

## Air Force Research Lab (AFRL)

The U.S. military has many research labs, such as the Office of Naval Research and the Defense Advanced Research Projects Agency. The Air Force Research Lab has branches in Ohio, New Mexico, and upstate New York. Here are the main contracts involving AFRL during FY2019. For major war corporations (e.g. Lockheed Martin, Northrop Grumman), see their individual files. For some cyber contracts, see the IT Cyber file.

### A&P Technology Inc. (Cincinnati, OH)

- Design for Manufacture of Attributable Aircraft Primary Structure program; provides an alternative design & manufacture of an aircraft structure relative to a baseline aircraft structure “that is more unitized and uses fabrication processes that may be automated leading to greatly reduced costs associated with manufacturing”; 10 Sept 2019
  - o AFRL Wright-Patterson AFB, OH (FA8650-19-C-2200)

### Apogee Research LLC (Arlington, VA)

- developing techniques and software systems that will substantially accelerate software vulnerability research; 27 Nov 2018
  - o “The Computers and Humans Exploring Software Security program will develop computer-human software systems and capabilities to rapidly discover all classes of vulnerabilities in complex software in a scalable, timely, and consistent manner.”
  - o AFRL Rome, NY (FA8750-19-C-0010)

### Applied Research Solutions (Beavercreek, OH)

- sensing, learning, autonomy, and knowledge engineering research & development; R&D multi-domain technologies and strategies to orchestrate closed-loop sensing that manages knowledge from environment understanding to mission effects across multiple missions → Wright-Patterson AFB; Dayton, OH; 6 Nov 2018
  - o AFRL Wright-Patterson AFB, OH (FA8650-19-C-1692)

### Assured Information Security

- *see IT\_cyber file*

### AX Enterprize LLC (Yorkville, NY)

- collaborative low-altitude drone integration effort; research the needs and challenges of the integration of unmanned aircraft operations in the UAS Traffic Management (UTM) as well as the relevance and impact of UTM on manned & unmanned aircraft operations; FA8750-16-C-0293; 17 July 2019
  - o AFRL – Information Directorate's Information Grid & Systems Contracting Branch, Rome, NY

### BAE Systems Information & Electronic Systems Integration, FAST Labs – Advanced Information Technologies (Burlington, MA)

- the MAPLE Exploits Multi-INT Data for Directed Energy Weapons Discovery software; addresses topics including multi-source data (radar, optical and other) exploitation and analysis and fusion for timely, accurate and complete characterization of space objects and mathematical approaches for fusing, assessing and characterizing data from new sensor and information sources to provide robust threat detection, prediction and decision aids based on complex patterns of events; 27 Sept 2019
  - o AFRL Rome, NY (FA8750-19-C-0529)

### BAE Systems Information & Electronic Systems Integration (Merrimack, NH)

- the Mercury Program, a Top Secret / Special Compartmented Information Special Access Program; overall objective of the program is to research electronic warfare; 27 Sept 2019
  - o AFRL Wright Patterson AFB (FA8650-19-C-7925)

### BAE Systems (Nashua, NH)

- Technologies for Mixed-mode Ultra Scaled Integrated Circuits (T-MUSIC) and the Disruptive SiGe Circuits fabricated Onshore (DiSCO) effort; 23 Sept 2019
  - o *see BAE Systems FY2019 doc*

BlackHorse Solutions Inc. (Herndon, VA)

- CD12E software / hardware prototypes; 9 Sept 2019
  - o "This will advance global vigilance, global reach, and global power in the information environment through the application, research, development, and transition of emerging technologies and next-gen solutions. This includes rapid tool development, development of electronic warfare/cyber network attack software and hardware systems, analytical processing, cyber threat avoidance and cyber threat defense, test and evaluation, and to manage the development to ensure projects move forward at a rapid pace, that technical and process innovations incorporated into successive rounds of development."
  - o AFRL Rome, NY (FA8750-19-C-1528)

Black River Systems Co. (Utica, NY)

- operational counter-small unmanned aircraft systems (s-UAS) open systems architecture software/hardware systems; provides system analysis, simulation & modeling, technique development, hardware & software rapid prototyping, integration, test, demonstration, data analysis, transition, operational assessment, and hardware & software enhancement relative to the objective; 2 May 2019
  - o AFRL, Rome, NY (FA8750-19-C-0040)

