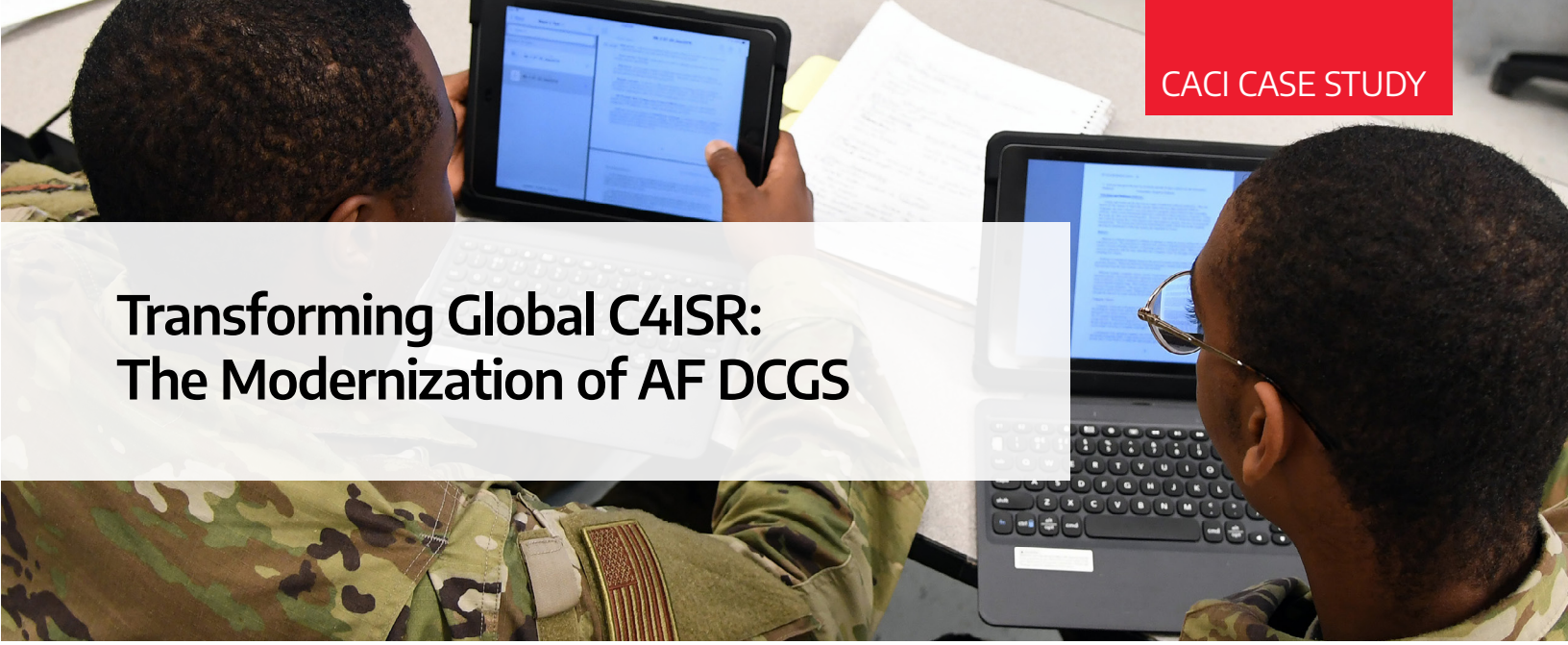
CACI CASE STUDY



Transforming Global C4ISR: The Modernization of AF DCGS

Networked across 27 geographic sites, the Air Force Distributed Common Ground System (AF DCGS) is critical to the service's national security mission. The weapon system connects the Air Force's platforms, sensors, and sites to enable actionable intelligence, communication, command and control, and more. This can include, for example, connecting the information collected by airborne sensors on platforms such as the U-2 Dragon Lady and RQ-4 Global Hawk with those on the ground who make the decisions that keep us safe.

To modernize such an important system, Air Combat Command (ACC) decided to implement a more agile development process that would result in a government-owned baseline that reduced reliance on specialized support. The Air Force Research Laboratory (AFRL) designed an open architecture system from the ground up, and the System Program Office at Warner Robins Air Force Base defined the requirements and own the system. Due to its expertise and experience in providing, updating, and integrating complex systems, CACI was chosen to help support the effort to modernize AF DCGS and its software.

27
GEOGRAPHIC SITES

Three
REDUCED A TWO-YEAR UPGRADE CYCLE TO ONLY THREE MONTHS

Zero
DOWNTIME

The Challenge: Replacing the entire system software with zero downtime

The reasons for the Air Force changing the development model were numerous. Legacy AF DCGS technology was vendor locked, meaning the system's assets were developed independently by various vendors, each using their own closed and proprietary technology. The system and its apps could also differ at each site, requiring representatives and engineers on the ground to keep them running. It cost so much to sustain that there was little budget for modernization, and when there was funding, threats would evolve faster than the model would allow solutions to be developed.

