

**Susan Mercer — President**

susan@mariettaresearchsolutions.com | 404-795-7674

**Dr. James G. Maloney, PhD, MBA**

jim@mariettaresearchsolutions.com | 770-286-0254

**Office:** 1640 Powers Ferry Rd SE, Bldg 11, Ste 200, Marietta, GA 30067**Web:** [mariettaresearchsolutions.com](http://mariettaresearchsolutions.com)

## Core Engineering Services

- **Computational Electromagnetics**

Proprietary FDTD electromagnetic simulation engine developed over 25+ years and used extensively across the defense community. Full-wave 3D analysis for antenna performance, scattering, coupling, and near-field characterization. Custom simulation tool development and RF materials characterization.

- **Antenna Design & Optimization**

Inventor of the Fragmented Aperture Antenna (US Patents 6,323,809 & 11,228,102) — a genetically optimized antenna topology. Broadband and wideband design from UHF through millimeter wave. Phased array element design. Electrically small antennas. Custom impedance matching network design.

- **Antenna Integration Services**

End-to-end antenna integration for IoT, wireless, and embedded devices. Antenna selection and trade studies, matching network design with component-level specs, full-wave EM simulation in device context, and test & tuning plans for prototype bring-up. LoRa, Bluetooth/Wi-Fi, cellular, GNSS, sub-GHz ISM, medical, and drones. Vendor-neutral. Remote-first. Fixed-scope engagements.

- **Platform Integration & Installed Performance**

Installed antenna analysis on vehicles, aircraft, and ships. EMI/EMC assessment and mitigation. RCS prediction, shaping, and treatment design for low-observable platforms. Co-site interference analysis. Radome and canopy RF scanning for military specification compliance.

- **AI/ML-Accelerated Engineering (Coming August 2026)**

ML surrogate models trained on proprietary FDTD data. Neural network-driven antenna optimization. Physics-informed ML models. AI-orchestrated design pipelines for faster iteration cycles.

- **SBIR/STTR Proposal Support**

Technical volume writing and proposal development for SBIR/STTR grants. Innovation narratives, feasibility arguments, work plans, milestones, and solicitation alignment.

- **Patent Drafting Support**

Technical drafting for patent materials prepared for attorney review. Invention disclosure, technical descriptions, figure preparation, and structured explanations of innovations.

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## Industries Served

Defense & Aerospace · Telecommunications (5G/6G) · Satellite & Space · IoT & Embedded Systems · Automotive · Intelligence Community

## Additional Professional Services

- **AI for Small Businesses & Law Firms**

Practical AI workflow implementation. Intake organization, drafting support, research workflows, and reusable templates. Deliverables include prompt libraries, SOPs, checklists, and staff training.

- **Paralegal Support & Document Preparation**

Professional document preparation and administrative support. Form prep, records organization, proofreading, and filing readiness. Non-legal support only.

- **Prison Consulting & Reentry Support**

Structured non-legal support for planning, documentation, and reentry organization. Checklist-based timelines and practical reentry planning.

- **Notary Public Services**

Professional notarizations by appointment in Marietta, Georgia.

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## Engagement Options

- **Initial Consultation**

Confirm goals, scope, timeline, and deliverables (phone or virtual). No-obligation.

- **Hourly Support**

Flexible support for ongoing tasks, technical work, and document development.

- **Fixed-Fee Projects**

Defined scope and deliverables with agreed pricing before work begins.

- **Retainer Agreements**

Reserved capacity for clients requiring ongoing engineering support or advisory services.

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## Proprietary Tools & Credentials

- **Proprietary FDTD Solver**

Production-grade, full-wave 3D electromagnetic simulation engine. Used by multiple defense contractors and government laboratories.

- **Antenna Matching Suite**

Specialized tools for broadband impedance matching, combining circuit synthesis with full-wave validation.

- **Patents & Publications**

- Granted: US 6,323,809 & 11,228,102 (Fragmented Aperture) · US 11,937,270 (Flat Lens) · US 11,215,655 (Transmission Line Correction) · US 10,203,202 (Non-Contact Coating) · US 5,689,275 (Photonic Bandgap)
- Applications: US 20030108263 & 20030108265 (Polarization Multiplexed Optical)
- Awards: IEEE AP-S Best Paper (1993) & Runner-up (1992)
- Book: Fragmented Aperture Antennas (in progress)
- Scholar: scholar.google.com/citations?user=445KFCoAAAAJ

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## Important Notes

- No legal advice or legal representation is provided. Paralegal/document services are non-legal support only.
- Notary services do not include legal interpretation, drafting, or advice.
- Engineering consulting does not include PE-stamped plans unless explicitly contracted with a licensed PE.