Cubic Defense Applications Inc. (San Diego, CA)

- aerial layer mesh networking with Halo software and reports; investigate, design, develop, and demonstrate a multi-link digital beamforming communications technologies to reduce the Halo directional antenna and increase its functionality for airborne networks; 26 Sept 2019
  - o AFRL Rome, NY (FA8750-19-C-0100)

University of Dayton Research Institute \*Dayton, OH)

- see *academia* file

Defense Research Associates Inc. \*Beavercreek, OH)

- R&D to transition technologies related to long-duration multispectral sensor technology utilizing radiation from numerous sources to obtain warfighter objectives / advantages → Dayton, OH; 3 Jan 2019
  - o AFRL Wright-Patterson AFB (FA8650-19-C-1600)

DZYNE Technologies Inc. (Fairfax, VA)

- Mobile Onboard Nexus for Autonomy & Radical Computation Handling (MONARCH); further development of technologies they have established under previous and current contracts; and rapid development & maturation of novel airborne, space, and ground technologies and systems so that MONARCH technologies and associated capabilities can be transitioned to military markets → Irvine, CA; 26 March 2019
  - o AFRL, Wright-Patterson AFB (FA8650-19-C-9203)

Etegent Technologies Ltd. (Cincinnati, OH)

- R&D of cognitively-derived analyst tools to support the integration of more fully integrated intelligence products of greater relevance to the warfighter, and transitioning of analyst-aiding tools and technologies within the DOD "intelligence community"; 11 March 2019
  - o AFRL, Wright-Patterson AFB (FA8650-19-D-6939)

General Dynamics IT (Fairfax, VA)

- see *GD 2019 file*

Herrick Technology Laboratories Inc. (Manchester, NH)

- Spectrum-Agile, Location Aware, Enhanced Electromagnetic Kit (SLEEK) hardware and software; research, develop, integrate, prototype, demonstrate, validate, and verify new software capabilities for a software-defined and reprogrammable transceiver that has broad applicability to military-relevant missions → Germantown, MD; Manchester, NH; Rome, NY; 23 Sept 2019
  - o AFRL Rome, NY (FA8750-19-C-0530)

#### Innoveering (Ronkonkoma, NY)

- Enabling Technologies for High-Speed Operable Systems (ETHOS), Dual Mode Ramjet (DMRJ) design maturation; provides the DMRJ program to mature preliminary dual mode ramjet design to a critical design level, construct the DMRJ test article, and perform both direct connect and integrated free-jet testing → work in Ronkonkoma, NY; and Palm Beach Gardens, FL; with Innoveering; FA8650-19-D-2408; w Northrop Grumman; 24 April 2019
  - o AFRL Wright-Patterson AFB

#### JASR Systems LLC (La Jolla, CA)

- R&D of chip-scale Optical Phased Arrays and Light Detection and Ranging systems that leverages DARPA Modular Optical Aperture Building Blocks (MOABB) Phase 1, and maps to Phases 2 and 3 of the MOABB program respectively; 5 March 2019
  - o AFRL, Wright-Patterson AFB (FA8650-19-C-7916)

#### Kudu Dynamics (Chantilly, VA)

- Tactical Proficiency Synthesis software/hardware prototypes; provide cyber capabilities by performing multiple activities through the research, development and integration of cyber capabilities across all war-fighting domains to advance cyber dominance; 27 Sept 2019
  - o *This is a great example of a contract that says a lot but conveys no information.*
  - o AFRL Rome, NY (FA8750-19-C-1529)

#### LGS Innovations LLC, Applied Research & Technology (Florham Park, NJ)

- the SALIENT GHOST software/hardware testbed; develops a function to address the security and resilience of field programmable gate arrays; 12 Sept 2019
  - o AFRL Rome, NY (FA8750-19-C-1515)

#### Materials Engineering & Technical Support Services (Westerville, OH)

- research, development, test and evaluation (RDT&E) of methods and technologies to mitigate chemical and biological threat hazards; provides literature, policy, and technology reviews; lab & field studies; and modeling & simulation to further expand the understanding of the impact of chemical and biological threat agents → work in Westerville, OH; and Wright-Patterson AFB; 7 Nov 2018
  - o AFRL Wright-Patterson AFB (FA8650-19-D-6993)

