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TRAVEL SPACE REAL TIME: AN APPROACH TO INTEGRATED DIGITAL TECHNOLOGIES TO SUPPORT SPACE EXPLOITATION

Abstract

This paper introduces the approach to the Travel Space Real Time initiative, a combined set of digital technologies including Virtual Reality, Augmented Reality and 5G aimed at supporting specific space activities ranging from science to training, education and commercial exploitation. Also, emerging space operators trying to capture wider markets will take advantage from Travel Space Real Time in raising awareness among more extensive number of people about our planet and educating and training new generations towards space exploration.

Four uses case of the Travel Space Real time initiative will be considered, Scientific, Training, EduEntertainment and Commercial: the scientific use case deals with remote real-time verification of the experiments carried out by astronauts interacting with the researchers based on earth with augmented reality techniques. The Training use case deals with Virtual experiential features, even with the direct involvement of astronauts in space, living their instructions and real experiences in real time, such to have personal trainers on the field. The EduEntertainment use case deals with Knowledge promotion and mass information dissemination with the most modern VR technologies. Finally, promotion of space assets and products on board towards the general public will be the examined use case.

The use cases can be applied to multiple contexts, in particular tourist travel and Moon travel where opportunity will exist to take footage from new points of view making them immersive with new VR technologies for a more exciting participation, as well as involving also less technologically skilled users through the Lunar City Platform. Reaching the described goals will in particular be possible by installing in modules and vehicles under construction innovative features ranging from 3d cameras, VR devices, etc, with the final goal of telling the magnificence of the Artemis lunar program via multimedia technologies including VR, under exclusive agreements among interested parties. Pathway to the final achievement is testing the technologies taking advantage of available opportunities in affordable and current space missions in LEO, on ISS and other platforms.

The concept underlying the theme of this paper was recently filed with a provisional patent application (Filing provisional EPO - EP22425006.8 dated 17.02.2022).