

US Airforce ISR strategy for A2/AD environments is “Full-Spectrum Awareness” and “World-Class Expertise” which combine to the ultimate vision of “Delivering Decision Advantage.”

AF ISR 2023 Mission is to Enable decision advantage by providing and operating integrated, cross-domain ISR capabilities in concert with joint, national, and international partners. ISR is one of the Air Force’s five enduring core missions along with air and space superiority, rapid global mobility, global strike, and command and control. AF ISR is integral to Global Vigilance for the nation and is foundational to Global Reach and Global Power.

ISR is defined in Joint Publication 1-02, Department of Defense (DoD) Dictionary of Military and Associated Terms as “An activity that synchronizes and integrates the planning and operations of sensors, assets, processing, exploitation, and dissemination systems in direct support of current and future operations. This is an integrated intelligence operations function.”

Air Force ISR has been engaged in wartime and peacetime operations for decades to project U.S. power globally. ISR is often the first capability a combatant commander requests and employs prior to and upon the initiation of military operations. Often it must persist even after major combat operations have ended.

The Air Force will face unprecedented challenges in future operating environments. Emerging technology, irregular warfare tactics, asymmetric warfare, and anti-access capabilities in air, space, and cyber domains will enable adversaries to disrupt, degrade, and deny certain ISR capabilities. Cross-domain challenges will require cross-domain synergy of ISR capabilities to maintain situational awareness dominance.

Future threats are expected to be increasingly complex, crossing national and Geographic Combatant Command (GCC) boundaries and occurring throughout the global commons. Today's modern conflicts demand rapid, agile, and assured operations to meet decision support needs across air, space, and cyberspace domains, and all environments from permissive to denied.

Synchronizing forces across the three domains in time and purpose for effect is paramount for mission success and a major S&T challenge. The air, space, and cyber domains possess dramatically different characteristics with respect to speed, time, distance, and governing physics and forces.

"Since 9/11, there has been an explosion in space and cyberspace capabilities, with corresponding prominence on the national stage. Additionally, the conflicts in Iraq and Afghanistan resulted in renewed, sustained emphasis on human-derived intelligence (HUMINT and open sources) by all of the Services. To execute the AF ISR mission, we must be better collectors, enablers, and integrators of information derived from space, cyberspace, human, and open sources.

A significant challenge for Air Force ISR concerns operations in anti-access/area denial environments (A2/AD). These challenges can be addressed through improved sensing, processing, exploitation, data integration, and dissemination technologies. This includes reaching across domains in order to combine the information received from air, space, and cyber sources.

Contested environments compress decision timelines, which make the relevance and timeliness of ISR products ever more critical. These products must be tailored to meet the requestor's requirements in order to successfully achieve the commander's objectives. Additionally, ISR requirements should be timely enough to plan and execute effective operations. Intelligence resulting from timely ISR can provide information to aid a commander's decision-making and constantly improve the commander's understanding of the dynamic operational environment. Air Force ISR strategy will require technology improvements to further integrate cross-domain sensing capabilities, including technology to improve automated support to analysts to shorten timelines from tasking through product dissemination.

"AF ISR 2023: Delivering Decision Advantage," provides an overarching framework that will allow ISR Airmen (Active Duty, Guard, Reserve, and civilians) at every level and in every AF and joint organization—from the headquarters-level to the unit-level or any of the various other important positions we fill across the joint and larger intelligence community—to understand their roles in accomplishing the AF ISR mission.

In addition to the tactical intelligence mission, the AF ISR force of 2023 must also conduct strategic intelligence collection in peacetime—Phase 0—and provide world-class, multi- and all-source intelligence in highly contested, communications-degraded environments across all domains..

The report addresses the areas where the AF ISR Enterprise will direct time, resources, and manpower to ensure our ability to operate effectively in all domains, across all theaters, in all phases of conflict, any time.

