



NASA SBIR 2008 Phase I Solicitation

A1.05 Crew Systems Technologies for Improved Aviation Safety

Lead Center: LaRC

NASA seeks highly innovative, crew-centered, technologies to improve aerospace system safety through the development of more effective joint human-automation systems in aviation. This is to be accomplished through increased awareness of operator and crew functional state (both in terms of functional readiness and in situ assessment), and through improved interactions among intelligent agents (human and automated) while participating in flight operations on the flightdeck. We seek proposals for the development of advanced technologies that:

- Allow flightdeck systems to conform to individual operator's characteristics in a manner that improves performance, and that help characterize such individual differences;
- Improve our capability to non-intrusively sense and characterize operator and crew functional state in the ambient conditions of flight, or in flight simulation facilities;
- Convey operators state information to other intelligent agents (human and automated, proximal and remote) to improve coordinated performance;
- Modulate interactions among intelligent agents so as to minimize risk and optimize performance objectives across all possible mission scenarios;
- Intelligently aid operators such that the potential for and effects of human error are minimized, and so that operators can maintain appropriate functional states during flight operations; and/or
- Provide methods, metrics, and tools that help to assess the effectiveness of the above-mentioned technologies in human-in-the loop simulation and/or flight studies.

Proposals should describe novel technologies with high potential to serve the objectives of the Robust Automation/Human Systems element of NASA's Aviation Safety Integrated Intelligent Flight Deck program (<http://www.aeronautics.nasa.gov/avsafe/iifd/rahs.htm>). Successful Phase 1 proposals should culminate in a final report that specifies, and a Phase 2 proposal that would realize, technology that improves the effectiveness of joint human-automation systems in aviation, or improves the ability to assess effectiveness of such systems.

