National Aeronautics and Space Administration

Reconfigurable Auditory-Visual Display

technology opportunity

Communication monitoring system for enhanced situational awareness

The system and method of reconfigurable Auditory-Visual Display creates a multi-mode communications environment with the express intention of increasing situational awareness for the operator (controller) and reducing operator fatigue. Situational awareness is increased by a number of innovations such as spatially separating each voice communication channel and allowing a single voice channel to be prioritized while still allowing other channels to be monitored. The controller can see real time video from each of the controlled individuals and sensor data from the controlled individuals can be collected electronically rather than being presented over a voice channel. It also provides the controlling individual an interface to record and transmit event data. In addition, each communications channel is equipped with a video indicator that allows the controller to determine who is speaking and from which communication channel the signal is being received. The components of this system include a command module (auditory, visual displays, and computer processing equipment), event tracking database, and multiple rescuer systems (helmet, light, camera, throat microphone, ear speaker, and health monitoring sensors).

BENEFITS

- **Multi-mode communications with prioritization**
- **Increased operator situational awareness**
- **Minimal training required**
- **Secondary intercom system**
- **Both wired and wireless**
- **Self-contained power system**

Reconfigurable Auditory-Visual Display: Technology Detail

The reconfigurable auditory-visual display device analyzes and displays signals representing location and angular orientation of a human body thereby, increasing situational awareness. It is a signal analysis and communication system that accepts communication signals from multiple signal sources simultaneously and permits a signal recipient to assign priority to, or to focus on, a selected audio signal source. The reconfigurable auditory-visual display for multi-channel control center and rescue communications system can be expandable to accommodate from two to eight rescuer channels. Each individual system can be linked between one another to communicate between rescue teams. The video portion of the system (helmet camera) connected to the rescuer has the capability of producing still images in addition to its normal video feed. This capability allows the rescuer to continue working while the attendant analyzes the images. In addition, the video stream can be recorded and played back for analysis purposes. The system can also provide additional functionality such as the tracking of events for each rescuer. The software system includes a reconfigurable sound path and specialization algorithm through the use of a software signal processing plug-in architecture. This feature is used to select between different auditory display configurations, create tailored sound path routings for specific applications, add additional signal conditioning and/or analysis to the sound path, and provide upgrades to systems in the field.

APPLICATIONS

- **Air traffic control**
- **Tele-operations**
- **Search and rescue**
- **Auditory and visual monitoring**
- **Environmental conditions monitoring**
- **Process and manufaturing plants**
- **Oil/gas pipelines**

Patents

This technology has been patented (U.S. Patent 7,378,963).
Reference: ARC-15315-1.

Licensing and Partnering Opportunities

NASA's Technology Transfer Program seeks to transfer this technology out of NASA's space program to benefit U.S. industry. NASA invites companies to inquire about licensing possibilities for this technology for commercial applications.

Learn More

For more information on this technology, and to discuss licensing and partnering opportunities, please contact:

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