



NAVAIR CHIEF TECHNOLOGY OFFICE

Naval Air Systems Command (NAVAIR) Chief Technology Office (CTO) shapes science and technology (S&T) policies and initiatives, helps develop capacity/capability and influences investments in support of the Naval Aviation Enterprise (NAE) mission—sustain required current readiness and advance future warfighting capabilities while maintaining cost efficiency.

The CTO is the primary S&T adviser to NAE and NAVAIR leadership.

The CTO engages internally and externally to develop an S&T program that responds to capability needs with innovative solutions.

External focus:

- Maintains knowledge of needs through strong ties to the warfighter community
- Champions innovative ideas that address current and future needs
- Fosters relationships with DoD, industry and academia
- Develops strategic capability investment plans (roadmaps)

Internal focus:

- Advises NAE senior leaders, program executive officers (PEO) and program managers-aviation (PMA) regarding technology trends, issues and investments
- Advises Commander, Naval Air Systems Command, and NAVAIR senior leadership on issues related to S&T focus areas, workforce, infrastructure, revitalization efforts and capability growth
- Monitors the health of the S&T portfolio and progress made on transitioning capabilities toward commercialization or use on weapons systems

The current NAE S&T program is comprised of more than 1,000 active projects with an annual investment of more than \$370 million. All projects are captured within the NAE S&T Alignment and Investment Reporting System (STAIRS), a web-based relational database that provides comprehensive project information for the entire portfolio.

The Science & Technology Objectives (STO) provides the framework developed to align current NAE S&T investments to naval aviation

mission and capability needs. It enables the future force while enhancing current readiness. The STO provides the framework on how naval aviation can capitalize on current technologies, seek leveraging opportunities and maximize government and industry potential through collaboration, cooperation and communication.

The Coalition Warfare Program (CWP) is a competitive merit-based program that uses U.S. and foreign investments to conduct cooperative research and development projects with foreign partners.

The Foreign Comparative Testing (FCT) is a competitive merit-based program that was established in 1980. Its purpose is to find, assess and field world-class technologies to enhance military capabilities and provide long-term value to the warfighter.

The Small Business Innovation Research (SBIR) Program funds critical startup and innovative research and development (R&D) to benefit our warfighter and fosters commercialization of technology, products and services. It accounts for a considerable portion of the CTO S&T portfolio.

The Small Business Technology Transfer (STTR) Program, the sister program to SBIR, focuses on earlier stage research and requires the small business to partner with a university, federally funded research and development center or a qualified non-profit research institution.

The Rapid Innovation Fund (RIF) Program was enacted under the 2011 National Defense Authorization Act to provide accelerated integration of enhanced military capabilities and promote cost savings to acquisition programs and fielded systems. It is authorized periodically, with NAVAIR managing more than 50 RIF projects since the program's inception.

MAJOR S&T PROGRAMS AND CAPABILITIES

- S&T Portfolio Management
- CWP
- FCT
- SBIR/STTR
- RIF

PRODUCT SAMPLES

- S&T Strategies, Plans and Visions
- NAE S&T Objectives
- S&T Roadmaps
- Transition Report
- S&T Metrics
- SBIR/STTR Projects

PRIMARY LOCATIONS

NAVAIR Headquarters, Naval Air Station (NAS) Patuxent River, Maryland

Naval Air Warfare Center (NAWC) Aircraft Division: NAS Patuxent River, Maryland; Joint Base McGuire-Dix-Lakehurst, New Jersey; NAWC Training Systems Division, Orlando, Florida

NAWC Weapons Division: Naval Air Weapons Station China Lake and NAS Point Mugu, California

Fleet Readiness Centers: Marine Corps Air Station Cherry Point, North Carolina; NAS Jacksonville, Florida; NAS North Island, California

For more information, contact the CTO at naecto@navy.mil

Naval Aviation Research Areas of Interest

The NAVAIR CTO, in partnership with the Office of Naval Research, DoD services, international partners, industry and academia, conducts scientific research in pursuit of innovative and advanced capabilities for U.S. naval air forces; translates successful research into technologies useful to the military; matures S&T to improve U.S. naval capabilities; and demonstrates technologies in relevant operational environments to facilitate their transition to programs of record. The goal of the NAE S&T portfolio is to provide solutions that will enable the future force to maintain maritime superiority in contested environments, sustain their ability to maneuver and project a forward presence while simultaneously enhancing current readiness and mitigating risk.

NAVAIR is interested in high-impact technologies that will increase readiness and lethality while sustaining fleet wholeness and improving efficiency.

Enabling technologies:

- Improve materials and manufacturing processes
- Reduce dependence on global positioning systems
- Advanced electronics with reduced size, weight and power requirements and expanded capabilities in high-temperature environments
- Artificial intelligence, machine learning, autonomy, human systems interface, network and sensor technologies to enable manned and unmanned systems to operate as an effective hybrid team
- Quantum sensors, computers and networks

Technologies to improve readiness and sustainment:

- Next-generation repair technologies for metals and composites (i.e., particle deposition/cold spray)
- Advanced manufacturing technology and 3D technical data
- Corrosion prevention, prediction, detection and removal technology
- Physiological episode protection and aeromedical/man-machine interface challenges
- New fuel bladder materials and advanced manufacturing processes
- Improved maintenance capabilities
- Next-generation metrology
- Improved supply chain management through data analytics
- Prognostics and health management enabled by machine learning and artificial intelligence
- Distance support/remote training of fleet maintainers and operators
- Automate current and future flight deck operations, increasing deck efficiencies and aircraft readiness in all weather conditions to enable round-the-clock operations

Technologies to improve warfighter performance:

- Training and education instructional technologies and strategies that support the requirements of forward-deployed warfighters and training environments
- Human performance modeling, assessment and ergonomic design
- Human system design to reduce manned and unmanned operator workload, enhance decision-making and improve situational awareness
- Life-support technologies and personal protective equipment spanning from physiological state monitoring, to hearing/eye protection, to helmet-mounted displays, to crashworthy seating systems that optimize warfighters' physical and cognitive performance, effectiveness, safety and survival

Technologies to improve warfighting capability:

- Shared battlespace awareness
- Fully networked command, control and communications
- Flight controls, handling qualities, propulsion, materials and aerodynamic technologies to improve maneuverability and agility
- Transportation and employment of personnel, internal and external cargo, weapons and sensors
- Range, speed and endurance of naval aircraft and weapons
- Protection of all manned and unmanned aircraft, including passive and active susceptibility reduction, aircraft countermeasures, electronic protection and increased crashworthiness
- Projection of aeronautical-based lethal and directed energy effects against air, surface, surfaced submarine and land targets in any operational theater
- Dynamic mission planning and execution technologies
- Networked and collaborative electronic attack technologies
- Hypersonic technology, including thermal management, lightweight/resilient materials, sensors/subsystems, flight separation and propulsion systems