Draft Project plan for the CEN Workshop on ”Unmanned aircraft systems — Counter UAS — Testing methodology”

Requests to participate in the Workshop and/or comments on the project plan are to be submitted by 2023.07.31 to cristina.popa@asro.ro[1]

Recipients of this project plan are kindly requested to name all patent rights known to them to be relevant to the Workshop and to make available all supporting documents.

Bucharest, 2023.06.12 (Version 1)

[1] Applications for participating in the Workshop and comments on the project plan that are not received by the deadline do not need to be taken into consideration. Once constituted, the Workshop will decide whether or not to consider the comments received in good time.

Contents

Summary

The objective of this pre-standardization deliverable is to define a testing methodology taking into account a general set of operational needs based on defined standard scenarios. These operational needs will describe what authorities need to mitigate the threats that non-cooperative UAS pose, especially in the hands of malicious actors including terrorists in order to adequately protect different sites/facilities, events and individuals. Examples of operational needs are how much early warning an authority requires in order to effectively protect a given site, how many UAS an operator needs to be able to track at any given time or operational needs related to the use of the system itself in the context of specific scenarios (e.g., how quickly do operators need to be able to deploy a C-UAS system, how many operators, should ideally be needed to work the system).

There are currently no standard operational requirements for counter-UAS developed throughout technical standards and based on consensus of different parties (users, companies, and regulators). This major problem determines a lack of mature DTI (Detect Track and Identify) tools for specific use-cases and consequently a lack of information to support rapid operational counter measures to threats. Moreover, no existing C-UAS system is perfect from a user point of view since the user requirements and scenarios are so different. The issue is compounded by a lack of standards for design and use of C-UAS system, as well as reliable test and operational data. The problem must be seen from two perspectives:

- from the user point of view, the lack of reliable test data makes it difficult to know what actually works or not, to anticipate potential issues and select a system that is best suited to their needs. The end user must be able to formulate operational needs without knowing the system performance. It is about the difference the end users want to make in order to improve the operational challenges one is facing. So, the used approach: operational needs definition > system procurement > system validation, out in a very short/conservative way and update/prioritize the needs.
- from a producer point of view, the lack of reliable and complete operational needs, coming from the end users, and presented in a standardized manner, makes impossible the development of solutions which will fulfil later the user's expectations, for different scenarios.

1 Status of the project plan

Draft project plan for public commenting (Version 1.0)

This draft project plan is intended to inform the public of a new Workshop. Any interested party can take part in this Workshop and/or comment on this draft project plan. Please send any requests to participate or comments by e-mail to **cristina.popa@asro.ro**.

All those who have applied for participation or have commented on the project plan by the deadline will be invited to the kick-off meeting of the Workshop on **2023.08.04**.

2 Workshop proposer and Workshop participants

2.1 Workshop proposer

Person or organisation	**Short description and interest in the subject**
Name: Geert De Cubber Organization: Ecole Royale Militaire – Koninklijke Militaire School (RMA), Belgium	Geert De Cubber is the team leader of the Robotics & Autonomous Systems unit of the department of Mechanics of the Belgian Royal Military Academy. He is also a senior researcher at this institute with a research focus on developing robotic solutions for solving security challenges like crisis management, the fight against crime and terrorism and border security. He received his Diploma in Mechanical Engineering in 2001 from the Vrije Universiteit Brussel (VUB) and his Doctoral Degree in Engineering in 2010 from the Vrije

