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). We seek
proposals for the development of advanced technologies that:

- Effectively convey information and aid decision making to enable novel NextGen operational requirements
  (e.g., 4D trajectory-based operations, visual operations in non-visual meteorological conditions, etc. as
described in http://www.faa.gov/about/initiatives/nextgen/media/NGIP_0130.pdf);

- Foster the appropriate use of automation and complex information sources by, for example, conveying
  constraints on automation reliability and information certainty/timeliness;

- Support effective joint cognitive systems by improving the communication and collaboration among multiple
  intelligent agents (human and automated, proximal and remote), and provide assessment techniques and
  metrics for evaluating mixed H/A team performance;

- Characterize the operational status of the human crew members, effectively modulate this state, and/or
  effectively adapt interfaces and automation in response to functional status (e.g., situationally-aware display
  reconfiguration, aiding, and multi-modal presentation of information to maximize system performance and
  minimize information processing bottlenecks);

- 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.