

# COMBAT UNMANNED GROUND SYSTEM – CUGS

Autonomous technologies are increasingly a feature of today's world and are, more or less visibly, interacting with different aspects of our lives. Advances in robotics, artificial intelligence (AI), computational power, networking, engineering, among other disciplines, are driving increasing autonomy, in turn granting significant advantages to those who have access to them.

In the military context, autonomous systems provide operational benefits across a very broad range of missions, from intelligence, surveillance, reconnaissance and logistics missions to combat missions.

There are significant cooperation opportunities in the European Union regarding unmanned ground systems. The CDP priorities highlight the need to deploy unmanned systems to reduce the danger to human personnel and manned platforms, as well as to increase robustness, sustainability and resilience of ground systems. A comprehensive set of unmanned systems, including combat systems, should contribute to the ground combat capabilities in order to ensure advantage in respect to the adversary.

## Objectives

The project aims to choose and adapt 3 different categories of platforms, and to define, design and develop a set of functional modules which will be articulated in full demonstrators for highly autonomous combat unmanned ground systems. The platforms and functional modules will provide solutions for:

- » Navigation,
- » Communications, command and control (C3), and cooperation (including secure C3 for firing chain),
- » Effector management.

The project will be constituted by the following three phases:

- » Phase 1: requirements and standard-based system architecture of the full CUGS demonstrator.
- » Phase 2: adaptation of platforms and development of combat functional modules, in parallel.
- » Phase 3: integration of all the functional modules and associated intelligent functions into the platforms to demonstrate combat abilities on operational scenarios.

## Work Strands

The project is currently in the preparation phase, it is planned to start in early 2022 and is going to be running during 2022-2024.

EDA has launched the "Ground Combat Robotic Systems (CUGV)" OB study, which will be the very first step of a comprehensive research and technology development for combat unmanned ground systems (CUGS).

The execution of this project will be made in respect to the European Parliament "Resolution on autonomous weapon systems (2018/2752(RSP))".

## Way Ahead

The number of unmanned platforms will grow on the battlefield in the coming years. A significant number will integrate weapon systems able to cover a large spectrum of missions like surveillance, protection or attack. Each type of weapon (cannon, rocket, missile...) or type of engagement (Line of Sight with or without Lock on and Non Line of Sight) will require some specificity to reach the requested level of capability with a man in/on the loop.

This project will contribute to identifying the adequate level of autonomy for autonomous weapon system with men on the loop and to testing relevant features in TRL demonstrators.

The first CUGS project is mainly focused on a single unmanned system, but the community will soon discuss the possibility to engage in a second CUGS project aimed at exploring the teaming aspects of combat unmanned systems.

## Participating Members



## Consortia/Organization



## Link to TBBs, other CapTechs, and other links

- OSRA TBB 71 - Information Process Enhancement by using AI and Big Data
- OSRA TBB 74 - Land Systems Architecture & Integration.
- OSRA TBB 78 - Manned/unmanned teaming, adaptive cooperation between man and unmanned system with different levels of autonomy.
- OSRA TBB 79 - Target / Threat recognition and identification.
- OSRA TBB 82 - Mobility and Counter-Mobility
- OSRA TBB 83 - Weapon system integration
- OSRA TBB 101 - Navigation in GNSS denied environment
- OSRA TBB 103 - Guidance and control in challenged environments
- OSRA TBB 104 - Autonomous and automated GNC and decision- making techniques for manned and unmanned platforms
- OSRA TBB 106 - Multi-robot control and cooperation
- OSRA TBB 110 - Passive imaging systems
- OSRA TBB 111 - Novel optical configurations
- OSRA TBB 114 - Image processing
- OSRA TBB 118 - Data fusion and systems integration
- OSRA TBB 119 - Detection, Tracking and Recognition of Challenging Targets
- OSRA TBB 129 - Artificial Intelligence (AI) and Big Data (BD) for Decision Making Support



MILREM Robotics - TheMIS UGV

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### EDA Activities

[www.eda.europa.eu/what-we-do/all-activities](http://www.eda.europa.eu/what-we-do/all-activities)