	Universiteit Brussel and the Belgian Royal Military Academy (RMA). He is and was the coordinator of multiple European and national research projects, like FP7-ICARUS (on the development of search and rescue robots), H2020-SafeShore (on the development of a threat detection system) and COURAGEOUS (on the development on a standard test methodology for C-UAS tools). Next to this, he is the principal investigator for RMA for multiple international research projects like STARS*EU and ASSETs+. His research interests include methodologies for perceiving and control of multi-agent robotic systems, across the air, land and maritime domain. His major goal is to find new ways to make multiple robotic systems capable of understanding their environment and decide on optimal collaborative strategies. Prominent application examples are crisis management robots, humanitarian demining robots, robots for surveillance applications, and generically robotics for tough environments. Geert is active as a reviewer for the European Commission and other funding agencies and is a member of the organizing committee of several conferences and workshops in the field of robotics and computer vision. He has published around 100 scientific papers, including books and chapters in books. The Robotics & Autonomous Systems lab is a research unit of the department of Mechanics of the Belgian Royal Military Academy. As a university laboratory, we conduct research in all matters related to unmanned systems: on one hand trying to develop novel “good" applications for these systems and on the other hand trying to find solutions to counter the potential malicious use of these systems. As a military research institute and part of Belgian Defence, we focus on niche fundamental research axes and apply those to practical applications that provide a direct added value for our end users, mostly in the safety, security and defence sectors.

2.2 Other potential participants

This CWA will be developed in a Workshop (temporary body) that is open to any interested party. The participation of other experts would be helpful and is desired. It is recommended that:

- Representatives of Law Enforcement Agencies (LEA)
- Participants in related Research Projects
- Representatives of UAS and C-UAS industry
- Members of relevant Technical Committees
- Representatives of DG SAFE, DG HOME

take part in the development of this CWA.

2.3 Participants at the kick-off meeting

The following persons or organisations already signed up to the kick-off meeting prior to the publication of the draft project plan.

Person	**Organisation**
Workshop proposer: Geert De Cubber	Ecole Royale Militaire – Koninklijke Militaire School (RMA), Belgium
Ali Mohamoud	Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek (TNO), Netherlands
Christian Huberty	Police Grand-Ducale (PGD), Luxembourg
Paraskevi Petsioti	Kentro Meleton Asfaleias (KEMEA), Greece
Kris Verlaenen	Police Federale Belge (PFB), Belgium
Verónica Ortiz Leal	Ministerio del Interior (SMI), Spain
Aleksandr Lind	Politsei- ja Piirivalveamet (PPA), Estonia
Dimitrios Gkritzapis	Hellenic Police (HP), Greece
Christopher Church	The International Criminal Police Organization (INTERPOL), France
Razvan Roman	Serviciul de Protecție și Pază (SPP), Romania
Konrad Brewczynski	Wojskowa Academia Techniczna im.jaroslawa dabrowskiego (WAT), Poland
Ivan Maza	Universidad de Sevilla (USE), Spain
Workshop secretariat: Cristina Popa	**Workshop secretariat**: Asociația de Standardizare din România - Romanian Standards Association (ASRO)

3 Workshop objectives and scope

3.1 Background

As Unmanned Aerial Systems (UAS) or drones become more and more available, law enforcement agencies find themselves confronted with the novel task of having to police the access to the lower airspace. Commercial providers have already developed a wide range of solutions to this extent, but the capabilities of these systems are hard to benchmark. The result is that end-users have a hard time in matching the right tools to the specific use cases that they encounter.

COURAGEOUS aims to facilitate the development of a common baseline understanding amongst Member State authorities concerning the effectiveness of different technical systems intended for use in specifically the detection, tracking and identification of non-cooperative drones. In doing so, the project aims to support decision-making regarding the development, procurement and/or operational deployment of different commercially available C-UAS

systems, most of which are very expensive. COURAGEOUS focuses on meeting the needs of civilian law enforcement/security stakeholders with C-UAS responsibilities in Europe.

Project COURAGEOUS deals with five relevant aspects:

1. The development of a set of relevant standard scenarios that will describe different situations in which protection from non-cooperative UAS may be necessary. Each standard scenario will be accompanied by a risk analysis, giving security stakeholders the capability to rapidly identify UAS-related risks based on standard scenarios;

2. The development of quantifiable and technology-agnostic functional and performance requirements and metrics for different detection-tracking-identification systems;

3. The development of a standardised C-UAS systems testing methodology that will be used for testing both individual sensors & integrated systems;

4. The execution of four different test campaigns across Europe, where commercially available C-UAS systems will be evaluated following the developed test methods, in order to validate the methodology and to provide a baseline dataset;

5. Dissemination of test results and lessons learned with relevant competent authorities in different sectors in all Member States in a responsible and secure manner. This includes the production of dissemination products supporting DG HOME's communications efforts.

