

# ERC Space and Robotics Event – an annual international mobile robot competition in Poland

Ł. Wilczyński<sup>1</sup>, P. Węclewski<sup>1</sup>, A. Karahan<sup>1</sup>, R. Lubański<sup>1</sup>, A. Łosiak<sup>1,2</sup>.

<sup>1</sup>European Space Foundation, Poland. <sup>2</sup>WildFire Lab, University of Exeter, UK.

## Where new and inspiring ideas are born

ERC is the prestigious space and robotics event connecting international mobile robot competition with the science and technological show zone open to the public. Most importantly though it is the place where new and inspiring ideas are born through sharing knowledge and passion for science, technology and innovation. The ERC competition is organized annually in Poland by the European Space Foundation in cooperation with partners and a group of independent experts who sit on a jury and the advisory board. The event is held since 2014. The sixth edition of ERC will take place on 11–13 September 2020 in the City of Kielce.

## The Competition

One of the main components of the ERC Space and Robotics Event is the ERC mobile robot competition where university teams of engineers build rovers to compete on an extraterrestrial inspired arena performing tasks based on international roadmaps for space robotics. The project aims at stimulating and supporting a new generation of multidisciplinary engineers, boosting innovation in research and business, and popularising STEM (Science, Technology, Engineering, and Mathematics) advancements, all conceptually rooted in future space exploration.

In order to qualify for the competition, teams need to prepare a detailed technical, scientific and budgetary plan for their project. There are four field tasks the teams need to complete during the final:

- **Science:** take a soil sample from the deeper layers of the Mars Yard and secure it for later analysis, as well as justify the choice of the sampling site location.
- **Maintenance:** complete a designated route towards a control panel and perform several manual operations.
- **Collection:** find and collect containers with scientific samples.
- **Traverse:** perform a blind navigation task: reach places marked on the map with the robots without using the camera view. The rovers have to navigate independently based on the map of the area.

## The Science and Technological Show Zone

What makes ERC stand out against other events of such kind is the Science and Technological Show Zone open to the public. The intention behind this science fair is to add an educational and inspirational value to the event giving the audience of all ages an opportunity to gain knowledge in the matters of science, space, robotics and new technologies. What ERC also does is enabling the public to learn about the importance and possibilities of applying new technologies, including those space-related, in various spheres of life, such as industry, medicine, agriculture, and education. The program of each edition of the event involves workshops, film lectures, interactive shows and meetings with ERC special guests: representatives of the world of space and science.

## Inspire the next generation!

The ERC competition significantly increased public interest in Poland in the area of space robotics and exploration. That evinces in a growing number of teams from Poland who participate in other international rover competitions receiving awards (e.g., the IMPULS team from Kielce won a 2019 University Rover Challenge in Utah, USA and AGH Space Systems team from Krakow won a 2020 Indian Rover Challenge) – and, after completing their studies, become a part of the European space industry.

Last year's 5th edition of the ERC competition gathered 100,000 observers. The three-day event was visited by over 25,000 guests who came to Kielce literally from all over Poland. Three times as many people participated in live streamings on many online portals and social media. There were over 400 competitors from 13 countries taking part in ERC, including Australia, Columbia, India, Bangladesh, Italy, Great Britain, Germany, and Poland.

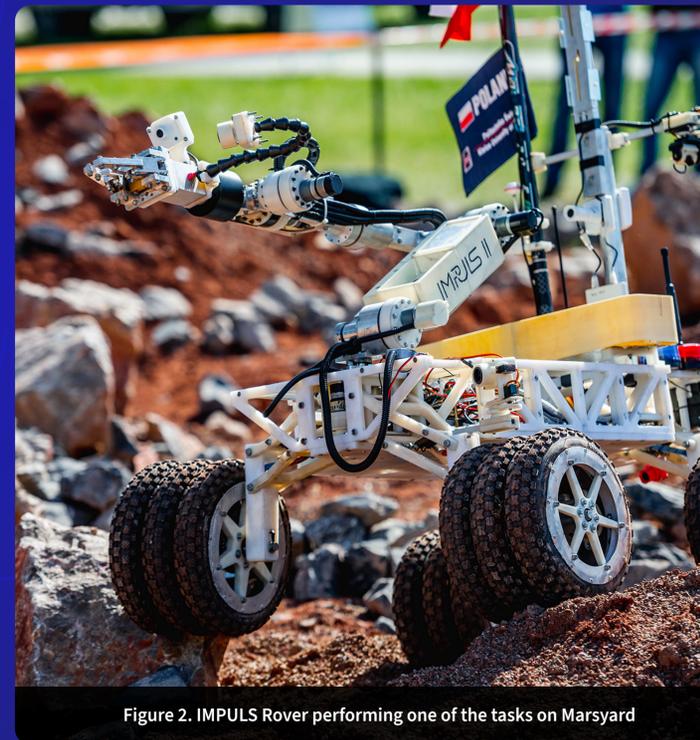


Figure 2. IMPULS Rover performing one of the tasks on Marsyard



Figure 1. ERC 2019 Mars Yard in the center of the campus of the Kielce University of Technology (Poland). The design of the area was based on a Jezero crater – a future landing place of the American Mars 2020 rover.

The list of special guests of the ERC 2019 involved Steve Jurczyk, Associate Administrator at NASA, Gianfranco Visentin, Head of Automation and Robotics Section at ESA and the coordinator of the European space robotics consortium PERASPERA, Maria Antonietta Perino, Director International Network Opportunities Development at Thales Alenia Space Italy, Pantelis Poulakis, Mobile System Engineer in the ExoMars mission of the European Space Agency, and Artemis Westenberg, CEO at Explore Mars Europe, a non-profit organization. The attendance of those guests improved the visibility of the ERC in Polish and international media and allowed young people to interact with most experienced and inspiring space professionals.

In the Science and Technological Show Zone over forty exhibitors offered at their stands attractions such as rocket and stratospheric balloon building workshops, hologram shows and the opportunity to complete an analogous Martian mission with a mini robot. Wiktor Niedzicki, creator of the extremely popular in the 80's and 90's scientific TV program the 'Laboratory', conducted chemical and physical experiments engaging both the younger and older audience. There were also presentations of Polish devices created by space sector companies that are used in ESA (European Space Agency) and NASA space missions. Additionally, the "Rover Mechanic Simulator" game, created by the Pyramid Games studio, had its premiere. There were "Martian spacesuits" available for children who could wear them and get a certificate of analog astronaut training after collecting water samples from various springs around 'the base' and measuring their pH to determine which sample is safe for drinking.



**CONTACT**

[contact@spacefdn.com](mailto:contact@spacefdn.com)

**LEARN MORE**

[www.roverchallenge.eu](http://www.roverchallenge.eu)

See the official  
ERC 2019 movie!

