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## The modular and scaleable small satellite platform S2TEP

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The German Aerospace Center (DLR) has an inhouse research and technology program for satellite systems. This program serves for in-orbit technology demonstration, for preparation of future missions as a pathfinder, for high class science purposes and for enhancement of satellite system knowledge about design, assembly, verification, operation and exploitation methods. The scope of mission requirements is large and differs from mission to mission with respect to computing power, power consumption, data rates, attitude control and so on. To ensure a quick and efficient development of a satellite mission the development of a flexible and scaleable satellite platform has been started. This satellite platform, called S2TEP (Small Satellite Technology Experiment Platform) has innovative elements allowing a high modularity in the mechanical and the core avionic architecture. The S2TEP platform will be in the class from 10 kg to 50 kg. The modularity in the core avionic will be reached by an own developed computer which is scalable in terms of computing power and reliability. It will have high reliable computing knots mixed with high computing power knots. If one of the high computing power knots fails the other takes over automatically. Other modular elements are a flexible power management system including new developed batteries and a flexible communication system based on software defined radio. Also the design and verification process has innovative elements. The preliminary design has consequently applied concurrent engineering methods based on a unique data model using a concurrent engineering facility. Model based system engineering methods have been introduced which allows to develop efficiently, including automatic testing and verification. For the operation of the satellite a decentralized operating system is foreseen and the satellite itself will have partly autonomous operating modes.

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