The project COURAGEOUS https://courageous-isf.eu/ identified gaps in standardisation regarding the counter-UAS and has compared them to the needs of end-users. The pre-standardization deliverable to be developed in the course of the COURAGEOUS project will be fully tested and validated in field trials (FT).

The proposed workshop has resulted from the COURAGEOUS project and its purpose is to propose a testing methodology for counter-UAS that should be adopted by the civilian law enforcement/security stakeholders.

3.2 Scope

The planned Workshop will develop a standardized test methodology for detection, tracking and identification of nefarious drones' utilising countermeasure systems to protect the lower airspace. This standardized test methodology will be based upon a series of standard user-defined scenarios representing a wide set of use cases (e.g. prison & airport security, critical infrastructure protection, border security, drugs & human trafficking, etc). For these scenarios, operational needs & functional performance requirements will be extracted by end-users. Using this information, an integral test methodology will be developed that allows for a fair qualitative and quantitative comparison between different counter-UAS systems.

In the short term, the proposed standardized test methodology will lead to a much better understanding of the capabilities counter-UAS systems. In the medium-to-long term, subjecting an extensive set of commercial counter-UAS systems to the standard test methodology will allow for system developers of such systems to make design decisions based upon quantitative data, thereby iteratively improving their systems.

3.3 Related activities

The subject of the planned CWA is not at present the subject of a standard. However, there are committees, standards and/or other technical specifications that deal with related subjects and thus need to be taken into account - and involved, where necessary - during this Workshop:

CEN/TC 471 Unmanned aircraft systems

4 Workshop programme

4.1 General

All meetings are intended to be virtual and/or physical, according to the given possibilities. In all cases when a physical meeting will be set up, the possibility of virtual participation will be also granted. The kick-off meeting is planned to take place on 2023.08.04 at CCMC and hybrid (teleconference). A draft for public commenting will be made available for 40 days.

A total of seven Workshop meetings (kick-off meeting and Workshop meetings) and web conferences will be held, during which the content of the CWA(s) will be presented, discussed and approved.

The CWA will be drawn up in **English** (language of meetings, minutes, etc.). The CWA will be written in **English.**

4.2 Workshop schedule

The following project schedule is for orientation only and is to be modified as the Workshop progresses.

Table 1: Workshop schedule (preliminary)

CEN Workshop	May 2023	June 2023	July 2023	August 2023	September 2023	October 2023	November 2023	December 2023	January 2024	February 2024	March 2024	April 2024	May 2024	June 2024
Initiation														
1. Proposal form submission and TC														
2. Project plan development														
3. Open commenting period on draft project														
Operation														
4. Kick-off meeting				K										
5. CWA(s) development														
6. Open commenting period on draft CWA(s)														
7. CWA(s) finalised and approved by Workshop												A		
Publication														
8. CWA(s) publication														
Dissemination														
Milestones				K	V	M	V	V	V		V	A		P D

K Kick-off
M Workshop meeting
V Virtual Workshop meeting
A Adoption of CWA
P Publication of CWA
D Online distribution of CWA

5 Resource planning

ASRO will provide the Workshop Secretariat, subject to formal approval of the Project Plan at the kick-off meeting. The copyright of the final CEN Workshop Agreement will be at CEN. All costs related to the participation of interested parties in the Workshop's activities have to be borne by themselves. The Workshop will be financed within the framework of the European Union's Internal Security Fund Police under Grant Agreement 101034655 (COURAGEOUS). The COURAGEOUS project aims to reach an agreement with CEN CENELEC Management Centre to make the CWA freely downloadable from the CEN Website. The final document will include the following paragraph: "Results incorporated in this CEN Workshop Agreement received funding from the European Union's Internal Security Fund Police under Grant Agreement 101034655 (COURAGEOUS)". Registration, as well as participation at the CEN Workshop, described here are free of charge.