But because the AF DCGS is so critical to national defense, any transition to a system needed to be done with zero downtime. For example, when it came to software, both the legacy and new baselines needed to be supported throughout the process, and CACI engineers had to conduct smaller, incremental transitions to new baselines on a site-to-site basis. Additionally, adherence to agile methodologies was critical because rapidly evolving threats and technology meant requirements would change mid-development. Complicating matters further was the arrival of the COVID-19 pandemic and the subsequent limitations regarding travel and on-site work.

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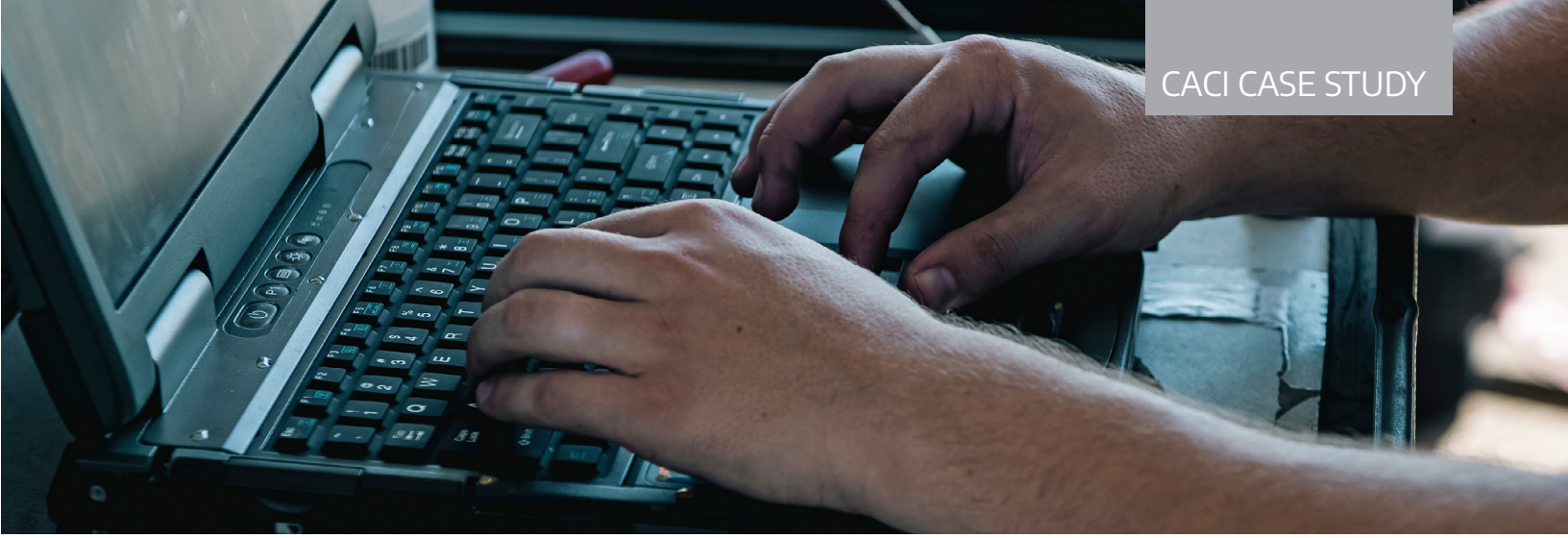

The Results: Helping deliver modern solutions to our service members

The CACI team supported the transition from monolithic instantiations to a common service-based architecture. It continued to support legacy baselines while developing and deploying the modernized software. This work included site visits across the enterprise to install both localized and standardized updates for each baseline and to train and support system operators on the transition. After that was complete, operators needed to be made comfortable with remote upgrades and support, capabilities that proved especially useful when the pandemic arrived. CACI supported the creation and progress of the Department of the Air Force (DAF) CloudWorks development platform, allowing automated continuous Authority To Operate (cATO) and low-to-high deployment. It also enforced open standards for all capabilities across the AF DCGS team.

Today, this remote sustainment approach has helped decrease the software upgrade cycle from two years to one that regularly occurs every 90 days. DCGS installations are much cheaper, faster, and more uniform across the board. Manual tasks have been automated, installations and upgrades streamlined, and errors caught and fixed before they get to users. Artificial intelligence and machine learning (AI/ML) scripts are also being used in operational baselines, and open architecture design and the use of Agile methodologies has replaced a vendor-locked system with one that is itself agile, upgradeable, and ready for solutions from other developers. As the lead system integrator, CACI brought advanced capabilities from more than 75 vendors to AF DCGS via a vendor-agnostic and best-in-class approach that included an analysis of alternatives and rapid onboarding support.

The Future: Regular upgrades, the cloud, and the power of AI

The complex multiyear transition to the AF DCGS of today was just the beginning. By design, the system will never be complete; it's crafted to be adaptable for the missions at hand. This includes expansion of cATO for all software upgrades. Other future changes to the system include the integration of a hybrid cloud to lessen risk as opposed to a full move toward the cloud, optimization for degraded communication environments, and the increased use of AI and ML algorithms, which are already being used to tag and identify objects detected by sensors.