

*Providing innovative solutions ...  
... to challenging EW/ELINT problems ...  
... for the DoD and all the US Services*





## Mission Statement

To solve technically challenging problems on behalf of our current and future customers while providing an exciting, challenging, and rewarding work environment for our employees.

## Leadership Statement

Research Associates of Syracuse (RAS) provides cutting-edge support to the Department of Defense (DoD) and the US intelligence community. RAS is active in Electronic Warfare (EW) signal measurement and processing, and is a recognized leader in Specific Emitter Tracking / Identification (SET/SEI) technology.

## Core Strengths

RAS is an EW processing and analysis firm with extensive experience in Electronic Intelligence (ELINT), Electronic Support (ES), Electronic Attack (EA), and Signals Intelligence (SIGINT) systems. Our principals have been providing expertise to industry and government customers since the 1960s. Our broad knowledge base and small size permits us to rapidly respond and address the changing needs of our customers. Leveraging our EW and radar systems processing expertise, RAS continues to push the envelope in the development of new Specific Emitter Feature (SEF) techniques to permit more accurate characterization and identification of signals-of-interest, including Low Probability of Intercept (LPI) signals, within the increasingly crowded electromagnetic spectrum. We are an industry leader in developing emitter sorting / clustering, de-interleaving, correlation, and emitter identification algorithms for SET/SEI. In addition, we have extensive expertise in the design, evaluation, and implementation of digital receiver systems in firmware for all types of EW applications.

**RAS: Bringing  
together EW and  
ELINT for the  
Warfighter**



## Other Services and Application Areas of Technology

RAS capabilities are by no means limited to the services and expertise identified as our Core Strengths. RAS is able to provide a number of unique services to our customers based upon the enabling talents and experiences of our personnel. For instance, RAS is a highly respected *honest broker* for the US DoD, frequently contracted to evaluate (or improve) other vendor's solutions. Due to our knowledge of radar systems and emitter processing, RAS has participated in a number of emitter data collection efforts to expand our own emitter database and those of our customers. Our depth of experience has allowed RAS to develop unique ways to measure, process, and identify unique emitters based upon collected data. In addition, our subject-matter expertise enables us to provide a number of different educational courses for the edification of our clients. Last, but not least, experience in emitter signal collection and analysis enabled our founders to develop the original ELINT and EW National databases, and this experience has allowed RAS to provide recommendations for their continued improvement.

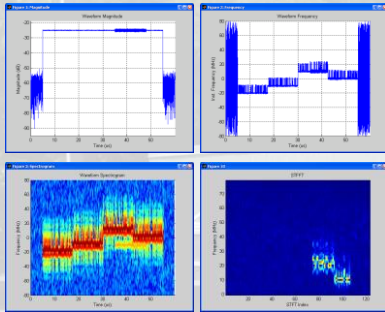


## Markets and Customers

RAS provides cutting-edge EW support to both the Pentagon and the US intelligence community. RAS is active in operational ES/EA and SIGINT / Measurement and Signatures Intelligence (MASINT) to support multiple DoD EW programs.

Present and past government and commercial customers include: the US Air Force, US Army, US Navy, National Security Agency (NSA), National Reconnaissance Office (NRO), US Southern Command, and the Defense Intelligence Agency (DIA), Westinghouse Defense, Lockheed Martin / General Electric, Raytheon, and others to provide thorough, quality technical engineering analyses and products for ELINT and SIGINT initiatives.

**RAS: Delivering  
honest and  
actionable studies  
and analyses**



## Innovation with Implementation

RAS has a proven track record in developing and implementing innovative solutions addressing challenging problems and technical concerns of our customers. A listing of a number of our recent Small Business Innovation Research (SBIR), Broad Agency Announcement (BAA), and contract wins follows:

### SBIR Phase II / Phase II Plus

- **Navy** (NAVSEA)
  - Multi-Algorithm Unique Emitter Identification (MAUEI)
  - Automated Radio Frequency Spectrum Management for Wideband Electronic Warfare Systems (ARFSM)
  - Enhanced De-Interleavers for Submarine Electronic Warfare Systems (RIPSAW)
  - Development of Algorithms for Characterizing Interleaved Emitter Pulse Trains with Complex Modulations (CHIP)
- **AFRL**
  - (Dayton) Hardware-Based Broadband Ultra-High Speed Digital Signal Processor
  - (Warner Robins) Development of Common Operational Specific Emitter Identification Functionality for Sustained Electronic Warfare Systems (COMOPS)
- **Army** (AMRDEC) – Advanced Detection Techniques for Altimeters (ALPIP), Army – Radar Altimeter Collections

