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PROPOSITION FOR MODULAR SPACE HABITAT

Abstract

This proposal refers to the design of a modular space habitat that transforms and adapts according to different mission planning and needs, with focus on the “human factor” framework and the philosophy of habitability. To this direction, the two terms that drove the architectural development of the habitat were adaptability and transformability. It was clear that a design solution that would embrace and respond to different scenarios, would be the most suitable design choice as many different missions with different unique characteristics and needs arise. Furthermore, the use of transformable spatial systems has the ability to improve the qualitative factors of space and increase, through that, the psychological comfort of people. In addition to architectural variability, this proposal makes extensive use of lighting design and projection mapping as main tools in order to address the multitude of scenarios, but also to reduce the harmful effects of extreme environments in human health and psychology. Lighting scenarios are used to increase productivity and human health, through qualitative and quantitative evaluation. Projection mapping serves as a vital tool in extreme and confined environments, transforming any surface into a canvas for dynamic visuals. This capability not only enhances the immersive experience for viewers but also provides a much-needed escape and stress relief in demanding conditions, therefore promoting mental well-being.