



Our People = Our Strength

RAS personnel work closely with each of our customers to define operational requirements, establish achievable programs, perform design tradeoffs, develop quantifiable metrics to assess performance, and then develop and test the end-item. RAS combines a top-down systems approach with bottoms-up integration and test.

Skilled Personnel — RAS staff are highly experienced in signal processing algorithms, software, and firmware for radar, EW and communication applications. Expertise includes signal detection, pulse detection and estimation, automatic modulation recognition, low probability of intercept (LPI) and multi-agile emitters and real-time EW signal processing. Many of our staff hold advanced engineering degrees. We also have access to Subject Matter Experts and consultants in sensors, signals, cyber, software radios, and machine-learning and artificial intelligence.

Broad Involvement — The RAS team has a broad background in systems engineering, algorithms, firmware and software development, modern signal analysis, and feature extraction. Our staff has experience with multiple DoD and intelligence platforms. We have worked with primes, mid- and small-tier contractors to insert technology into their applications as well directly to the government.

Who We Are

About RAS

Research Associates of Syracuse (RAS), founded in 1986, is a small business located on the Griffiss Technology Park in Rome, NY. RAS analyzes, models, designs, develops, and tests innovative software and firmware for Electronic Warfare (EW) subsystems, signal detection, measurement, identification and direction finding applications. Areas of interest include cognitive and machine learning to address challenging multi-agile emitters in contested and congested electromagnetic environments. We have extensive experience in digital receivers, system equalization, intentional and unintentional modulation recognition, identification and tracking (e.g. Combat ID). RAS has contracted with multiple DoD organizations, primes, and mid- and small-tier companies. RAS licenses or sells Firmware Cores and software with Application Programming Interfaces. RAS has rapid prototyping and Quick Reaction capabilities.

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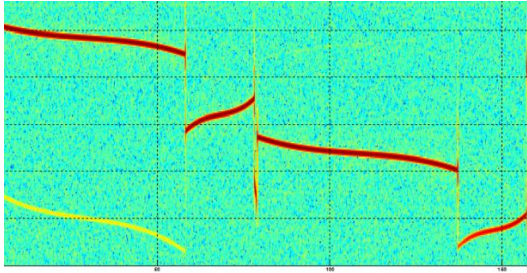


RAS

***Bringing Electronic
Warfare and Electronic /
Signals Intelligence
together for the Warfighter***

RESEARCH ASSOCIATES OF SYRACUSE, INC.

- *Electronic Warfare and Electronic / Signals Intelligence Analysis and Development*
- *Advanced technology development company with an emphasis on EW processing and analysis*



Mission Statement

Solve technically challenging problems on behalf of our customers while providing a challenging and rewarding work environment for our employees

Core Strengths

- Electronic Warfare (EW) Signal Processing
 - Electronic Support (ES)
 - Electronic Intelligence (ELINT)
 - Electronic Attack (EA)
- Digital Receiver Architectures and Firmware
- Signal Detection, Characterization, and ID
- Cognitive Reasoning/Machine Learning for EW
- Advanced Waveform Processing
 - Intentional Modulation on Pulse (IMOP) – Automatic ID & Characterization
 - Specific Emitter ID, Track, and Feature Extraction (SEI, SET, SEF) / Combat ID
 - Low Probability of Intercept (LPI) / Wideband (WB) Signal Detection and Measurement
 - Interference Characterization and Mitigation
- High Fidelity Waveform Generation and Scenario Development

Other Services

RAS provides a number of unique services to our customers based upon the enabling talents and experiences of our personnel, including:

- Electronic Warfare (EW) performance analysis for airborne, naval, and ground-based systems
- Systems engineering, firmware, algorithm, and software development and test
 - Signal detection, characterization, and de-interleaving and identification algorithms
 - Precision pulse parameter measurements
- Software Defined Radio (SDR) and Counter-sUAV
- Data collections for challenging multi-agile emitters; contributed to National ELINT DBs
- Subject Matter Expertise for Signal Collections and Test Environments
- Training and continuing education courses in radar, EW, ELINT, and digital signal processing

*Changing the way we listen,
gather, and react to signals*

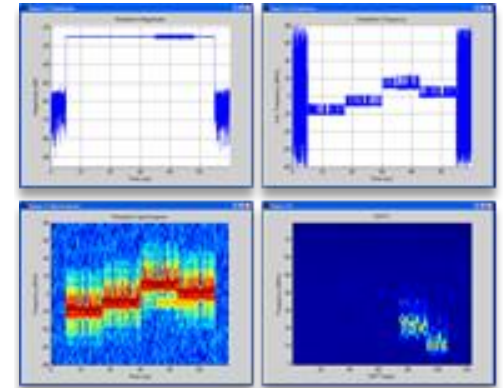
Key Government Contracts

RAS has a proven track record developing and implementing innovative solutions to stressing technical problems. Key Small Business Innovation Research (SBIR), Broad Agency Announcement (BAA), and other R&D contracts include:

Phase II / Phase II Plus

- **Navy** (NAVSEA) – Cognitive Reasoner for Electronic Warfare Systems (CREWS)
- **Navy** (NAVSEA) – Characterizing Interleaved Pulse Trains with Complex Modulations (CHIP)
- **Navy** (NAVSEA) – Multi-Algorithm Unique Emitter Identification (MAUEI)

- **AFRL** (Robins) – Common Operational SEI for Sustained EW Systems (COMOPS)
- **Navy** (NAVSEA) – Automated RF Spectrum Management for Wideband EW Systems
- **Navy** (NAVSEA) – Precision Feature Extraction Preprocessor (ES-PFEP)
- **Navy** (NAVSEA) – Processing Signals in High Density Electromagnetic Environments (including Interference Mitigation)
- **AFRL** (Dayton) – Hardware-Based Broadband Ultra-High Speed Digital Signal Processor
- **Army** (AMRDEC) – Advanced Detection Techniques for Altimeters (ALPIP)



Phase III / BAA / Production

- **Navy** (NAVSEA) – MAUEI Rapid Innovation Funds
- **AFRL** (Rome) – ELINT Signal Information Exploitation (ELSIE)
- **Navy** (NAVAIR) – F-18 Studies (ES-PFEP)
- **Army** (AMRDEC / LMCO) – Common ESM Sensor for Air Defense (CESAD) / SET
- **Army** (AMRDEC) – LPI Waveform Exploitation
- **Navy** (NAVSEA / GD / LMCO) – High-Gain, High-Sense (HGHS)
- **AFRL** (Rome) – Signal Intelligence for Real-Time Applications (SIRTA)