

Mission:

CERI is an independent not-for-profit research institute founded by partners from private industry, academia, and government laboratories. CERI brings these sectors together to address critical collaborative cognition issues and to form pathways from scientific results in the laboratory to implementation in problems of national importance. CERI accomplishes this through human centered design, problem-oriented research, and multidisciplinary collaboration among scientists and practitioners.

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Cognitive Engineering
Research Institute



for Collaborative Innovation



CERI Research Areas



Extreme Environments

Problem

US Special Forces must be able to operate effectively in underground facilities where equipment failure is common.

Objectives

Identify technologies, methodologies, and training approaches needed in military and search and rescue missions.

Approach

Collect information from organizations specializing in underground operations in order to develop underground technologies.

Progress

Development of underground mapping, positioning, and communications technologies.



Remotely Operated Vehicles

Problem

UAV mishap rates are extremely high with many incidents attributed to human error.

Objectives

Unite UAV researchers, operators, and developers to identify and address critical human factors challenges.

Approach

Improving UAV systems by studying team cognition, coordination, and communication of teams and hosting workshops.

Progress

Completing the seventh UAV experiment. Hosted three Human Factors of UAVs Workshops. Visit www.cerici.org for details.



Communication and Coordination

Problem

Real-time, objective metrics to assess team performance and cognition are needed for selection and training of teams and decision aiding.

Objectives

Automate analysis of communications data; use communications data as an index of team cognition and coordination.

Approach

Design and validate team level measures, analyze content and flow of communication and associate patterns with performance, decision making, and loss of situation awareness.

Progress

Developed and tested new communication flow, coordination, and team situation awareness metrics.



Healthcare Systems

Problem

Healthcare environments are complex, dynamic, and information rich, technologies are often introduced with little consideration of human needs.

Objectives

Provide research model encouraging participation of all related disciplines working together to solve problems.

Approach

Communication and cognitive task analyses, field studies, observation, laboratory experiments, and modeling.

Progress

Establishing partnerships with various organizations in the medical field (i.e. Banner Health Systems and Hill Rom).



Emergency Response Operations

Problem

Emergency response operations in recent years have fallen short of expectations.

Objectives

Establish methods and procedures to assess performance of Emergency Response Teams.

Approach

Field studies, observations, interviews, communications analysis, and laboratory experiments.

Progress

Forming a consortium with the Ira A. Fulton School of Engineering at Arizona State University, local Arizona research and development partners, and emergency management personnel to develop user-centered technologies for use in emergency response.

