Interface Technologies for Advanced Virtual Aircraft Products – The VISION project

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Abstract

The presentation gives a thorough overview of the objectives, the technical approach and the major technologies to be delivered by the VISION project. VISION is co-funded by the European Commission under the 7th EU Framework Programme for Research and Technological Development (FP7). The project's objective is to specify and develop key interface features in fundamental cornerstones of Virtual Reality (VR) technology, namely in immersive visualization and interaction, so as to improve the flexibility, the performance and cost efficiency of human-oriented life cycle procedures, related to critical aircraft-related virtual products. VISION has followed an upstream research approach. The project has delivered detailed visualization / interaction technology specifications for virtual aircraft applications, human factors guidelines for the technology development and the implementation of the integration platform, as well as a human-centred validation framework. VISION technologies are designed to be platform independent. The "interaction module" and the "visualization module" are the major software pillars of the VISION system. The "visualization module" includes an Extended Ray Tracing Engine, which provides physically correct simulation of light in aircraft interiors and dynamic illumination changes. The "interaction module" includes a generic, platform-independent interaction framework, a repository of advanced interaction metaphors for aircraft-related products and markerless body tracking technology. An integration of the features in common IT platforms is taking place, which will enable the launch of multi-disciplinary activities around virtual prototypes that ensure human immersion in complete context. The validation of VISION technologies will be carried out on the basis of two major use cases involving the project end users: a) flight attendant's operations and cabin light design activities, to be tested by EADS Deutschland GmbH, b) final assembly operations, including hole drilling and riveting processes, to be tested by EADS France Innovation Works.