#### Multibeam Corp. (Santa Clara, CA)

- R&D; The MEBL-Embedded Chip ID to Assure Traceability & Provenance of All Integrated Circuits contract's objective is to develop technology to address design assurance to ensure that the DOD maintains access to advance & legacy integrated circuit technology nodes through the implementation of assurance technologies embedded within an integrated circuit; 30 Sept 2019
  - o AFRL Wright-Patterson AFB (FA8650-19-C-1938)

#### Next Century Corp. (Annapolis Junction, MD)

- Multimodal Open Interfaces for Reasoning by Artificial Intelligence software prototype system; provides for an integrated platform that hosts algorithms developed by Technical Area 1 (TA1) and TA2 Knowledge-directed Artificial Intelligence Reasoning Over Schemas performers → work in Falls Church, VA; 23 Aug 2019
  - o AFRL/RIKE, Rome, NY (FA8750-19-C-0105)

#### Phase Sensitive Innovations (Newark, DE)

- design, develop, and demonstrate RF-photonics systems, sub-systems, components and devices for the Coherent Homodyne Integrated RF-Photonic System; 14 Aug 2019
  - o AFRL Wright-Patterson AFB (FA8650-19-C-1027)

#### Raytheon

- *see Raytheon docs for, among other contracts, a deal for prototype High Energy Laser Weapon Systems (HELWS); 2 Aug 2019 via AFRL Wright Patterson AFB (FA8650-19-9-9326)*

Radiance Technologies Inc. (Huntsville, AL)

- distributed, automated, and intelligent hardware & software security; 19 Aug 2019
  - o design, development, integration, and delivery of an adaptable set of models and tools, which can be used to provide detailed, comprehensive, and automated cyber vulnerability assessment capabilities, which can also be tailored towards multiple application spaces and DOD missions; this set of models and tools “will provide optimized system configurations and countermeasure placement in order to perform vulnerability assessments on complex, distributed systems, which include Internet of Things components in an automated fashion”;
  - o AFRL Rome, NY (FA8750-19-C-1508)

Sierra Nevada Corp. (Sparks, NV)

- *see file*

The Stratagem Group Inc. (Aurora, CO)

- Radio Frequency Identification, Detection, and Geolocation of Emitting Systems software/hardware; improve collection & processing capabilities across multiple intelligence, surveillance and reconnaissance sensing sources in the detection & characterization of priority radar waveforms; 20 Aug 2019
  - o AFRL Rome, NY (FA8750-19-C-0072)

Systems & Technology Research (Woburn, MA)

- Dynamic Exploitation Modeling for Operational Systems (DEMOS) program, with an objective to implement automated tools for generating indications and warning and transition prototype systems to operational end users for a variety of missions; 9 May 2019
  - o *some Defense Intelligence Agency operations and maintenance funds used*
  - o AFRL, Wright-Patterson AFB (FA8650-19-C-1030)
- the Mercury Program, a Top Secret / Special Compartmented Information Special Access Program; overall objective of the program is to research electronic warfare; 27 Sept 2019
  - o AFRL Wright Patterson AFB (FA8650-19-C-7927)

Two Six Labs (Arlington, VA)

- facilitating interchange and nonpublic information sharing while hiding within local inhospitable network environments software and hardware; develops a unique software architecture and systems integration approach that is specifically designed to address secure and anonymous messaging systems; 16 May 2019
  - o AFRL, Rome, NY (FA8750-19-C-0501)
- project IKE; the objective of IKE is to develop automated artificial intelligence / machine learning techniques to assist human understanding of the cyber battlespace, support development of cyber warfare strategies and measure and model battle damage assessment; 31 July 2019
  - o AFRL Rome, NY (FA8750-19-C-1507)
- build a system that can deal with unstructured, uncurated data, event extraction, bias detection, multi-lingual translation and build human-computer interfaces; 19 Sept 2019
  - o Army Contracting Command Aberdeen Proving Ground, MD (W911NF-19-C-0080)

UES Inc. (Dayton, OH)

- molecular assessment sensing technologies; provides for basic, applied and advanced technology development research, as well as development and demonstration of discovery of molecular signatures of Airman performance and the operational environment and sensing of these signatures in Air Force relevant scenarios at Wright-Patterson AFB; 26 Aug 2019
  - o AFRL Wright-Patterson AFB (FA8650-19-D-6109)

