

Brno University of Technology
Faculty of Information Technology

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Report type: **Final research report for project**

Pilot Evaluation

Pilot Turbulence KFC Evaluation

Annotation:

The summary report introduces the research on Pilot Turbulence KFC Evaluation. An integral part of avionics development is a piloted evaluation under atmospheric turbulence conditions. Faculty of Information Technology, Brno University of Technology operates a full motion aircraft simulator capable of performing precision simulations accounting for various atmospheric turbulence effects.

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An integral part of the avionics development is a piloted experimental evaluation of the designed unit's performance under atmospheric turbulence conditions. Faculty of Information Technology, Brno University of Technology operates a full motion aircraft simulator capable of performing precision simulations accounting for various atmospheric turbulence effects.

The aircraft simulation framework provides motion, visual, audio and tactile stimuli which introduce an illusion of flight. The simulator's visual subsystem displays a virtual representation of the surrounding environment. The haptic subsystem contributes to the simulation's overall fidelity by providing the pilot with accurate tactile cues. The effect of a high fidelity active force–feedback is further refined through the simulation of longitudinal and lateral trim actions, control stick dead-band and friction and damping effects in the mechanical control system. A quality reproduction and spatial distribution of acoustic cues within the cabin environment is achieved through the utilization of high grade crew worn stereo headsets.

The simulation framework for pilot evaluation contains a high fidelity nonlinear dynamic model which generates input signals for the washout motion control algorithm. Its precision has a direct influence on the perception of the overall simulation accuracy. The full motion simulator's continuous turbulence model is implemented in accordance with the MIL-HDBK-1797 standard, using the aircraft altitude, velocity and attitude to compute respective turbulence induced contributions to the translational and rotational velocities of the aircraft.

Following tasks have been performed under the Pilot Turbulence KFC Evaluation:

#1 Pilot Turbulence KFC Evaluation



Figure 1 Full motion flight simulator for pilot evaluation

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Hereby it is confirmed that on the 15th September 2017 the Supplier provided to the Buyer and the Buyer received and fully accepted following items:

Item	Description	Delivery Date
10	Pilot Turbulence KFC Evaluation	15/SEP/2017

Provided by:

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