AF ISR 2023 Vision:

AF ISR 2023: Delivering Decision Advantage lays out a strategic vision of “Full-Spectrum Awareness” and “World-Class Expertise” which combine to the ultimate vision of “Delivering Decision Advantage.”

Full-Spectrum Awareness

Operations-intelligence integration currently provides unprecedented awareness of the operational environment for tactical, operational, and strategical commanders and decision makers. Our vision depicts an AF ISR Enterprise that seamlessly ingests data from an even wider expanse of sources, swiftly conducts multi- and all-source analysis, and rapidly delivers decision advantage to war fighters and national decision makers.

Full-spectrum awareness in Phase 0 and Phase 1 will enable ISR Airmen to develop a comprehensive picture of the operational environment and, in coordination with the entire intelligence enterprise, develop a better understanding of potential adversaries’ intentions and capabilities. In Phases 2-5, full-spectrum awareness will provide the operations-intelligence convergence that will lead to informed decisions and compressed observe, orient, decide, and act (OODA) loops.

World-Class Expertise

Our Airmen—Active Duty, Guard, Reserves, and civilians—are the engine that powers AF ISR and are key to the world’s greatest Air Force. For our vision to become reality, we must ensure they are organized, trained, educated, and equipped to execute their assigned missions across all domains, geographic

regions, and phases of conflict. Providing world-class expertise as an integral part of air component and joint operations requires ISR Airmen who are masters of threat characterization, analysis, collection, targeting, and operations-intelligence integration. Empowered to innovate, ISR Airmen will lead the way in the development of tactics, techniques, and procedures (TTP) that will compress OODA loops, produce actionable intelligence, and provide the intelligence needed to complete the kinetic or nonkinetic targeting equation.

Rebalance and Optimize Integrated ISR Capabilities

AF ISR is exquisitely equipped to operate in permissive environments is directed to be transformed into one more suited to win the nation's wars in contested or highly contested environments.

Key to maintaining the ability to operate in both permissive and contested environments is the appropriate mix of Airmen, manned platforms/sensors, and remotely piloted aircraft (RPA). Our air, land, maritime, space, human, and cyber sensors must be able to penetrate denied space, survive to operate, and provide required levels of persistence.

The challenge is to integrate these sensors through a robust information architecture that allows highly trained multi- and all-source analysts to rapidly access and analyze all pertinent data and deliver it quickly to the war fighter and decision makers. To achieve this optimal mix of Airmen and machines, we will rebalance the AF ISR portfolio by divesting some platforms/sensors and, where possible, reinvesting the savings in information architecture, all-source analytic training, and next-generation penetrating ISR platforms/sensors.

AF ISR's processing, exploitation, and dissemination (PED) capability has evolved considerably over the last decade. To continue the maturation, we will break the linear relationship between collection and analysis, where every increment of additional collection capacity requires a proportionate increase in analytical manpower. We will embrace the need for increased automation while recognizing that analysts play the critical role in synthesis, integration, and insight.

To achieve this balance we will transition the Air Force Distributed Common Ground System (AF DCGS) to a service-oriented architecture (SOA) with an initial focus on cloud data storage, analytic and collection planning tools, and ISR visualization. To share our all-source analytical expertise across the entirety of AF ISR, we will provide our Airmen with an integrated information architecture that connects the entire Enterprise—from our Airmen

Over the past two decades, our deliberate targeting competence has stagnated. To ensure AF readiness across the full range of military operations, we will refocus on satisfying the air component commander's air, space, and cyberspace deliberate targeting requirements by: adopting a distributed targeting concept of operations and TTPs; integrating and automating targeting capabilities across the enterprise; integrating kinetic and non-kinetic targeting TTPs; and establishing more comprehensive targeting training. Targeting is a critical enabler of Global Vigilance, Global Reach and Global Power; we will ensure that AF ISR is ready to provide this highly perishable skill when required.

