

S&T Campaign: Human Sciences *Integration of Humans and Systems Integration Technologies*

Thomas Davis, PhD
(256) 876-2048
thomas.w.davis.civ@mail.mil

Research Objective

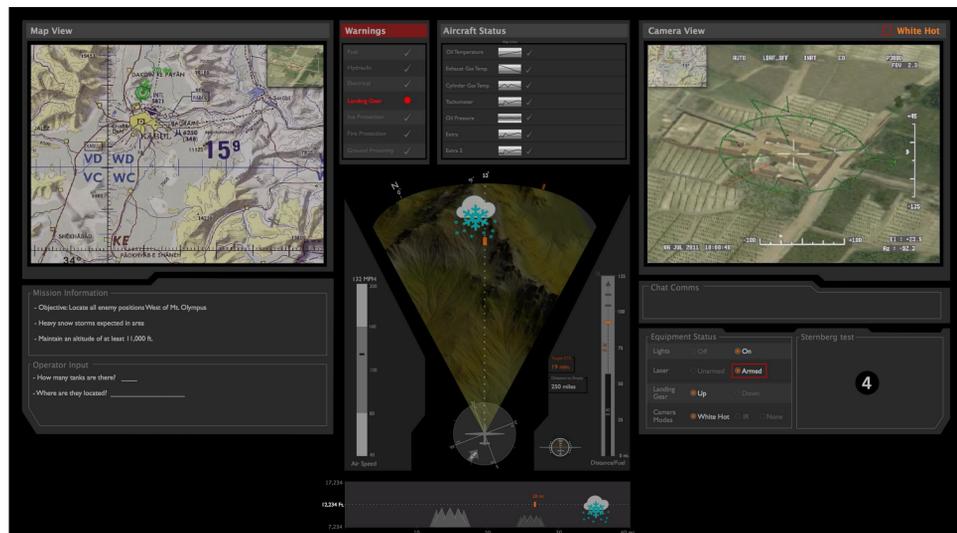
- Expand understanding of dynamic human-machine relationships with the military's fleet of unmanned and optionally piloted vehicles
- Identify and model factors that determine effective teams, decision making, and performance, specifically for manned/unmanned teams



Unmanned Systems Virtual Environment

Challenges

- Determining approaches to maximize human performance and decrease workload given that mission requirements dictate system interoperability levels beyond the traditional human-machine interface paradigms
- Higher order system-of-system interactions add complexity to the way technology is designed, constructed, measured, and evaluated



Reconfigurable Unmanned Aerial System User Interface Simulation

ARL Facilities and Capabilities Available to Support Collaborative Research

- Immersive System Integration Center, which includes:
 - Collaborative Unmanned Systems Integration Laboratory
 - Networked Virtual Battlespace 3 environment
 - 8 participant workstations
 - 1 coordinator workstation
 - Audio communication network
- Human Interface Innovation Laboratory
 - HCI for touchscreen and virtual reality
 - Multi-sensory interfaces
 - Cognitively tailored interfaces
 - Data visualization



Virtual Battlespace 3 Environment

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Deep learning approaches for computer vision algorithms and target detection
- Deep learning approaches for improving voice recognition
- Cognitive training for attentional control and regulation over long periods of time
- Expanded Virtual Battlespace 3 networks for larger scale experiments