

Abstract Details

Title: A-320 based virtual flight test bed

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Abstract: A flight test bed (ftb) is a dedicated experimental aircraft with extensive instrumentation and is used for evaluation of modification proposals e.g. Integration of a new sub system to improve operational deployment of the existing aircraft. Flight testing on the ftb is an involved process comprising of lengthy and expensive experimentation procedures using physical prototypes. Reference [1] contains descriptive procedure to realise virtual environment of an aircraft for evaluating various modification options. The research methodology does facilitate visualisation and immersion into a virtual aircraft along with modification scheme thereby evaluating functional aspects of the modification proposal. The main challenge is however to simultaneously compute and assess relevant aerodynamic parameters affecting flight safety, performance, stability and control of the modified aircraft. This research paper deals with integrating a flight dynamics computational application, jsb sim for transporting results of the calculations undertaken on the dynamics of the aircraft into virtual realisation software, unreal engine that was used to develop the virtual environment. In this paper, airbus a 320 based ftb has been used as a virtual platform on which a hypothetical modification proposal to fit three modification racks in the cargo compartment for utilising this aircraft in electronic warfare role has been experimented. The flight dynamics computational engine is programmed to compute trim conditions of the modified aircraft during cruise conditions of flight.

Keywords: flight test bed . Integration . Flight dynamics . Virtual . Jsbsim . Trim . Modification proposal . Simulation .