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CIMON – A MOBILE ARTIFICIAL INTELLIGENT CREW MATE FOR THE ISS

Abstract

CIMON is the first European Free Flyer designed for the International Space Station (ISS). It will be launched in Sumer 2018 and commissioned by Alexander Gerst during the "horizons" mission. Besides demonstrating the variety of implemented technologies in the specific human spaceflight environment, CIMON shall be used to identify its abilities to assist the ISS and ground crew in multiple tasks. Assistance and interaction is realized by verbal commands and visual data as well as by movements of the Free Flyer based on its Guidance, Navigation and Control System (see other abstracts/papers by Schröder V(1)., Regele R(1).). The unique human-machine-interface is powered by IBM Watson technology. It provides access to services based on artificial intelligence. In a first step, the feasibility and acceptance of the CIMON system will be investigated. Procedures will be available as well as assisting videos. Also the social interaction between humans and CIMON will be analyzed. Based on the gain of knowledge during the first mission, user acceptance shall be enhanced step by step e.g. via training of the artificial intelligence and software updates, if necessary. For future applications, it is foreseen to provide a fully accepted mobile crew companion for human space flights. CIMON shall be able to answer technical questions and shall have access to a knowledgebase filled with procedures and manuals. Also medical assistance could be a possible use case. Finally, CIMON shall be able to detect moods. . During future long term mission, an artificial crew mate like CIMON could detect stress or changes in the mood of a group and provide social countermeasures to assure mission success.

This paper presents the actual status and actual mission goals as well as the roadmap for future use cases.