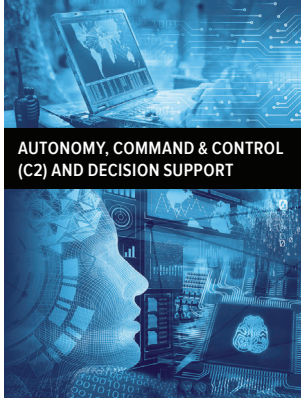


Core Technical Competencies (CTCs) Focused in Four Major Technical Areas of Research



AUTONOMY, COMMAND & CONTROL (C2) AND DECISION SUPPORT

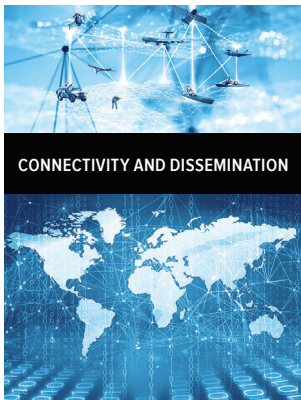
■ Autonomy, Command & Control and Decision Support *Mastering complexity of multi-domain command & control.*

Vision: Mastering and imposing complexity to command & control (C2) future multi-domain operations in an evolving battlespace with speed and scale.

Mission: Deliver revolutionary, trusted, affordable information technologies for agile, resilient and distributed Air Force command & control and autonomous systems.

Sub CTCs: Complex Effects Analysis • Complex Adaptive Systems • Machine Intelligence

Goals: Master complexity through development of adaptive C2 systems-of-systems and services. Control, impose and synchronize complex multi-domain effects chains. Harness machine intelligence to increase C2 speed and scale of operations. Realize large-scale multi-agent systems for autonomous planning, tasking and execution.



CONNECTIVITY AND DISSEMINATION

■ Connectivity and Dissemination

Putting the right information into the right hands at the right time.

Vision: Seamless, resilient networked communications fabric across the command and control intelligence surveillance reconnaissance (C2ISR) enterprise, assuring delivery of timely, reliable and actionable information to warfighters and systems.

Mission: Provide agile and secure mission-responsive communications and information exchange globally.

Sub CTCs: Communication Links and Networks • Secure Multi-Domain Architectures • Mission-Responsive Information Exchange

Goals: Agile and secure communications and networks. Agnostic connectivity. Autonomous link discovery, creation and utilization. Dissemination of information at need, securely.



CYBER SCIENCE AND TECHNOLOGY

■ Cyber Science and Technology

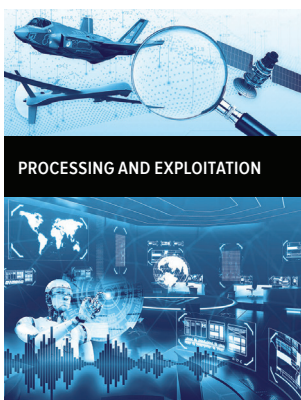
Leveraging and shaping the cyber domain to the nation's advantage.

Vision: An Air Force equipped with technologies that enable our freedom to operate in cyberspace while denying the adversary the same.

Mission: Deliver the science and technology necessary to ensure cyberspace superiority and support the conduct of full-spectrum, multi-domain, integrated cyberspace operations.

Sub CTCs: Cyber Assurance • Electromagnetic Cyber Convergence • Cyber Warfighting

Goals: Secure, composable, risk-based compute options. Cyber operations integrated and on par with air & space. Ability to conduct cyber operations agnostic to medium and geography.



PROCESSING AND EXPLOITATION

■ Processing and Exploitation

Exploiting computing and algorithms to transform big data into information.

Vision: Innovator of technologies that process and exploit data in near real time, analyze massive collections over time, and employ continuous learning to deliver asymmetric decision speed to the Air Force and Intelligence Community.

Mission: Deliver fast sensemaking for situational awareness and adversarial insight for the AF, DoD, and Intelligence Community.

Sub CTCs: Machine Analytic Characterization • Machine Analytic Comprehension and Projection • Extreme Computing

Goals: Multi-INT correlation and fusion of massive amounts of intelligence, surveillance, and reconnaissance (ISR) and publicly available data. Exploit targets in denied areas. Adversarial and secure machine learning. Dynamic, hybrid computing advancing neuromorphic, nanotech, and quantum systems to efficiently process ISR information.