OBJECTIVE: Develop, test, and implement a Flight Test playback and review tool that incorporates terrain data.

DESCRIPTION: The Air Force’s Special Operations Forces/Combat Search and Rescue team perform constant aircraft avionics system software and hardware revision cycles to meet new or improved Air Force mission capabilities. With each revision cycle (Block Upgrade), the 402nd Software Engineering Group (402 SWEG) performs extensive Independent Verification and Validation (IV&V) of the avionics suite.

Currently, the process of performing analysis on test-flight data is manpower and time intensive. Performing manual review has several limitations. For example, analysts cannot correlate terrain data with Unit Under Test (UUT). Radar terrain data accuracy cannot be evaluated. If topology can be incorporated with UUT sensor data, Software/Hardware performance accuracy can be confirmed and, the analysts will finally have a method to accurately evaluate radar returns. Being able to incorporate terrain data into flight test reviews will provide for more detailed analysis of aircraft dynamics as they relate to the environment allowing for analysis of the airframe as it moves through the test envelope.

This research topic is seeking innovative advancements and automation of the current technology available to the US Air Force to support UUT flight-test and radar data analysis. There are many limiting factors involving manual analysis of flight-test data. Currently, the ability to accurately compare radar return data with topology is non-existent. The research will bring about the process required for maximizing the effectiveness of all flight tests by the incorporation of specific terrain features providing a complete analysis of the complete test environment.

The US Air Force will see process improvement, elimination of safety risk, improved software sustainment, and benefits derived from the new process.

PHASE I: Develop a Flight Test playback and review tool that incorporates terrain data.

PHASE II: The Phase I technology will be tested, optimized and expanded to incorporate those characteristics that were not previously developed.

PHASE III DUAL-USE APPLICATIONS: If Phase II is successful, the company will be expected to support the Air Force in transitioning the technology for use. Working with the Air Force, the company will integrate the technology for evaluation to determine its effectiveness in an operationally relevant environment.

REFERENCES:


KEYWORDS: automation, data analysis, topography, terrain