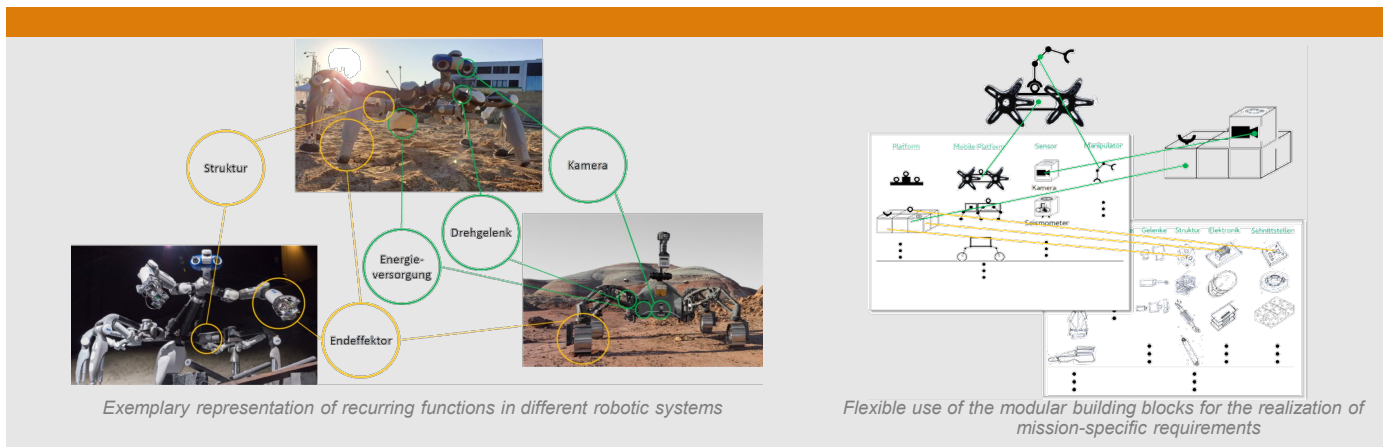


MODKOM

Modular components as Building Blocks for application-specific configurable space robots



Out of the box: DFKI and University of Bremen develop modular functional units for reconfigurable space robots

The tasks of autonomous robots in space are manifold. In order to meet the respective requirements, existing systems are strongly mission-specific. The disadvantage: If the mission requirements change, a completely new development is sometimes necessary. With the MODKOM project, which has now been launched, the German Research Center for Artificial Intelligence (DFKI) and the University of Bremen want to initiate a paradigm shift in robotic spaceflight: By building a modular system, the usually highly specialized robots are to be replaced by flexible reconfigurable systems, thus significantly reducing the development effort.

Flexibel, robust, kosteneffizient – Vorteile der Baukastensystematik

The advantages of modularization are obvious: On the one hand, it will be possible to subsequently add functionality to robotic systems that was not foreseen at the start of their development. This will enable them to adapt flexibly to the requirements of different missions. The reusability of individual modules and components will also make it possible to significantly shorten development and qualification cycles on Earth and make them more cost-effective.

Thanks to standardized interfaces or special adapters, even originally incompatible commercially available components and interfaces can be added to the modular kit to expand its portfolio and the range of possible applications. Another advantage of modular systems is their greater robustness against failures: Faulty modules can be replaced quickly and easily, thus restoring a fully functional robot. With regard to space applications, this possibility is extremely advantageous, as it is extremely difficult to repair a robot that is far away.

Project Duration: 07/2021 – 06/2024

Grant No.: 50RA2107

Partner:



Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



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