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Space Architecture: Designing Human Systems Interaction (3)

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CONTEMPORARY HUMAN TECHNOLOGY INTERACTION ISSUES IN SPACE ARCHITECTURE – A POSITION PAPER

Abstract

Human interaction with technology has been a central characteristic of space architecture. Viewing this relationship from both the user's and designer's angle, crewed space-based platforms are essentially habitable machine systems, while the ground-segment infrastructure is permeated with information systems. From a system-of-systems perspective, the planning and utilisation of space-related infrastructure yields even wider organisational and societal implications. Recent cross-disciplinary collaborations highlighted the blurred boundaries between the diverse technical, life science and humanities fields that share a human-centred focus in space, e.g. human factors, biomedical, safety and systems engineering, industrial design and architecture. At the same time, the human-technology ensemble is increasingly viewed as partnership rather than juxtaposition. Accompanying the initiation of the session Space Architecture: Designing Human Systems Interaction, in this position paper we revisit central topical notions of the human-technology relationship and outline the broader framework for discussion. Through the conceptual lens of Human Technology Interaction (HTI), we situate the session's focus on human systems interaction and integration within the context of, and with an emphasis on, space architecture. We lay out current principles and practical issues related to the design, operation, and evaluation of human-rated systems in science, applications and exploration, including orbital and planetary bases, ground segment, and space analogous environments.