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ACTIVITIES (D5)

Knowledge management for space activities in the digital transformation age (2)

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SIMULATION OF OFF-WORLD COMMUNITIES BY DESIGN OF STANDARDISED LEARNING
PROCEDURES TO ASSESS SAFETY MEASURES AND RISK PREVENTION

Abstract

The ability of humans to survive and run productive activities in a harsh environment depends highly on how information is created, held, stored and shared. Skills, forms of tacit knowledge and organizational behaviour are at the basis of any human based activity. Nowadays, such skills in a connected world are being supported and enhanced by Information and Communication Technologies. In the case of space exploration, individuals and teams are trained by simulations or analog missions depending on the kind of training programmed, but training environments lack digital means and solutions, such as integration of sensors, data flow and harvesting and crunching to represent real time forms of team behaviour. Collective behaviour is being studied in digital environments by Social Network Analysis, pattern clustering and Virtual Learning Environments able to track the learning process of individuals and groups can be designed and customised according to peculiar needs and situations. The design of standardised and digital learning objects for the enactment, detection and evaluation of safe and riskful behaviour can be implemented in individual and collective practices. Moreover, social network analysis of complex ecosystems makes it possible to understand how such communities share information remotely with the rest of the connected experts and population, how communities and biological agents interact in a closed environment given several scenarios. Training in simulation and analog mission for moon/martian exploration and future settlements should benefit from such perspective of simulating digitally ecosystems with human machine interactions and monitoring different levels of interactions to survive given reverse salients and nonfunctional agents in a harsh environment.