

# ELROB - ISMCR 2018







21th International Symposium on  
Measurement and Control in Robotics  
26-27 September 2018 – International  
CBRNE Institute, MONS, Belgium

ROBOTICS FOR THE CHANGING WORLD

## REDUCED CATALOGUE



[www.imeko.org](http://www.imeko.org) – TC 17

				
				
European Society for Defense	Hainaut Sécurité	Belgian Royal Higher Institute of Defense	Climbing and Walking Robots Association	

## The International CBRNE Institute



### Ladies and Gentlemen,

Dear friends,

the International CBRNE Institute is very pleased to welcome you to ELROB 2018.

I would like to thank especially the ELROB committee for the trust in our capacities to organize such a great event.

Thank you also to the companies which accepted to sponsor this event, their contribution helped greatly to the organization of this activity.

Finally, thank you to the staff of the ICI and the RPA Hainaut Sécurité for their indispensable support to the success and their kind availability.

The ICI with its 2 groups of experts becomes by its international dimension more and more a key player in all matters concerning CBRNE (Chemical, Biological, Radiological, Nuclear and Explosives) at both national and international level. Indeed, representatives from no less than 34 countries passed through our walls last year; and the trend still seems to be towards increasing this figure this year.

The advent of robotics has greatly improved the response capabilities of both military personnel and first responders in hostile or dangerous environments; it saves lives and is therefore of considerable interest to all. Our Institute therefore has a role to play not only for the benefit of first responders but also by cooperating with regional and national academic institutions in our country and abroad.

Robotic is now integrated in our "Knowledge Centre" managed by Professor Yvan Baudoin and Brigadier General Ioannis Galatas

I hope that this week's trials will be useful to you or at least open your eyes to this very particular subject but also allow you to discuss on the subject with both the experts present and your colleagues.

Feel free to visit the stands in the marquee, they will present the latest technical developments in the field.

The ELROB event has been doubled this year by the organization of the 21st International Symposium on Robotics (ISMCR'2018) under the auspices of the International Confederation IMEKO, and more particularly its technical committee (TC17) coordinator of research in robotics, chaired by Japan, of which Belgium is an active member in charge of the organization of this symposium.

Thank You

A handwritten signature in blue ink, appearing to read 'Y. Dubucq'.

**Director ICI**

A handwritten signature in blue ink, appearing to read 'Y. Baudoin'.

**Y. Baudoin**

**ICI/EKC Manager**

## **Military ELROB 2018 – Lens-Bauffe Belgium**



Welcome to the military ELROB 2018 in Belgium.

This year's event is already the tenth edition of the European Land Robot Trials. Over the years, the trials have established themselves as Europe's leading outdoor robotics event.

After exceedingly successful ELROB events in Hammelburg (Germany), Thun (Switzerland), Warsaw (Poland), and Eggendorf (Austria) this seventh presentation of the military version of ELROB takes place at the RPA Hainaut Sécurité site in Lens and is kindly co-organized by the International CBRNE Institute (ICI), Les Bons Villers. Bringing together potential end-users, members of the robotics research community and industry representatives, ELROB once more demonstrates the successful cooperation between the European countries.

The purpose of the European Land Robot Trial is to provide a comparative evaluation of outdoor robotic systems across applications such as basic mobility, scouting, EOD, convoying, etc. The trials will provide important information to potential users in terms of the status of current technologies. Through a baseline comparison of systems, it is also a prominent opportunity for vendors to understand current limitations and needs of end-users. ELROB furthermore provides an important venue for academics to understand challenges of technology transfer from research to field applications and basic research problems that remain unsolved.

The military ELROB addresses the fact that it is generally difficult for companies to get access to user feedback about their systems from actual end-users in the theatre. The event offers a unique insight into possible use cases. ELROB is thus an important event for all participants including end-users, providers, research institutes, and universities.

To promote new and future-oriented innovations, European Robotics, the scientific co-organiser of the event, will award special Innovation Prizes. The purpose of these prizes is to recognize new ways of solving the challenges at hand as well as approaches with very strong potential.

