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Space Architecture: Habitats, Habitability, and Bases (1)

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BEYOND PHYSICAL LIMITS: A FRAMEWORK FOR ACCESSIBLE DESIGN IN SPACE HABITATS

Abstract

There have been no astronauts who are specially abled and there have been 67 women who have flown to space. Out of the 12 people that have walked on the moon, none have been women or gender minorities. Space agencies and private players across the world aim to land humans on the moon as early as 2024. This facilitates the need for a design framework for space habitats to be more accessible and inclusive. This paper explores a careful consideration of the needs of all users, including those with disabilities and other accessibility requirements. The design framework presented in this paper offers a structured approach to designing technologies that can be used by all members of a space habitat. The design framework consists of several key elements, including user-centered design, accessibility guidelines, and iterative testing and evaluation. User-centered design involves taking a holistic approach to design that places the needs of users at the center of the design process. This involves conducting research on the needs of different user groups, as well as involving users in the design process through activities such as participatory design workshops and user testing. These guidelines cover a range of topics, including user interface design, assistive technologies, and physical accessibility. The design framework presented in this paper is illustrated through the development of several case studies. These case studies focus on the design of different technologies for use in space habitats, including user interfaces, assistive technologies, and physical infrastructure. The case studies demonstrate how the design framework can be applied to a range of different technologies, and highlight the importance of user-centered design and iterative testing and evaluation in ensuring that technologies are accessible and inclusive for all users. Overall, the design framework presented in this paper offers a structured approach to designing technologies that are accessible and inclusive in space habitats. By taking a user-centered approach, following accessibility guidelines, and conducting iterative testing and evaluation, designers can ensure that technologies are designed to meet the needs of all users, including those with disabilities and other accessibility requirements. The case studies presented in this paper demonstrate the effectiveness of this approach and offer practical guidance for designers working on technologies for use in space habitats.