

PRoViScout

Planetary Robotics Vision Scout

GIVING ROBOTIC ROVERS A SIGHT OF THEIR OWN

For more than two millenia, Mars has made Europeans dream. Ancient Greek astronomers looked at it, H.G. Wells wrote about it, and today some of Europe's best scientists prepare to explore the Red Planet further with robotic vehicles. The project PRoViScout develops new building blocks for future robotic exploration of the planets.

Is life unique on Earth? The search for traces of life – past or present – is at the centre of Europe's ongoing planetary exploration programme. In the near future, robots with life science sensors will explore the surface of Mars and drill below its surface to look for signs of life, supported by recent data from Europe's Mars Express mission.

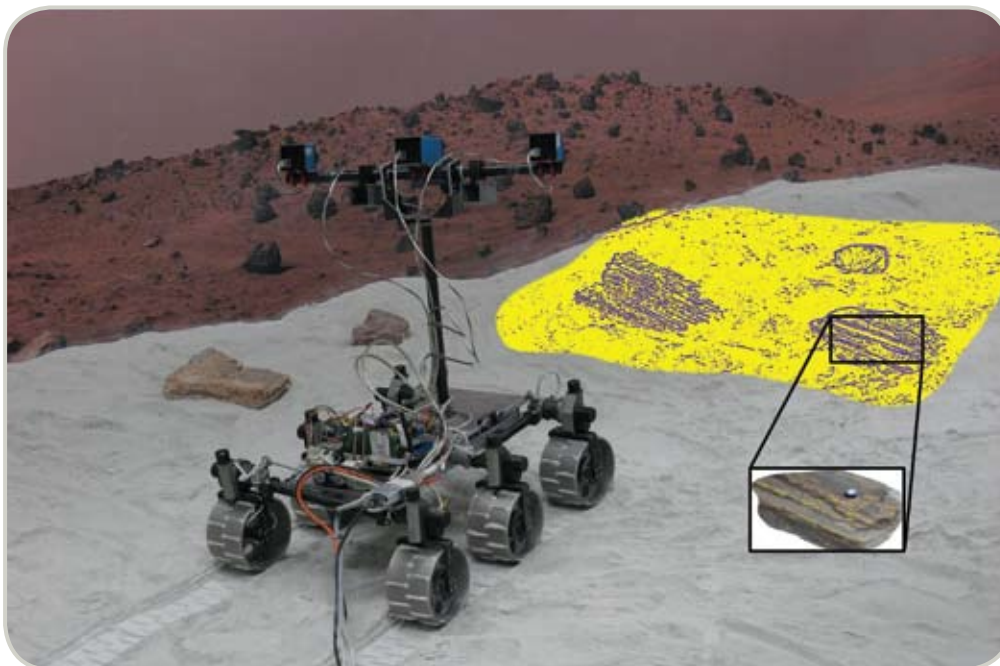
Yet mobility at the surface of another planet is no small challenge. Mars is a harsh and cold environment, and transmission time between Mars and Earth currently

stands at some 15 minutes. So real-time remote control is impractical, making overall scientific progress slow.

PRoViScout addresses this challenge. The project will demonstrate a novel, autonomous exploration system. In order to make robotic rovers more independent and efficient, instead of waiting for instructions from Earth, PRoViScout will implement a vision-based identification and planning system on board of rovers. Thereby the rovers will be able to independently identify objects of interest and interpret their relevance against various mission goals. Rovers will "see" important scientific or navigation features in the terrain and task themselves to gather more detailed data about previously unseen targets, whilst carefully prioritising and allocating their limited resources, and keeping track of possible hazards.



GERHARD PAAR
IS PROJECT COORDINATOR



Using advanced 3D and image understanding algorithms, PRoViScout will enable rovers to interpret the surrounding terrain and, if appropriate, gather additional data such as a high resolution image data without intervention from the ground. © SciSys Ltd. & Aberystwyth University

PRoViScout supports the development of more autonomous space vehicles. Vision based sample identification enables such rovers to act more independently, which is needed for more efficient mission outcomes.

QUESTIONS & ANSWERS

What do you want to achieve with this project?

Our objective is to increase the amount of quality science data that remote planetary rovers can deliver on behalf of Earth based science teams. We will do this by prototyping intelligent technologies, which increase their autonomy and therefore exploration efficiency.

Why is this project important for Europe?

Mars exploration promotes the European competencies in the exploration of difficult and hazardous terrain on Earth, using autonomous robotic platforms. For space science itself, the project helps save resources of future European missions by maximizing their science return.

How does your work benefit European citizens?

It will effectively increase the amount of data returned per euro spent on European space missions thereby ensuring good value for European taxpayers. The development of the core robotic technologies will help secure European jobs in this emerging market.

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LIST OF PARTNERS

- SCISYS UK LTD, United Kingdom
- Deutsches Zentrum Fuer Luft - Und Raumfahrt EV, Germany
- Aberystwyth University, United Kingdom
- Ceske Vysoke Uceni Technicke v Praze, Czech Republic
- Gmv Aerospace and Defence SA, Spain
- University of Leicester, United Kingdom
- Csem Centre Suisse D'electronique et de Microtechnique SA - Recherche et Developpement, Switzerland
- TRASYS S.A., Belgium
- University College London, United Kingdom
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PROJECT INFORMATION

Planetary Robotics Vision Scout (ProViScout)
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