6 Workshop structure and rules of cooperation

6.1 Participation in the Workshop

The Workshop will be constituted during the course of the kick-off meeting. By approving this draft project plan, the interested parties declare their willingness to participate in the Workshop and will be formally named as Workshop participants, with the associated rights and duties. Participants at the kick-off meeting who do not approve the project plan are not given the status of a Workshop participant and are thus excluded from further decisions made during the kick-off meeting and from any other decisions regarding the Workshop.

As a rule, the request to participate in the Workshop is closed once it is constituted. The current Workshop participants shall decide whether any additional members will be accepted or not.

Any new participant in the Workshop at a later date is decided on by the participants making up the Workshop at that time. It is particularly important to consider these aspects:

a. expansion would be conducive to shortening the duration of the Workshop or to avoiding or averting an impending delay in the planned duration of the Workshop;
b. the expansion would not result in the Workshop taking longer to complete;
c. the new Workshop participant would not address any new or complementary issues beyond the scope defined and approved in the project plan;
d. the new Workshop participant would bring complementary expertise into the Workshop in order to incorporate the latest scientific findings and state-of-the-art knowledge;
e. the new Workshop participant would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
f. the new Workshop participant would ensure wider application of the CWA.

All Workshop participants who voted for the publication of the CWA or its draft will be named as authors in the European Foreword, including the organisations which they represent. All Workshop participants who voted against the publication of the CWA, or who have abstained, will not be named in the European Foreword.

6.2 Workshop responsibilities

The Workshop Chair is responsible for content management and any decision-making and voting procedures. The Workshop Chair is supported by the Workshop Vice-Chair and the responsible Workshop secretariat, whereby the Workshop secretariat will always remain neutral regarding the content of the CWA(s). Furthermore, the Workshop secretariat shall ensure that CEN-CENELEC's rules of procedure, rules of presentation, and the principles governing the publication of CWA(s) have been observed. Should a Workshop Chair no longer be able to carry out her/his duties, the Workshop secretariat shall initiate the election of a new Workshop Chair. The list below covers the main tasks of the Workshop Chair. It is not intended to be exhaustive.

- Content related contact point for the Workshop
- Presides at Workshop meetings
- Ensures that the development of the CWA respects the principles and content of the adopted project plan
- Manages the consensus building process, decides when the Workshop participants have reached agreement on the final CWA, on the basis of the comments received
- Ensures due information exchange with the Workshop secretariat
- Represents the Workshop and its results to exterior

The Workshop secretariat, provided by ASRO, is responsible for organising and leading the kick-off meeting, in consultation with the Workshop proposer. Further Workshop meetings and/or web conferences shall be organised by the Workshop secretariat in consultation with the Workshop Chair. The list below covers the main tasks of the Workshop secretariat. It is not intended to be exhaustive.