We are convinced that this ELROB will again provide important insight into the state of the art regarding military use of ground robotics and will be a valuable resource in further dissemination of UGV technology.

We wish all ELROB visitors and participants a pleasant and successful stay in Belgium!

With kind regards

A handwritten signature in black ink that reads "F. Schneider". The signature is written in a cursive, slightly stylized font.

Dr Frank E. Schneider

Deputy Head of the Cognitive Mobile Systems Department (CMS)  
Fraunhofer Institute for Communication, Information Processing and Ergonomics FKIE  
[frank.schneider@fkie.fraunhofer.de](mailto:frank.schneider@fkie.fraunhofer.de)

**Military ELROB 2018 – Lens, Belgium**



### **The Royal Higher Institute for Defence**

The Royal Higher Institute for Defence (RHID) is the reference body or think tank of the Belgian Ministry of Defence in the field of security and Defence.

In order to fully accomplish its mission, the RHID has set the objectives of focusing the attention - by identifying research and discussion topics, and themes of interest - as well as deepening and disseminating knowledge.

It is also responsible for managing the multiannual programme for scientific and technological research, including the security and Defence studies, as well as the scientific research of the Royal Army and Military History Museum.

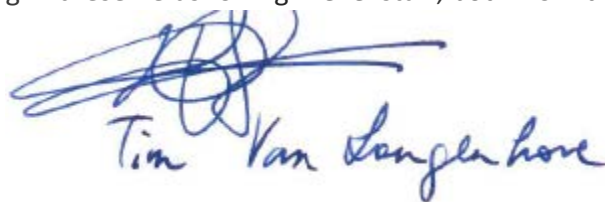
Scientific & Technological Research is organized in 3 main domains to cover the whole spectrum of ongoing and future scientific research: Data Acquisition and Processing (OAP), Mobility, Systems and Protection (MSP), Human Factors and Medicine (HFM).

Through national and international partnerships, the RHID has developed an extensive network to exchange ideas and experiences.

Triple Helix, also known as Golden Triangle, which actively involves the 3 main actors (industry, the academic world and the administration) is the preferential approach followed by RHID to conduct scientific and technological research. This way, the best balance is to be achieved between outsourcing and in-house expertise.

Organising conferences, colloquia and seminars as well as publishing papers by researchers at the Belgian Ministry of Defence, and the Institute in particular, fully contribute to knowledge transfer. We are proud to support ISMCR and ELROB'2018.

The High Studies for Security and Defence, in the form of a meeting place with seminars and visits, provides training in these fields for high-level staff, both from the ministry

A handwritten signature in blue ink, reading "Tim Van Langenhove".

## ELROB 2018 – PARTICIPANTS

**TELEROB – [www.telerob.com](http://www.telerob.com)**

### telemax HYBRID

**The best of both worlds:  
Compact and strong!**

#### Features

- Strong precision 6-axis manipulator with TCP control and automatic tool change
- Reinforced axes
- Lifting capacity up to 45 kg (99 lbs.)
- Compact dimensions
- 4-track drive system with a top speed of up to 10 km/h (6.2 mph)
- More than 30 pre-programmed automatic motion sequences for manipulator and flippers
- Interchangeability of accessories within the telemax family, e.g. batteries, tools, cameras and sensors
- Optional version for CBRN defense

#### Benefits

- Intuitive control of complex manipulator movements
- Ideal manipulator for working with heavy tools and firing systems
- Precise operating even with heavy objects in confined spaces
- Extreme mobility to overcome stairs, slopes, gaps and obstacles up to 50 cm (20 inches)
- Easy access to predefined automatic motion sequences
- Excels in a wide variety of applications
- Improved resistance against decontamination agents



