

Virtual reality project could improve UAV operations

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ARLINGTON, Va. (AFMCNS) – An Air Force Office of Scientific Research-managed team is building a virtual reality environment for the battlespace initiative to maximize the potential of unmanned aerial vehicles.

According to Iowa State University lead researcher Dr. James Oliver, the team is applying advanced physical and eye-tracking systems and voice interfaces.

“Our goal is to provide role specific interfaces for a team and shared situational awareness using a large display,” Dr. Oliver said.

The team initially is trying to solve significant human interface issues arising from limitations affecting operators who control UAVs from the ground. They are also designing and testing the hardware, software and aeronautical systems to create immersive ground control stations based on virtual reality technology.

“We are using a virtual environment of the battleground as the primary interface context, with the variety of information sources available in a modern military engagement,” Dr. Oliver said. “We’re also developing and measuring the effectiveness of new human interface techniques, which will enable operators to effectively control multiple, semi-autonomous aircraft. Already, up to 230 persons can be interfaced to participate in the system simultaneously.”

The virtual reality environment uses a 3-D audiovisual stereoscopic facility, with six walls, 24 projectors, ultrasonic motion tracking, eight-channel audio and a graphics computer. The context has many benefits including large field of view and innovative information representation.

The virtual reality environment will enable participants to see the vehicles, the surrounding airspace and the terrain they are flying over as well as information from instruments, cameras, radar and weapons systems. This approach can solve the critical operational and training challenges that must be overcome to allow an operator to simultaneously monitor and control several UAVs at the same time.

“We are also exploring new ways to employ virtual reality to address the challenge of time lag that is characteristic of applications where machines are operated at a distance,” Dr. Oliver added.