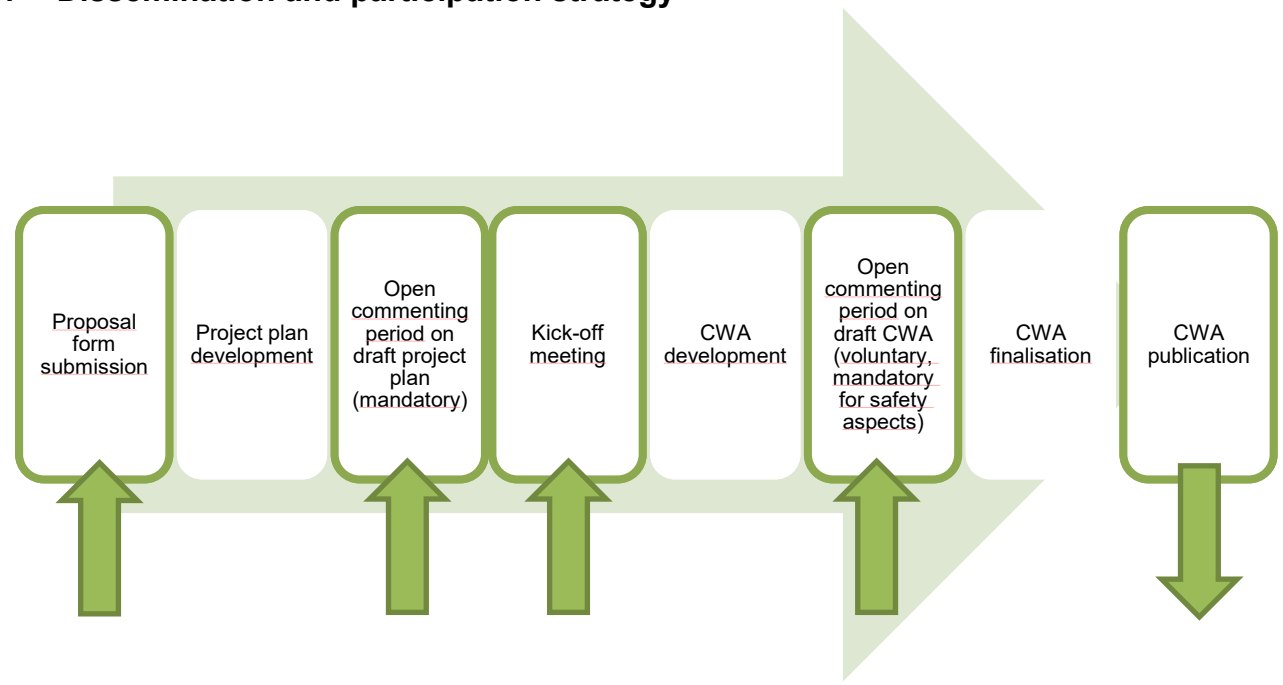
- Administrative and organisational contact point for the Workshop
- Ensures that the development of the CWA respects the principles and content of the adopted project plan and of the requirements of the CEN-CENELEC Guide 29
- Formally registers Workshop participants and maintains record of participating organisations and individuals
- Offers infrastructure and manage documents and their distribution through an electronic platform
- Prepares agenda and distribute information on meetings and meeting minutes as well as follow-up actions of the Workshop
- Initiates and manage CWA approval process upon decision by the Workshop Chair
- Interface with CEN-CENELEC Management Centre (CCMC) and Workshop Chair regarding strategic directions, problems arising, and external relationships
- Advises on CEN-CENELEC rules and bring any major problems encountered (if any) in the development of the CWA to the attention of CEN-CENELEC Management Centre (CCMC)
- Administrates the connection with relevant CEN or CENELEC/TCs