**TELEROB**

### telemax PRO

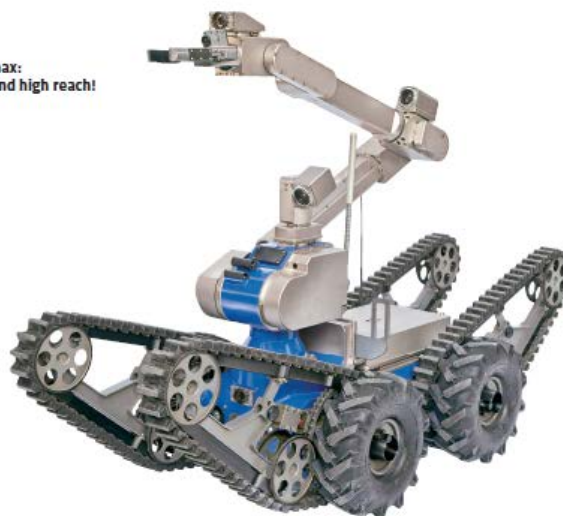
**The original telemax:  
Compact design and high reach!**

#### Features

- Precision 7-axis manipulator with TCP control and automatic tool change
- Telescopic joint allows for increased reach of manipulator
- Lifting capacity up to 30 kg (66 lbs.)
- Compact dimensions
- 4-track drive system with a top speed of up to 10 km/h (6.2 mph)
- More than 30 pre-programmed automatic motion sequences for manipulator and flippers
- Interchangeability of accessories within the telemax family, e.g. batteries, tools, cameras and sensors

#### Benefits

- Intuitive control of complex manipulator movements
- Precise operation in a wide variety of situations
- Easily manipulate into difficult locations such as baggage compartments or under aircraft seats
- Extreme mobility to overcome stairs, slopes, gaps and obstacles up to 50 cm (20 inches)
- Easy access to predefined automatic motion sequences
- Excels in a wide variety of applications





## telemax PLUS

The biggest and strongest telemax:  
Versatile and strong!

### Features



- Exceptionally strong precision 6-axis manipulator with TCP control and automatic tool change
- Lifting capacity up to 75 kg (165 lbs.)
- Double payload area on the chassis
- 4-track drive system with a top speed of up to 5 km/h (3.1 mph)
- More than 30 pre-programmed automatic motion sequences for manipulator and flippers
- Interchangeability of accessories within the telamax family, e.g. batteries, tools, cameras and sensors

### Benefits

- Intuitive control of complex manipulator movements
- Particularly precise operating with very heavy objects
- More space for additional payloads such as: up to 4 batteries and other accessories like repeaters, x-ray systems or sensor platforms
- Good mobility to overcome stairs, slopes and obstacles up to 40 cm (16 inches)
- Easy access to predefined automatic motion sequences
- Excels in a wide variety of applications



**AVRORA – [www.kt-avrora.ru](http://www.kt-avrora.ru)**

<p>Pictures of the vehicle:</p>		<p>Pictures of the vehicle:</p>	
<p>Pictures of the vehicle:</p>		<p>Pictures of the vehicle:</p>	
<p>Name of vehicle:</p>	<p>Wombat Leader</p>	<p>Name of vehicle:</p>	<p>Wombat Follower</p>

**BROKK [www.brokk.com](http://www.brokk.com)**

Pictures of the vehicle:



Please provide detailed pictures from ALL sides of the vehicle



Name of vehicle:

Brokk SR-120D-System

**DIEHL DEFENCE <http://www.diehl.com/de/diehl-defence.html>**

Pictures of the vehicle:



Name of vehicle:

TheMIS

Pictures of the vehicle:



Name of vehicle:

Kobra 710

Pictures of the vehicle:



Name of vehicle:


