



# C – ELROB 2011

Civilian European Land-Robot Trial  
6<sup>th</sup> European Land Robot Trials  
3<sup>rd</sup> Civilian ELROB  
20-24 June 2011  
Leuven, Belgium

## REAL TASKS, IN A REAL WORLD SCENARIO

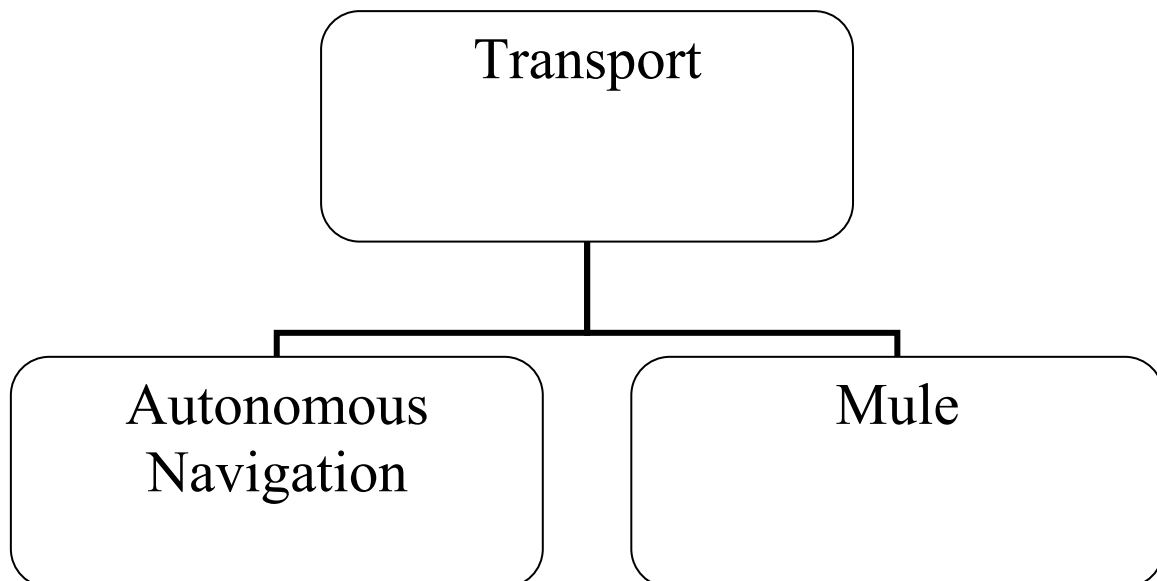
The transport tasks can be roughly divided into two broad areas, dismounted operations and the one for vehicles.

Movements of personnel, material, humanitarian aid etc. in risky and hazardous environments are dangerous missions.

In dismounted operations, people will have to carry heavy kit when on a mission. This is extremely exhausting and tends to distract them from their actual tasks. MULE is a particularly apt description for such carrying tasks.

The ELROB 2011 transport trial is subdivided into two independent trials.

Participants can choose to take part in either one or both parts of the trial.



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



# C – ELROB 2011

Civilian European Land-Robot Trial  
6<sup>th</sup> European Land Robot Trials  
3<sup>rd</sup> Civilian ELROB  
20-24 June 2011  
Leuven, Belgium

## Transport-Autonomous Navigation

### Environment:

Non-urban, wooded, hilly terrain with roads and paths (e.g.: asphalt, loose chippings, concrete, dirt roads).

### Situation:

There is a delivery for a camp within approx. 7-14 km.

A vehicle has to be moved to this camp.

There will be dynamic objects and static obstacles on the route.

Dead ends, sharp turns, road blockings and narrow passages can occur.

Traffic presence at the transport route can be expected.

### Objective:

Move a vehicle of at min. 50kg to the target location as fast as possible and with highest autonomy possible.

### Execution/Implementation:

#### **The vehicle must be completely unmanned!**

There will be three (3) levels of difficulty. The first two (2) routes are standard and shall be driven by all scenario participants. You can drive level two only if you have successfully mastered level one. The third level is optional and can be inspected before hand.

Acquire own position (not known or given).

Traverse given waypoints (UTM coordinates) on the way to the destination.

The approach should be done with maximum autonomy.

If possible, transmit live position and imagery to the control station.

### Timing:

Duration approx. 60 min.

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



## **C – ELROB 2011**

Civilian European Land-Robot Trial  
6<sup>th</sup> European Land Robot Trials  
3<sup>rd</sup> Civilian ELROB  
20-24 June 2011  
Leuven, Belgium

### Constraints:

The troop will receive a section of a digital map with UTM grid and UTM co-ordinates that have to be traversed in the given order; see example in the rules.

The scenario ends with reaching

1. the target location and transmission of the acquired data or
2. time limit and transmission of the acquired data

what ever occurs first.

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



# C – ELROB 2011

Civilian European Land-Robot Trial  
6<sup>th</sup> European Land Robot Trials  
3<sup>rd</sup> Civilian ELROB  
20-24 June 2011  
Leuven, Belgium

## Transport-Mule

### Environment:

Non-urban, wooded, hilly terrain with roads and paths (e.g.: asphalt, loose chippings, concrete, dirt roads).

### Situation:

There are two camps with a distance of approx. 2km in between.

A vehicle should serve as a “mule” between the two camps carrying as much payload as possible.

There will be dynamic objects and static obstacles on the route.

Dead ends, sharp turns, road blockings and narrow passages can occur.

Traffic presence at the transport route can be expected.

### Objective:

Shuttle with the highest achievable autonomy as often as possible between two points P1 and P2 carrying as much payload as possible.

### Execution/Implementation:

#### **The vehicle must be completely unmanned!**

Only one vehicle can be used.

The MULE (Multiple Utility for Logistic Equipment) system is delivered to a starting point (P1).

From this starting point (P1) a person will then lead the MULE vehicle to a turning point (P2).

From there on the vehicle has to shuttle with highest autonomy possible between both points (P1, P2) carrying equipment.

If the robot cannot follow a person for teach-in, the turning point (P2) will be given by coordinates directly.

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



## **C – ELROB 2011**

Civilian European Land-Robot Trial  
6<sup>th</sup> European Land Robot Trials  
3<sup>rd</sup> Civilian ELROB  
20-24 June 2011  
Leuven, Belgium

Acquire own position (not known or given).

Follow a person with maximum autonomy from loading to turning point (P2).

At the turning point (P2), the person walking in front (teach-in) should give the command to turn/shuttle or alternatively give the UTM coordinate before the trial (no teach-in possible).

If possible, transmit live position and imagery to the control station.

### Timing:

Duration approx. 60 min.

### Constraints:

There is only one control station allowed, either stationary or carried by operator (for teach-in).

The troop will receive a section of a digital map with UTM grid and measures ;see example in the rules.

The scenario ends with reaching time limit and transmission of the acquired data.

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