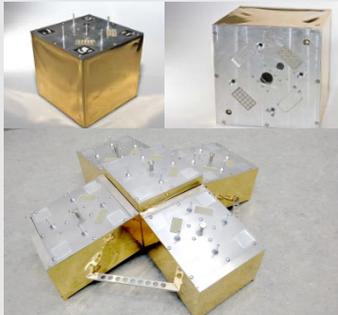


TransTerra

Semi-autonomous cooperative exploration of planetary surfaces including the installation of a logistic chain as well as consideration of the terrestrial applicability of individual aspects



Cubic payload elements (top) and BaseCamp (bottom)



Rover SherpaTT in an integrated state in the crater of the Space Exploration Hall



Shuttle Coyote III in uneven terrain

Robotic systems that are able to work autonomously on alien planets or moons are equally well suited for applications on earth. Examples are the exploitation of maritime resources, search and rescue, or medical rehabilitation. The goal of the project TransTerra is to further develop the space technologies available at DFKI within a complex scenario and to make them available for terrestrial applications.

Scenario: a team of robots explores the lunar surface

Manned missions to alien bodies such as the Moon or Mars have to be prepared by robotic missions. Besides surveying the landing zone, the logistics and infrastructure for the astronauts have to be prepared. The scenario in TransTerra demonstrates the (semi-) autonomous exploration of planetary surfaces using a cooperating robot team consisting of a rover and a shuttle. The shuttle's task is to supply the rover which requires the installation of a logistic chain. Human operators on earth will be able to control the mission using novel human-machine interfaces. In order to build up the logistic chain, so-called BaseCamps will be used to bridge large distances between a lander and the rover. BaseCamps, replaceable functional modules, rover and shuttle possess a compatible docking interface so that the shuttle as well as the rover can modify the BaseCamps using modules delivered to them. Additionally, the modules can be exchanged between shuttle and rover.

Technology transfer to terrestrial applications

The robotic technologies of all involved systems developed within the space exploration scenario, including their cooperation, the installation of a logistic chain and a suitable human-machine interface, will be transferred into the terrestrial application domains search and rescue, exploitation of maritime resources, and rehabilitation. This demonstrates the exchangeability and mutual applicability of technologies from space and terrestrial robotics.

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