Revolutionize Analysis and Exploitation

The highly complex strategic environment of 2023 will require robust multi- and all-source analysis. It will demand focus on all phases of the intelligence cycle and capability to perform

in all phases of conflict.

Second, information-age technology is advancing at a stunning pace, yielding increasingly common information architectures, data accessibility, and knowledge management—all of which have created the conditions for a leap in intelligence processes. Whether it is labeled as “big data,” data mining, activity-based intelligence (ABI), or object-based production (OBP), the vast amount of information that we collect demands a transformation in the way we process, organize, and present data. To optimize our limited manpower and resources, we will “flip” today’s larger investment of Airmen in processing and exploiting single collection streams of data to an enterprise model where ISR Airmen develop, construct, and conduct multi- and all-source analysis in concert with the squadrons, wings, Air Operations Center (AOC), Joint Intelligence Centers, joint, and national producers.

The most important and challenging part of our analysis and exploitation revolution is the need to shift to a new model of intelligence analysis and production. The growing complexity of the data we collect along with the sheer quantity of data has obviated the traditional linear model of production. The new model treats all intelligence collection as sources of meta-tagged data accessible across multiple domains, organizational, and security divides from which analysts—trained in all-source techniques and methods—can discover, assess, and create relevant knowledge for commanders and decision makers at all levels. The AF will present and implement this model at the forefront of the IC, as a full partner of the IC Information Technology Environment (IC-ITE) and Joint Information Environment (JIE).

AFRL S&T Strategy

From uncontested to completely denied environments, AFRL sees

an Intelligence Community (IC) in great need of increased integration and autonomy; sensing modalities to support longer range and passive sensing; new ways to manage massive data stores; and tools to support both analysis and dissemination of product. The Air Force needs faster, better ways to accomplish ISR missions.

Tenets Driving the AFRL ISR S&T Strategy:

AFRL has adapted the tenets identified in the overall Air Force Science and Technology Strategy to guide the AFRL ISR Strategy:

- **Align, Leverage, and Grow:** Align our S&T with Air Force ISR requirements and leverage DoD, IC, and global S&T developments to create affordable and effective capabilities. Continuously strengthen and grow our ISR competence and enhance our unique ISR research facilities so AFRL continues to develop preeminent ISR capabilities and serve as the S&T agent to the Air Force materiel acquisition enterprise and the broader DoD acquisition community.
- **Shape the Future:** Discover, investigate, and evaluate game-changing ISR technologies and perform S&T to develop, integrate, and demonstrate leap-ahead capabilities that meet documented warfighter needs for contested ISR environments. Lead the effort to optimize the capability of weapons systems for ISR. Through our IC involvement and in-depth understanding of past and present Air Force ISR operations, AFRL will shape the future by providing technological options that underpin future all-domain ISR capabilities.
- **Streamline:** Partner with operational communities to rapidly and affordably transform the art-of-the-possible into force multiplying ISR capabilities spanning air, space, and cyberspace. AFRL must work to accelerate and streamline the ISR technology lifecycle from research

and development, to acquisition, fielding, and sustainment.

S&T Strategic goals

Three S&T strategic goals have been identified to ensure forces retain the ability to quickly and efficiently gather and share information to enable battlespace awareness. These goals will enable AFRL to focus its ISR S&T efforts and drive toward achieving its vision:

- **Advance ISR Technologies:** Advance S&T and apply new technologies to enable Air Force ISR operations in the A2/AD environment while preserving a reasonable level of investment in research supporting the permissive environment.
- **Increase Analyst/Operator Effectiveness:** Increase the effectiveness of Air Force analysts/operators by developing and integrating adaptable autonomy, effective human-machine teaming to augment Air Force ISR personnel, persistent and penetrating sensing capabilities, modern architectures, more efficient data management, and analyst/operator tools.
- **Leverage Partnerships:** Partner effectively with industry, coalition partners, academia, and other DoD and national labs to find the most cost-effective solutions for Air Force ISR needs and gaps.