United Tech Goodrich Corp. (Westford, MA)

- Hyperspectral Imaging, AgilePod®, Standoff High Resolution Imaging Next Era, and Multi-Mode Lidar research and development; provides research and integration of existing electro-optical, infrared, radio frequency, multispectral imaging, hyperspectral imaging, and lidar sensors and related ISR technologies in order to develop the Air Force’s next generation ISR sensor; 19 March 2019
  - o AFRL Wright-Patterson AFB (FA8650-19-D-1014)

Universal Technology Corp. (Dayton, OH)

- nondestructive evaluation exploratory development and inspection support for Air Force systems; provides quick reaction response support for failure analysis and materials and processes issues relating to nondestructive inspection in support of the systems support division of AFRL materials and manufacturing directorate at Wright Patterson AFB, OH, and Dayton, OH; 27 June 2019
  - o AFRL Wright Patterson AFB (FA8650-19-D-5625)

Valley Tech Systems Inc. (Folsom, CA)

- development and testing of open system SIGINT framework; aims to enhance cyber knowledge through R&D of innovative concepts and advancement in the software defined radio state-of-the-art to support signal intelligence related capabilities including real-time collection, geolocation and signal exploitation; 30 Sept 2019
  - o AFRL Rome, NY (FA8750-19-C-1531)

Volant Associates LLC (Chantilly, VA)

- Defense Intelligence Information Enterprise (DI2E) Framework Integrated Collaborative Environment (DICE) Software; facilitates the transition of the DI2E framework and aims to enhance existing capabilities and get them ready for enterprise deployment within the customer environment; requested additional work will prepare the prototype and create, test and execute a transition plan; FA8750-17-C-0001; 26 Sept 2019
  - o AFRL Rome, NY

Wichita State University (Wichita, KS)

- research on developing Modeling for Affordable, Sustainable Composites (MASC); provides development of a quantifiable, risk-based assessment methodology for determining the service life of advanced composite structures aided by high-fidelity damage modeling in order to optimize advanced composite structural design concepts; 15 May 2019
  - o AFRL, Wright-Patterson AFB (FA8650-19-C-5212)

the Structures Engineering Research program: basic, applied, advanced, and demonstration/validation research to develop, demonstrate, integrate, and transition new aerospace vehicle structures technologies; technologies “will provide cost-effective, survivable aerospace vehicle platforms capable of accurate delivery of weapons and cargo worldwide”; 21 Dec 2018 via AFRL Wright-Patterson AFB, Dayton, OH [contracts: FA8650-19-D-2241, FA8650-19-D-2242, and FA8650-19-D-2243; initial task orders: FA8650-19-F-2245, FA8650-19-F-2246, FA8650-19-F-2248]

- Booz Allen Hamilton
- Universal Technology Corp.
- University of Dayton Research Institute

scientific exploration for the discovery and/or advancement of power, energy, thermal, integration and control (PETIC) technologies to develop enabling materials, processes, devices, modeling and simulation for advanced high performance military weapon systems and emerging applications; 13 May 2019 via AFRL, Wright-Patterson AFB

- UES Dayton, OH (FA8650-19-D-2904);
- University of Dayton Research Institute, Dayton, OH (FA8650-19-D-2905);

the enhancements, modifications, integration, testing, demonstrations, deployments, maintenance, and R&D of Global Application Research, Development, Engineering and Maintenance software baselines → Fairfax, VA; Chantilly, VA; McLean, VA; Colorado Springs, CO; 16 Sept 2019 via AFRL Rome, NY

- American Systems Corp.
- Booz Allen Hamilton
- General Dynamics
- Polaris Alpha LLC

## AFRL at Eglin Air Force Base

### Innovative Technologies International Inc. (Lynchburg, VA)

- Katana Hardware Fabrication effort; concept design analysis and advanced fabrication capabilities to rapidly manufacture products meeting specific characteristics through a partnering arrangement by fulfilling research, development, test and evaluation requirements for Eglin AFB, FL, with organization-specific tasks; 25 June 2019
  - o AFRL Eglin AFB, FL