PackBot 510 EOD




**FRAUNHOFER FKIE &TNO [www.fkie.fraunhofer.de](http://www.fkie.fraunhofer.de)**

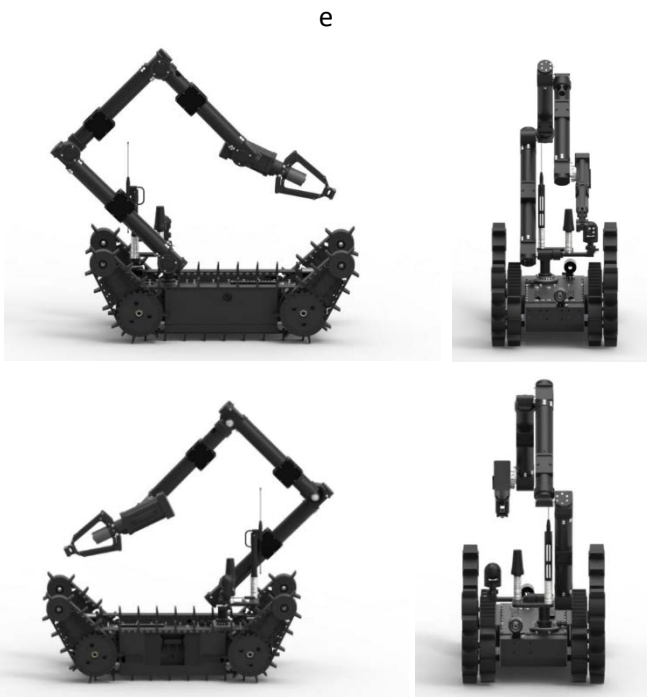
<p>Pictures of the vehicle:</p>	
<p>Name of vehicle:</p>	<p>Longcross</p>

**MUCAR [www.unibw.de/tas](http://www.unibw.de/tas)**


<p>Pictures of the vehicle:</p>	
<p>Name of vehicle:</p>	<p>MuCAR-3 (Munich Cognitive Autonomous Robot Car, 3rd generation)</p>


Pictures of the vehicle:	
Name of vehicle:	MuCAR-4 (Munich Cognitive Autonomous Robot Car, 4rd generation)

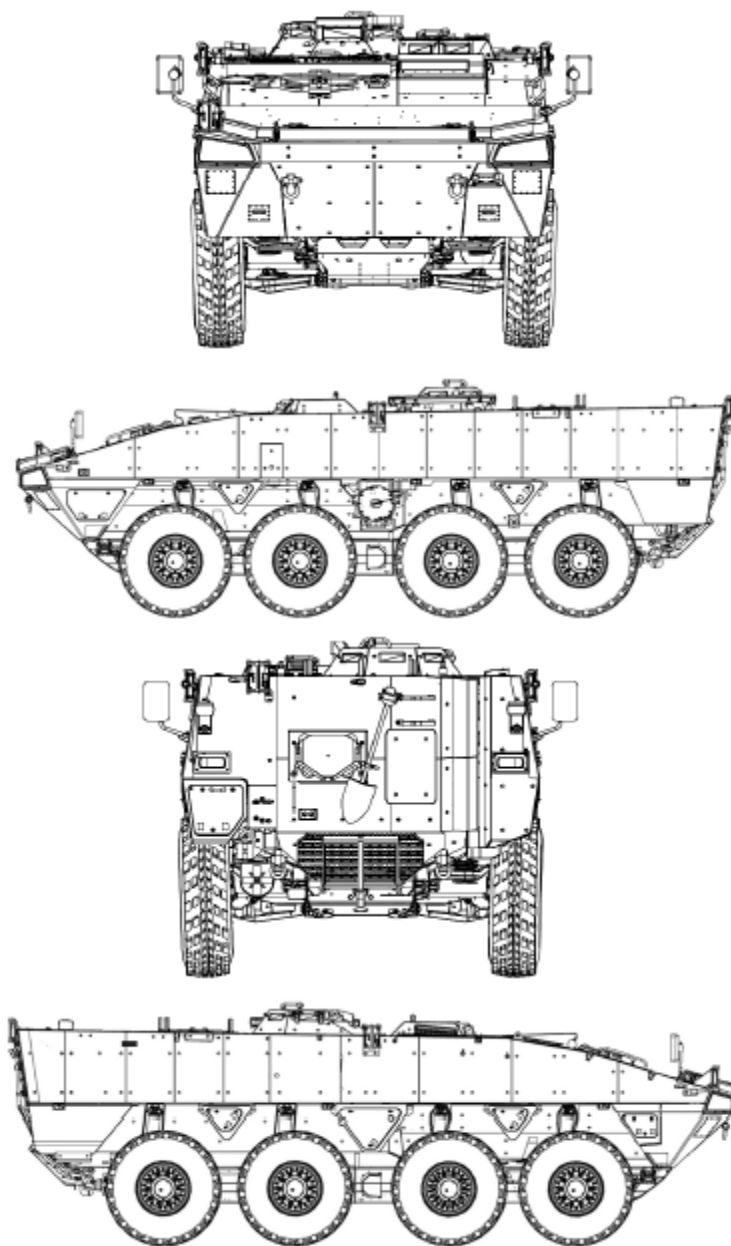
**NIC Instruments limited – [www.nicltd.co.uk](http://www.nicltd.co.uk)**

