NASA SBIR 2007 Phase I Solicitation

X4.03 Space Suit Displays, Cameras, Controls, and Integrated Systems

Lead Center: GRC

Participating Center(s): JSC

Future exploration space suits will require innovative technologies for displaying various types of information. Technology development is needed for space suit mounted displays for use both inside and outside the space suit; outside mounted displays must be compatible with the space radiation, thermal, and vacuum environment. Examples include internally or externally mounted helmet displays and lightweight wrist or arm mounted displays.

The spacesuit will also require research for lightweight CO\textsubscript{2}, biomedical, and core temperature sensors with reduced size, increased reliability, and greater packaging flexibility; and camera systems that are lightweight, low power draw, and integrate with the spacesuit. The camera system should allow both motion and still imagery providing compressed digital data output suitable for transmission over IP networks. This camera must provide excellent situational awareness for crew members and quality imagery for remote viewing and public relations.

Research is also needed for lightweight, low power consuming general purpose computing platforms that are tolerant to the space radiation environment. Such platforms could be processor or FPGA based to allow the use of on-suit software applications such as biomedical advisory algorithms, procedure displays, navigation displays, and voice recognition. Technology development is needed for low computational overhead voice recognition processing systems capable of performing on lightweight radiation tolerant embedded computing platforms.