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ARAMIS - AUGMENTED REALITY APPLICATION FOR MAINTENANCE, INVENTORY AND  
STOWAGE

**Abstract**

The crew time is one of the most important resource available on ISS. Astronauts' time for maintenance, housekeeping and ordinary activities, including stowage tasks, has to be optimized in order to have more time for science and experiments performed on the Station. The Space Agencies and industries, involved in ISS operations, continuously study and apply new methodologies, processes and technologies in order to improve and effectively and efficiently perform these activities, minimizing the possibility of crew error, increasing their autonomy and reducing the execution times. In business contexts, the technology of Augmented Reality is spreading with increasing speed and flexibility, which allows to "enhance" human sensory perception by adding information and data useful to the reality of the user. The aim of ARAMIS is to demonstrate that the technology of the Augmented Reality can be adopted as part of the continuing effort to reduce the crew time while improving efficiency. ARAMIS has been developed as an iOS application to be installed on the ISS iPad Air 2. Up to now, the crew operations are supported by the usage of procedures, messages, logs, in paper copy or via laptops with continuous changes of point of view for the astronauts between the working area and the information sources, with a loss of concentration and waste of time, and with limitation in the amount of information available in the same time. ARAMIS wants to demonstrate that having all the information available on a single portable device, in the field of sight of the operator, the overall operations efficiency improves. The paper describes the ARAMIS experience starting from the concept, the development and the operational phase splitted into two different scenarios (maintenance activity in Node 2 and one stowage activity into PMM) that were performed by the Italian Astronaut Paolo Nespoli during his VITA missions. ARAMIS has been funded, coordinated during both development and utilization phase by ASI. Furthermore ASI execute the role of contract management and granted access to ISS resources through a dedicated contract with NASA.