Pictures of the vehicle:	<p>e</p> 
Name of vehicle:	ZEUS

## TAUT AUSTRIA TECHNOLOGY

Pictures of the vehicle:	
Name of vehicle:	e-Mule A.I.C.T

Pictures of the vehicle:	<p>Please provide detailed pictures from ALL sides of the vehicle</p> 
Name of vehicle:	taurob Tracker



PATRIA AMV 8x8



## SMV – DIEHL DEFENCE Smart Military Vehicle

Pictures of the vehicle:



Name of vehicle:

TULF (Technologieträger Unbemanntes Landfahrzeug)



Pictures of the vehicle:



Name of vehicle:

StrAsRob

**BISG OULU [www.oulu.fi/bisg/robotics](http://www.oulu.fi/bisg/robotics)**



**MSAS – [www.mandalarobotics.com](http://www.mandalarobotics.com)**



**RHEINMETALL DEFENCE -**  
[https://www.rheinmetall.ca/fr/rheinmetall\\_canada/index.php](https://www.rheinmetall.ca/fr/rheinmetall_canada/index.php)



**ECA GROUP** <https://www.ecagroup.com>

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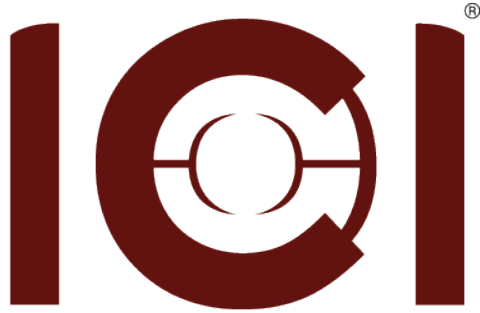
Please provide detailed pictures from ALL sides of the vehicle



Name of vehicle:

