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MARTIAN DELIGHT: EXPLORING QUALITATIVE CONTACT FOR DECOUPLED
COMMUNICATIONS

Abstract

Exploring farther into our solar system for planetary exploration will require the human crews to reside in their space transfer habitats for a long period of time. These explorers will also face isolation, owing to the sheer physical distance from the Earth, which may eventually affect their health and well-being. Furthermore, looking at a trip to Mars, astronauts will have to wait for at least forty minutes to receive updated round communications from Earth, due to the time it takes for the signal to travel the separation distance at the speed of light. Thus, when it comes to long-duration crewed space missions, communication and the feeling of connection with their loved ones—friends and family—on Earth is crucial for the astronauts' well-being. In this context, exploring a new communication approach for long-duration spaceflight seems necessary for our missions to Mars. This paper attempts to introduce a new way of decoupled communication that enables astronauts to connect with their feelings towards their loved ones on Earth via embedded interactions, focusing on the idea of “qualitative contact”. The idea of qualitative contact was inspired by one of our previous studies on the concept of “qualitative interface” in relation to HCI (Human-Computer Interaction), then extended to our case study for human-object interactions. Much of how we construct meaning in the real world tends to be qualitative rather than quantitative. Yet quantification has become a default method for displaying, presenting and communicating information. In this paper, we explore beyond the idea of ordinary distance communication and information exchange during deep space exploration. We introduce how human explorers in a space transfer habitat can qualitatively contact their loved ones on Earth during their long-duration space missions. We discuss our design processes, which includes the study of human-centredness, communication barriers, the ideation process, and a prototype development with a boundary-object based demonstration. We believe that our communication method or tool can stimulate ideas for space habitat designs beyond today's technological solutions for long-duration and long-distance space missions. By advancing the astronauts' physiological and psychological well-being, human explorers can venture to expand our civilisation deeper into the solar system. What are the ways to make astronauts feel connected with their family and friends back on Earth during their long-duration space missions? Here we share the idea of qualitative contact through a device we call Martian Delight—a device intended to advance the astronauts' well-being.