Virtual Reality in the aerospace industry: dedicated solutions and research fields at EADS Innovation Works

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Abstract

By designing aircraft, helicopters, launchers or satellites, EADS engineers are facing several challenges that relate to specificities of the aerospace industry: complex products with lots of components and embedded systems, long life products (several decades), strong reliability commitment and largely reconfigurable aircraft. Digital Mock-Ups (DMUs) are widely used within EADS but mostly on the design stages and less for testing or evaluation: Virtual Reality is a complementary solution to existing solutions for product experimentation.

The presentation aims at illustrating the relevance and efficiency of Virtual Reality tools within the specific context of EADS, by introducing two pragmatic use-cases where innovation in VR has led to enhanced efficiency and improved acceptability by non-VR experts: one maintenance use-case (with the dedicated SAMIRA software) and one systems installation and integration use case (where the VR framework RHEA provides immersion capabilities and consistency within the global DMU workflow).

It underlines current achievements and stresses research fields where improvements are still to be provided: scene behaviour, photo-realistic rendering, interaction devices, user-friendly and natural interactions and metaphors. EADS Innovation Works participation within the FP7 VISION project emphasises the need of new approaches dedicated to specific and very demanding needs, with partners working on ray-tracing, interactions and motion capture.