

# ELROB 2024

24 – 28 June 2024  
Trier, Germany

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REAL TASKS, IN A REAL WORLD SCENARIO

## **Search and retrieval of human casualties in outdoor environments**

The rescue of wounded persons is an important yet often difficult task in civil catastrophes as well as in military scenarios. During military operations the retrieval of casualties (CasEvac) usually takes place in hostile environments, thus leading to severe dangers for the involved soldiers. The use of robotic vehicles, first, to find injured persons and, second, to autonomously pick them up and transport them back to safe areas would obviously be a great improvement.

### Environment:

A semi-urban structure, vehicles, low or no light, closed doors, wrecks, sand, water, stones, rubble and debris.

The semi-urban structure that has to be entered is approx. 70m long and 10m wide, it can be partially blocked, dilapidated or even wrecked. There might be smoke present.

### Situation:

There are wounded & unconscious persons at a roughly known location (P1, in distances of approx. 50-75m). The robot should approach P1 and search and locate the casualties. Recover / salvage the individuals and then transport them back to the starting point. All this should be conducted with highest possible autonomy.

There will be dynamic and static obstacles on the route. Dead ends, sharp turns, blockings and narrow passages might occur. Fences, barriers or any kind of blockades and “negative” obstacles e.g. trenches can be expected.

### Objective:

The team will receive a section of a digital map with UTM coordinates for P1; see example in the rules. In the vicinity of this point dummy soldiers have to be found. Expect an artificial object of 170cm length and a weight of 70kg. The dummy will have a pull strap or loop for easier handling.

First, approach P1. Then, find the imitated bodies, recover / salvage them and move them back to the starting point in any way, e.g. by dragging them at the special strap, by pushing, or by completely lifting them. Place at least one dummy as near to the starting point as possible.

**!!! This document is subject to change and refinement !!!**

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Acquire imagery and exact GPS position of both bodies. Report gathered data to the control station, online or offline after having returned to the starting point. If possible, also transmit live position and video imagery throughout the mission.

## *Remarks:*

- Be prepared to deliver additional data in ROS bag format; exact specification and data types will follow.

## Timing:

Duration approx. 30 min. The scenario ends when all imitated bodies have been moved back to the starting point or with reaching the time limit, whatever occurs first, and must include the transmission of the acquired data.



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