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Landing a spacecraft on another planet is a complex and expensive endeavour. Once the craft is there, it is essential that any pictures and data sent back to Earth are of the highest quality in order to help scientists and astronomers acquire the best possible knowledge and assist them with planning future missions. A European Union (EU)-funded project, P*RoVisG*, has developed a new technique to convert information collected from other planets into higher resolution 3D images.

Information sent by rovers from the surface of other planets can now be processed back on Earth with the advanced technique pioneered by the P*RoVisG* project team. High-resolution 3D images are converted quickly and comprehensively, which could give scientists more complete views of other worlds.

“We are combining tens or hundreds of images into 3D reconstructions,” says Gerhard Paar of Joanneum Research company in Graz, Austria, coordinator of P*RoVisG* project. “Not only can this technique be used for current and future missions, but also for images and data that were collected from planets in the past,” he adds.

The success of any mission to another planet depends on data being processed and converted into 2D and 3D representations as accurately and as quickly as possible. Rovers, balloons, cameras, analytical equipment and other devices have limited service lives that can be shortened by inhospitable temperatures, pressures, weather and radiation.

This is the case on Mars, which has vast temperature swings, high winds, dust storms and frozen carbon dioxide. Like Earth, Mars also has a varied landscape – with mountains, sand dunes, cliffs, valleys, canyons and volcanoes. This can pose risks to robotic vehicles exploring the planet. For example, the rover Spirit was taken out of commission on 6 May 2009 when it became stuck in soft sand and could move no further, according to media reports.

“More complete and accurate images would help future missions go beyond the range of previous ones,” says Paar. Benefiting from the technology developed by the P*RoVisG* team, mission controllers and scientists are expected to be able to better identify targets to explore and send instructions to rovers and other devices quicker.

Providing higher 3D representations, P<sub>RO</sub>VisG's technology is also expected to give the public more realistic views of Earth's planetary neighbours. "Our aim is to also show the general public what it looks like to be on another planet," explains Paar.

P<sub>RO</sub>VisG's technology is expected to be used to process images taken by the panoramic camera ("PanCam") scheduled to reach Mars in 2019 as part of the joint European-Russian ExoMars mission.

"As a follow-up to P<sub>RO</sub>VisG, the P<sub>RO</sub>ViDE project, which began in January 2013, is processing in 3D most of the data obtained by all crafts that have landed on other planets," concludes Paar.

**See also:**

[Info-centre](#) [2]

**Project:**

Planetary robotics vision ground processing

**Project Acronym:**

PROVISG

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