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NEW SPACE: IMPACTS OF INNOVATIVE CONCEPTS IN SATELLITE DEVELOPMENT ON THE
SPACE INDUSTRY**Abstract**

In the past and present, the space sector has been dominated by conventional risk-averse development methods. Accelerated by the involvement of private companies and investors in the commercial space industry, the New Space approach of spacecraft development emerged. This paper captures the shift, which is taking place in the industrial space sector and derives future trends of the space industry with focus on satellites development and production by means of a qualitative research method. The development of an understanding of the New Space trend constitutes an essential element of this paper. This innovative New Space approach is a philosophy, that incorporates novel business ideas in designing, manufacturing and selling spacecrafts. New Space represents the way the space market transforms the demand of space activities into products and services, with projects often being high-risk. Within the frame of this paper, a digital questionnaire consisting of half-standardized questions was designed to investigate the subjective knowledge of globally spread questionnaire partners. Seven questionnaires were completed by German and international space companies and federal agencies, and allow insight into the New Space functioning. Questionnaire analyses show, that New Space projects are characterized by investments, acquisitions and consolidations, and their business model profitability still needs to be verified. To succeed, they need to collaborate with reliable partners and adapt knowledge and methods from other high technology industries like the automobile's Lean Management Philosophy. Results show, the customer focus is substantial, and responsiveness is necessary to remain flexible to market changes. From selling data to selling answers – for future applications of satellites, the Earth Observation sector is expected to be the dominating field of application. With on-board data processing, real-time custom-tailored solutions can be provided. Fractionation, modularization, standardization, and the use of commercial off the shelf parts enable series production, which will be economically feasible for the development of mega constellations. When integrated vertically, companies can reduce product margins of safety and margins of requirements to save costs. However, not many satellite manufacturing sites will remain to satisfy the demand of a few constellations per year. To conclude, the future of the space industry will be marked by the co-existence and collaboration of conventional and New Space companies, and emerging new markets. However, it will take time to overcome the risk-averse biases of conventional developers, and a change in human mindset is required to facilitate New Space concepts.