Paper ID: 65470
oral

IAF SPACE SYSTEMS SYMPOSIUM (D1)
Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards. (5)

Author: Mr. Andrew Herd
ESA, The Netherlands

Prof. Massimiliano Vasile
University of Strathclyde, United Kingdom

LESSON LEARNED INNOVATIONS IN THE EUROPEAN SPACE AGENCY - FIRST STEPS IN THE APPLICATION OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FOR IMPROVED CAPTURE OF AND LEARNING FROM OUR PAST EXPERIENCE

Abstract

The European Space Agency has been undertaking space missions for more than 50 years. In this time, it has gained significant and a unique collection of experience. This collection of knowledge, held by its experts, is now one of the key assets of the Agency, and, in the light of a current retirement wave impacting this experience resource, has recently needed knowledge sharing mechanisms to be established through robust processes allowing this experience to be captured and shared. The ESA Digital Agenda for Space (EDAS) has provided focus and energy for the transformation and adoption of innovations aimed at changing how users capture and share their knowledge through enhanced means using Artificial Intelligence and Machine Learning for collaboration and interaction with ESA's knowledge asset on a daily basis. This paper will give the status of lessons learned rapid transformation to the virtual environment, and will also present a discussion on the capture and dissemination means employed and present a view on how this is expected to develop in the coming years, enabled through the adoption of not only Artificial Intelligence and Machine Learning, but also the use of visualisation techniques. To round up the paper will explore a new concept in development; looking for learning beyond launch, a domain dominated by data focussed only related to anomalies, as opposed to sub-system long-term performance such as structure, environmental aging, battery and solar panel performance.