### Management Services Group Inc., d.b.a. Global Technical Systems (Virginia Beach, VA)

- Mid-Size Munitions (MSM) technology; provides prototyping & demonstration program which focuses on an intermediate weight capable of defeating challenging target; program leads to flight test demonstrations, effectiveness assessments, and manufacturing readiness assessments adequate to support weapon system transitions; 18 June 2019
  - o AFRL Eglin AFB (FA8651-19-D-0073)

### Scientific Applications Research Associates Inc. (Cypress, CA)

- Golden Horde Science & Technology demonstration; provides for support R&D of emerging munition technologies, as well as integrated weapon demonstrations; effort is conceptualized as a fast-paced AFRL-led demonstration project executed under the auspices of the Team Eglin Weapon Consortium; 18 March 2019
  - o AFRL, Eglin AFB (FA8651-19-D-0072)

## AFRL Kirtland Air Force Base

### Atmospheric & Environmental Research (Lexington, MA)

- R&D on comprehensive “next-generation” space environment model, space environment related product development support, and design/prototyping of advanced space weather sensors → Lexington, MA; Kirtland AFB, NM; 22 March 2019
  - o AFRL, Kirtland AFB, NM (FA9453-19-C-0400)

### Ball Aerospace & Technologies Corp (Boulder, CO)

- Solid State Laser Effects and Modeling; provides for developing innovative diagnostics/test methods, increasing fidelity, realism and confidence of predictive models, measuring and consolidating laser vulnerability data, and working synergistically with tri-service for high energy laser system research → Kirtland AFB, NM; 19 Oct 2018
  - o AFRL Kirtland AFB, NM (FA9451-19-C-0001)

### Boston College

- see *academia file*

### LoadPath LLC (Albuquerque, NM)

- Advanced Spacecraft Systems with Integrated Structural Thermal Technologies (ASSISTT); advances technology and scientific knowledge in the areas of deployable structures, thermal systems, RF antenna structures, integrated structural sensing, and advanced manufacturing; 25 Feb 2019
  - o AFRL Kirtland AFB (FA9453-19-C-0002)

### Millennium Engineering & Integration Co. (Arlington, VA)

- R&D in support of the AFRL Space Vehicles Directorate at Kirtland AFB, NM; provides research, engineering, and technical management for performing space technology concept development, analysis, development, integration, experimentation, demonstration, and evaluation; 1 March 2019
  - o AFRL Kirtland AFB (FA9453-19-D-0002)

Multibeam Corp. (Santa Clara, CA)

- Electron-Beam Direct Write subsystems; continue demonstration of the advanced lithography tool for government integrated circuits developed under the basic contract; FA9453-17-C-0015; 28 Jan 2019
  - o AFRL Kirtland AFB

Tau Technologies LLC (Albuquerque, NM)

- directed energy modeling for cross-domain analysis; seeks to advance directed energy technologies and weapon systems in engagement and mission-level analysis to enable data-driven wargaming, military utility assessments, and weaponeering; 13 Feb 2019
  - o AFRL Kirtland AFB (FA9451-19-C-0002)

Teledyne Scientific & Imaging LLC (Thousand Oaks, CA)

- Fortress program; establish thrust to pursue medium wavelength infrared and long wavelength infrared HgCdTe based detector technologies with a higher performance than conventional HgCdTe photodiodes; pursues novel HgCdTe detector technologies in parallel with conventional HgCdTe and III-V based unipolar barrier infrared detectors but grown on larger substrates; FA9453-17-C-0037; 31 Jan 2019
  - o AFRL Kirtland AFB

**Other Air Force research**

analytical and technical services for the Secretary of the Air Force's Concepts, Development, and Management Office; 18 Sept 2019 via Secretary of the Air Force's Concepts, Development, & Management Office, Fairfax, VA

- Altamira Technologies Corp., McLean, VA (FA7146-19-D-0700);
- Booz Allen Hamilton, McLean, VA (FA7146-19-D-0710);
- Deloitte Consulting LLP, Arlington, VA (FA7146-19-D-0720);
- Fulcrum IT Services, Centreville, VA (FA7146-19-D-0730);
- ManTech Advanced Systems International Inc., Herndon, VA (FA7146-19-D-0740);
- MCR Federal LLC, McLean, VA (FA7146-19-D-0750);
- Novetta Inc., McLean, VA (FA7146-19-D-0760);
- SAIC, Reston, VA (FA7146-19-D-0770);