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ENHANCING CREW TRAINING FOR EXPLORATION MISSIONS: THE WEKIT EXPERIENCE

Abstract

Training is an essential component of an astronaut mission preparation. Every astronaut receives specific training for the task that will be performed in orbit (routine and emergency), during the two years that precede the launch. In addition astronauts are assigned to perform On Board Training (OBT), to practice and maintain a high level of proficiency, in particular for complex or emergency procedures. The astronaut training process needs to evolve and to adapt to the different conditions and requirements that will be introduced by long duration exploration missions. Currently, the training period for an astronaut is 18-24 months. Projecting this estimation on a Mars/Moon mission of 2 years (i.e. including the long distance journey to/from Mars), a training period of about 6 years would be necessary, but at the same time not feasible. In addition, crew-members are now constantly supported by the Ground Team while performing the activities on board the International Space Station (ISS). This will not be possible during a mission to Mars since the communication between Ground and Mars is affected by a delay that can range from 8 to 20 minutes, depending on how Mars and Earth are aligned in that specific moment. The WEKIT tool is expected to fill these gaps by reducing the training duration and providing support to the crew when communication with Ground is not available, increasing their autonomy. WEKIT is an ambitious European research and innovation project supported by the Horizon 2020 program dedicated to develop and test a novel way of industrial training enabled by Smart Wearable Technology (WT). WEKIT

stands for Wearable Experience for Knowledge Intensive Training. 12 partners representing academia and industry from six countries in Europe have built a new learning technology platform and unique methodology to capture expert experience and share it with trainees making industrial training more efficient, affordable and engaging. Within the WEKIT Consortium ALTEC is responsible of coordinating the three industrial pilot cases (ALTEC is one of these) which aims at testing and evaluating the performance of the WEKIT product within the Industrial environment. The objective is to demonstrate how the learning processes can be improved in terms of effectiveness, time reduction and user perception by using the WEKIT methodology.

This paper describes the methodology utilized by the Consortium to design the WEKIT tool, its features and the feedbacks obtained by the almost 200 participants who tested the prototype in ALTEC.