### SBIR Phase III / BAA / Production

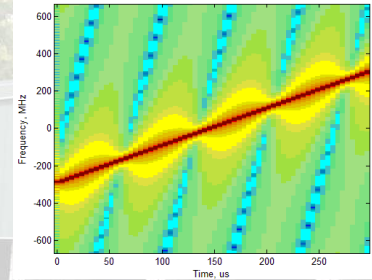
- **Navy** (NAVAIR) – F-18 Studies (ES-PFEP)
- **Army** (AMRDEC / LMCO) – Common ESM Sensor for Air Defense (CESAD) / SET
- **Navy** (NAVSEA / GD / LMCO) – High-Gain, High-Sense (HGHS)
- **AFRL** (Rome)
  - Signal Intelligence for Real-Time Applications (SIRTA)
  - ELINT Signal Information Exploitation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

**RAS: Providing  
innovative solutions  
for our customers**



## Company Profile

Research Associates of Syracuse is a small business located within the Griffiss Technology Park adjacent to the Air Force Research Laboratory - Rome Research Site in Central New York. Founded in 1986, RAS started as a small team of innovative engineers who wanted to provide high-quality studies and analyses for the US DoD – the same team originally involved in the design of the KILTING (the National Technical ELINT database developed during the 1970s) and Electronic Warfare Integrated Reprogramming (EWIR) databases. Over the years, our customer base has expanded and so has our staff. RAS is experienced in algorithm, software, and firmware development for signal detection, pulse feature measurement, automatic modulation recognition, and real-time EW signal processing, clustering, emitter identification, and SET/SEI.



## Core Advantage

RAS has broad, in-depth experience in EW and radar measurements and systems. We have an entrepreneurial culture that fosters creativity and innovation, and are a well-known innovator in the EW/ELINT community. RAS is recognized for our ability to provide improved emitter classifications based upon precision pulse detection and measurement using Intentional Modulation on Pulse (IMOP) and SEF characterization in support of SET/SEI. In addition, RAS pioneered many aspects of real-time system distortion and equalization compensation in EW receiver systems to correlate data from different receiver chains or platforms; our work in this area has resulted in significant improvements to the efficiency and effectiveness of EW measurement and provides improved situational awareness for the warfighter.

**RAS: Small, but growing business with EW and radar systems expertise**



## Our People = Our Strength

RAS engineers and researchers form a close-knit team with the customer to define operational requirements, layout achievable programs, and then execute them on-time and on-budget.

### Skilled Personnel

- Technical personnel and project managers with advanced degrees
- Senior, world-class consultants in sensors and signal / information processing techniques
- Engineers experienced in signal collection and analysis

### Rigor and Flexibility

- Excellent track record working with prime contractors
- Unbiased appraisals of systems and concepts for the DoD (Musketeer Dixie, Cinnamon, Castle Sixgun, and others)
- Rigorous system engineering and analysis processes
- Thorough, rapid assessments and collections
- Short notice assignments (Quick Reaction Capability)

### Broad Involvement

- EW system design and analysis
- System engineering and modeling
- Modern signal analysis and feature extraction for SEI/SET
- Hands-on experience with F/A-22, F-18E/F, AN/BLQ-10, RIVET JOINT, AN/SLQ-32(V and VI), and B1-B
- Training courses in EW, ESM, radar, ELINT, DSP, EWIR, and KILTING

**RAS: Broad experience with the skills, rigor, and flexibility to get the job done**





## Contact Us

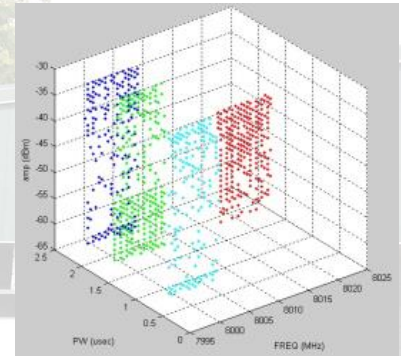
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**RAS: Changing the  
way we listen,  
gather, and react to  
signals**