CAMELEON MK1

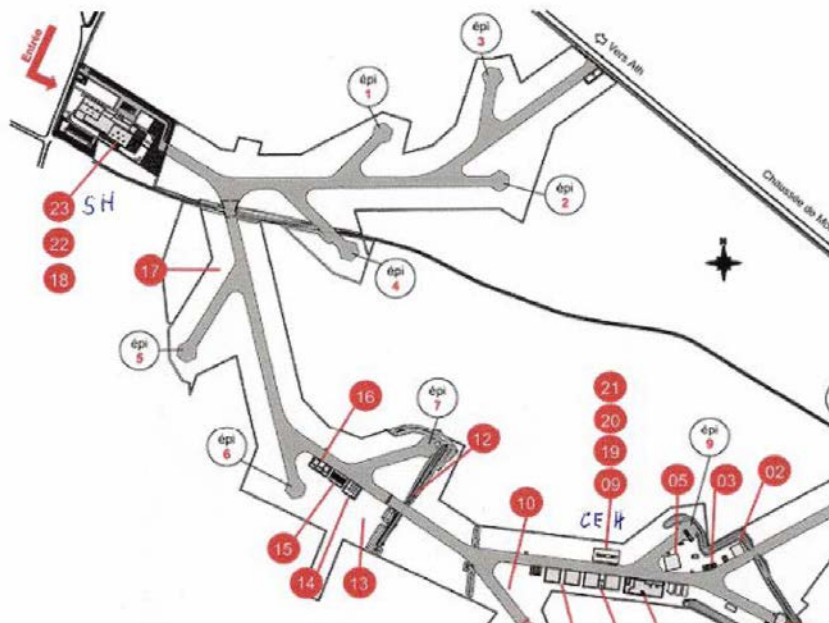




International **CBRNE** Institute

**TRIAL SITE – RPA Hainaut BAUFFE**

SH : ISMCR Symposium - CEH Trial Centre of Gravity



<b>General PRE-Programme</b>
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Sat/Sun 22/23	Mon 24	Tue 25	Wed 26	Thu 27	Fri 2/8
Team Arrival (whole day)	Official Opening Ceremony 10:00 - 11:00 (SH)	Urban Recon 9:00 - 17:30	Mule 9:00 - 17:30	Search & Rescue / MedEvac 9:00 - 17:30	Departure Teams and Exhibitors 10:00 - 12:00
Preparations and Tests (whole day)	Team Briefing Convoying 11:30 - 12:00		Welcome VIP-Press 10:00-11:00 (SH-1)		
	Convoying 12:30 - 17:00		Welcome ISMCR'2018 session 1 10:00-10:30 (SH-2)		
	Team Briefing EOD / IED 11:30 - 12:00		ISMCR'2018 session 2 10:30-12:30 (SH-2)	ISMCR'2018 session 2 10:00-12:30 (SH-2)	
	EOD / IED 12:30 - 17:00	EOD / IED 09:00 - 17:00	EOD / IED 09:00 - 17:00	EOD / IED 09:00 - 17:00	
	Standing LUNCH TIME 12:30-13:30 (SH or CEH)	Standing LUNCH TIME 12:30-13:30 (SH or CEH)	Standing LUNCH TIME 12:30-13:30 (SH or CEH)	Standing LUNCH TIME 12:30-13:30 (SH or CEH)	
			ISMCR'2018 session 3 13:30-17:30 (SH-2)	ISMCR'2018 session 4 13:30-17:30 (SH-2)	
	Team Briefing Urban Recon 17:30 - 18:00	Team Briefing Mule 17:30 - 18:00	Team Briefing Search & Rescue / MedEvac 17:30 - 18:00		
	Get-Together ELROB participants 18:30 - 20:00 at Hainaut / drinks only		Together ISMCR Participants MONS Hotel 19.30- 22.30	Award Ceremony & Farewell &BBQ ELROB participants 18:30 - 22:30	
Exhibition Setup (whole day)	Exhibition / Static Display 11:00 - 17:30	Exhibition / Static Display 11:00 - 17:30	Exhibition / Static Display (incl. VIP Tour) 11:00 - 17:30	Exhibition / Static Display 11:00 - 17:30	





**UAIS PM2110**  
Radiological/ Chemical  
Reconnaissance



**FR1 Fast Response**



**Deployable  
Analytical  
Laboratories**



**ICP Incident Command**



**MHMTU**  
Hazardous Material Plasma Treatment Unit

**Transforming operational experience to operational solutions:  
a full spectrum of unique products for hazardous substances management**



**Identifier HazCat**

**Modular CBRNE  
Sampling Kits**



**FPS CBRNE  
Fragment  
Protection System**



**Identifier Explosives**

**...and much more**

**Contact us at  
[info@hotzonesolutions.org](mailto:info@hotzonesolutions.org)  
[www.hotzonesolutions.org](http://www.hotzonesolutions.org)**



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SOLUTIONS  
group**

# International CBRNE Institute

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[info@ici-belgium.be](mailto:info@ici-belgium.be)

**The European Reference Point for all CBRNE-related activities**



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