

## BACKGROUND

Recent decades have brought a dramatic evolution of intelligent technologies in general, and more specifically in the targeted applications of artificial intelligence and machine learning (AI/ML) for increasingly complex tasks and environments. Such advances provide incredible potential for increasing Soldier-system capabilities for dynamic, multi-domain operations within an increasingly complex world. However, for individual as well as teams of Soldiers, these technologies, if designed incorrectly, may threaten the stability, robustness, and resilience of operational performance. The CAST was created to serve as a collaborative nexus that aims to grow and foster a *community* that is focused on innovative basic and applied research and technology development. The CAST objective is to generate new theories and research methods, as well as germinate and nurture disruptive technologies that will enable diverse groups of humans and intelligent agents to team as robustly as units of highly trained Soldiers do today, if not even surpassing modern capabilities.

## PARTICIPANTS

Open to government, academia and industry.

## CONCEPT OF OPERATION

Leadership and membership in the center will be participation based. All general communications are intended to be open across government and non-government entities to ensure the focus of the center is on open collaboration rather than funding. The organizational structure of the center is not intended to direct specific research or technology development efforts, but rather to support and foster an ecosystem that inspires collaboration, innovation, and the creation of opportunity.

## COLLABORATIVE FOCUS

The CAST will facilitate the collaborative connections among people and facilities necessary to support multiple, future-forward ARL S&T programs:

- Strengthening Robust Operations in Novel Groups (STRONG) (<https://www.arl.army.mil/strong/>)
- ARLs Essential Research Programs in Human-Agent Teaming (HAT) and Artificial Intelligence/Machine Learning (AI/ML)
- Each of these efforts realizes important focus areas for both capability-enabling science and army modernization focused technology demonstrations
  - Capability-enabling science areas include: Soldiers understanding agents, Agents understanding Soldiers, and Methods for adaptive agent-Soldier teams, including theories and models of emergent properties of successful team dynamics
  - Technology demonstration areas include: Vehicle crew-agent teaming and Intelligent agents for augmented squad weapons

## BENEFITS

- Formation of close collaborations among CAST partners
- Shared data, technology, and laboratory/technical innovation facilities; including access to novel, state-of-the-art facilities such as the Mission Impact through Neuro-Inspired Design (MIND) Lab and the reconfigurable, pervasively-sensed and instrumented Innovation Commons.
- Facilitation in formalizing collaborative relationships defining intellectual property issues
- Participation in strategic and technical discussion through targeted workshops and annual innovation summits
- Opportunity to significantly impact the technical projects across a variety of inter-connected, stand-alone ARL laboratories as well as to influence the management and vision of the CAST itself
- Access to multiple levels of training, including student projects at pre- and post-doctoral levels as well as co-development of career development opportunities for junior and senior science and engineering professionals.

## WEBSITE

A critical and central element of the CAST is our website which:

- Provides up-to-date information about center activities and opportunities that enhance S&T for advanced teaming within socio-technical systems
- Describes the community of interest including team partners, research and demonstration focus areas, and associated laboratories and facilities
- Facilitates ongoing technical exchange through highlights of scientific and engineering advancements

[HTTPS://WWW.ARL.ARMY.MIL/CAST](https://www.arl.army.mil/cast)

## POINT OF CONTACT

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