NASA SBIR 2010 Phase I Solicitation

X13  Behavioral Health and Performance

The Behavioral Health and Performance topic is interested in developing strategies, tools, and technologies to mitigate Behavioral Health and Performance risks. The Behavioral Health and Performance topic is seeking tools and technologies to prevent performance degradation, human errors, or failures during critical operations resulting from: fatigue or work overload; deterioration of morale and motivation; interpersonal conflicts or lack of team cohesion, coordination, and communication; team and individual decision-making; performance readiness factors (fatigue, cognition, and emotional readiness); and behavioral health disorders. For 2010, the Behavioral Health and Performance topic is interested in the following technologies: Unobtrusive behavioral health monitoring tools: specifically a tool(s) which would monitor physiological markers of stress and emotional states. Proposals should respond in this area: http://humanresearch.jsc.nasa.gov/elements/bhp/asp, http://www.nsbri.org/Research/Psycho.html.

Subtopics

X13.01 Behavioral Health Monitoring Tools

Lead Center: JSC

The NASA Behavioral Health and Performance Program Element (BHP) identifies and characterizes the behavioral health and performance risks associated with training, living and working in Space, and return to Earth. BHP develops strategies, tools, and technologies to mitigate these risks. Currently, BHP has the need for behavioral health monitoring tools specific to the long duration Exploration Mission environment. The aim of the current task is to provide a non-invasive technology that would unobtrusively monitor and detect physiological markers of chronic stress that could lead to behavioral or performance decrements. Factors may include the changes in Central Nervous System, Autonomic Nervous System, emotional state, environment, gestures, and speech. The stress monitoring system would automatically generate meaningful feedback for the user regarding their individual behavioral health status based on measures of physiological, psychological and emotional state.

Requirements: The stress assessment tool shall:
• Be unobtrusive;

• Require minimal crew time or effort;

• Monitor physiological markers of stress and emotional state;

• Provide meaningful feedback to user regarding individual behavioral health status;

• If decrements are detected, the measure shall provide meaningful feedback to user regarding recommended course of action or treatment.

Phase I Deliverables: A final report summarizing current accepted methods and measures of physiological markers of stress as they relate to performance, the current state of technologies, recommendations regarding enhancements to current technology or the development of a new technology with the technology enhancement or development concept fully described. A draft requirements document for the recommended technology.