the estimated cost and implementation timelines?

6. System availability

- What is the minimum delivery time for 6 fully integrated systems including the minimum components listed above (radar, EO/IR, jammer and C2)?
- What is the minimum time required from the contract signature to the completion of acceptance testing, training delivery, deployment at 6 location and declaration of the final operational capability?
- What is the production time if additional C-UAS systems are required? For example, are they readily available off-the-shelf or is a (long) lead time expected?
- Are there subsystems of your C-UAS still under development? If yes, when will they become available?
- What would be the delivery time for additional 12 fully integrated systems after the delivery of the first 6 systems?

7. C-UAS System Form Factor

- Is your system fixed, transportable or mobile?
- What is the typical time for system setup once everything needed (i.e. equipment, engineers, external support) is ready on site?
- Are there any civil works required for the deployment of your capability?
- What are the Size, Weight and Power (SWaP) characteristics of your system?
- What are the external requirements for operation of your C-UAS system, if any? E.g. power, weather protection, housing?)

8. Manning during operation

- Can the C-UAS system run in a continuous background mode and alert an operator when necessary?
- What are the manning requirements? Is continuous manning required?
- Does it require permanent manning from your company?
- Does it require manning from local operational staff? If yes, what are the requirements for the skills of those operators, and what are the training requirements?

9. Maintenance and troubleshooting

- Would your organisation be prepared to deliver, install and support this capability? If so, what arrangements or conditions would be required for this delivery and support?
- How much engineering support from your company would be expected, typically, during a full year of normal operation?
- Could local engineers be trained to do maintenance and troubleshooting to a certain level? If yes,
 - to what level can non-company engineers provide such maintenance?
 - what is the level of training from your company required to do this?
- What are the estimated operation and maintenance cost? Please provide these costs for a period of 15 years with increments of one year.
- Please provide your estimated Mean Time Between Failures and Mean Time To Repairs?

10. Proven performance in operation

- Is your system in operation anywhere, either for civil or military purposes, or has it been? If yes,
 - Please provide information on where and for how long?
 - Please share any results on its performance, including references?
 - Please include information on actual downtime, both planned and unplanned?
 - Please provide a list of users of your proposed capability including POCs.

11. Acquisition Options

- What would be the Rough Order of Magnitude (ROM) cost for one of your complete C-UAS systems, including system setup, training, and five years warranty and

Operations and Maintenance? And for 6 systems? Please indicate the price per components.

- What would be your best solution (using any combination of sensors, effector and C2 components and not limited to radar, EO/IR and jammers) for protecting an area as indicated in Figure 1? What would be the ROM cost of this solution?
- What would be your best solution (using any combination of sensors, effector and C2 components and not limited to radar, EO/IR and jammers) for protecting an area as indicated in Figure 1, which you can deliver for a ROM cost of 700,000EUR per unit?
- Are there any recurring cost associated with the operation of the system (i.e. licence fees)?
- Are there any export restrictions?

Market Survey - Questionnaire

NCI Agency is looking for 6 C-UAS capabilities. If your organisation meets the requirements detailed in Annex B, we would welcome your response to the Request for Information in the following format:

1. Cover Letter

Brief introduction of your organisation, expressing your interest in providing C-UAS capabilities to NCI Agency.

2. Company Overview

Provide an overview of your company, including its history, expertise, and experience in delivering C-UAS solutions that are relevant to our requirements outlined in Annex B. Include relevant client references or case studies of organisations that have successfully used your solution.

3. C-UAS Solution Features

Detail the features and functionalities of your C-UAS solution, and highlight any unique capabilities that set your platform apart.

4. Content Library

<p>Continuation Sheet</p> <p>Please feel free to add any information you may think that may be of value to NCI Agency in the space provided below. Should you need additional space, please copy this page and continue with the appropriate page numbers.</p>	<p>Page #</p> <hr/> <p>__ of</p> <hr/>
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