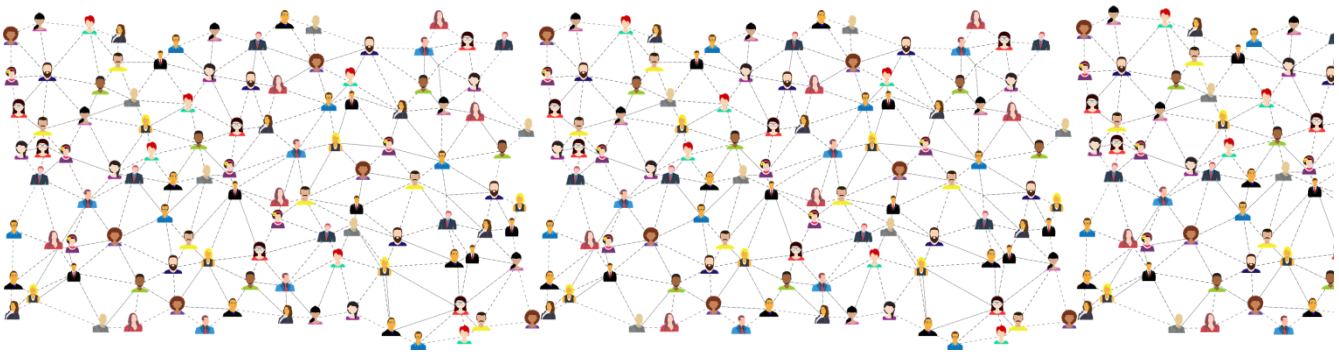
6.3 Decision making process

Each Workshop participant is entitled to vote and has one vote. If an organisation sends several experts to the Workshop, that organisation has only one vote, regardless of how many Workshop participants it sends. Transferring voting rights to other Workshop participants is not permitted. During voting procedures, decisions are passed by simple majority; abstentions do not count.

If Workshop participants cannot be present in the meetings when the CWA or its draft is adopted, an alternative means of including them in the voting procedure shall be used.

7 Dissemination and participation strategy





Proposal form submission
The Workshop proposal will be disseminated to the following relevant stakeholders and bodies for consultation:

CEN/TC 471 Unmanned aircraft systems

Open commenting period on draft project plan
The draft project plan will be disseminated to the following relevant stakeholders and bodies for commenting:

CEN/TC 471 Unmanned aircraft systems

In addition to the CCMC website, the project plan and the date of the kick-off meeting will be advertised on:

- website of COURAGEOUS Project: https://courageous-isf.eu/
- website of ASRO: https://www.asro.ro
  - ASRO Facebook
  - ASRO LinkedIn
  - ASRO Twitter

to raise awareness. Interested parties are requested to contribute either through commenting of the project plan (short term) or through Workshop participation (long term).

Open commenting period on draft CWA
The draft CWA will be disseminated to the following relevant stakeholders and bodies for commenting:

CEN/TC 471 Unmanned aircraft systems

In addition to the CCMC website, the draft CWA will be advertised on website of COURAGEOUS Project: https://courageous-isf.eu/ to raise awareness. Interested parties are requested to contribute through commenting of the draft CWA (short term).

CWA publication
The final CWA will be disseminated to the following relevant stakeholders and bodies:

CEN/TC 471 Unmanned aircraft systems

In addition to the CCMC website, the final CWA will be advertised on:

- website of COURAGEOUS Project: https://courageous-isf.eu/
- website of ASRO: https://www.asro.ro
  - ASRO Facebook
  - ASRO LinkedIn
  - ASRO Twitter

8 Contacts

- Workshop Chair:
  Name: Mr. Geert De Cubber
  Organization: Ecole Royale Militaire (RMA), Belgium
  Postal address: Av. De La Renaissance 30, 1000 Brussels, Belgium
  Email: Geert.Decubber@mil.be
  Phone: 0032-2-44-14008
  Webpage: https://mecatron.rma.ac.be

- Workshop Secretariat:

Name:	Cristina Popa
Organization:	ASRO (Romanian Standards Association)
Postal address:	238 Mihai Eminescu Street, Bucharest, 2nd District, 020085
Email:	cristina.popa@asro.ro
Phone:	+40745005184
Webpage:	www.asro.ro

- CEN-CENELEC Management Centre

Name: Thierry LEGRAND
Organization: CCMC
Postal address: Rue de la Science 23, B - 1040 Brussels, Belgium
Email: tlegrand@cencenelec.eu
Phone: +32 2 550 09 65; +32 473 13 27 82
Webpage: https://www.cencenelec.eu/Pages/default.aspx

- Workshop proposer

Name: Mr. Geert De Cubber
Organization: Ecole Royale Militaire (RMA), Belgium
Postal address: Av. De La Renaissance 30, 1000 Brussels, Belgium
Email: Geert.Decubber@mil.be
Phone: 0032-2-44-14008
Webpage: https://mecatron.rma.ac.be