SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)
Space Technology and System Management Practices and Tools (4)

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INDICATORS FOR DISRUPTIVE SPACE TECHNOLOGIES

Abstract

Only revolutionary concepts, out-of-the-box thinking and radical innovations have the chance to expand the frontiers of human exploration and exploitation of space. Disruptive Space Technologies (DSTs) is the collective names of technologies which contribute to this goal (also called game changing, cross cutting and radical space technologies). Within the space sector already some DST candidates are visible, which can boost the performance of spacecraft applications and even establish new functions and mission options. Some examples of possible these DSTs include; Magnetic Sails, Electrodynamics tethers, Quantum communication, Electroactive Polymers, Graphene, Quantum-Dot Solar cells and many others. The aim of the disruptive technologies for space applications project is to study past disruptions and to create methods of identifying and evaluating space technology concepts. Within this project, several factors were analyzed which could indicate the potential for disruption and thus, function as success factors for space technologies. These indicators result from both literature research and an analysis of the space sector. The indicators are ranked according to the different macro-environmental factors of the STEP-Analysis (Social, Technical, Economic and Political). The project was performed at the DLR Institute of Space Systems (Bremen, Germany) and is supported by ESA.