ResilientMind AI Research Brief

Applied Research in Sovereign AI Resilience

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SDVOSB Pending | 8(a) Pending | CAGE: 14JQ9 | UEI: NW3SNPP7QWF4 | SAM Registered | Defense-Aligned R&D
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Overview

ResilientMind AI conducts applied research in autonomous system resilience, focusing on environments where infrastructure cannot be assumed. Our research produces validated performance data, reference architectures, and benchmark frameworks that serve both academic publication and defense procurement.

Research Focus

Core Research Tracks

- Deterministic recovery under cascading failure conditions
- Federated model updates across sovereign nodes with intermittent connectivity
- Pre-inference compliance enforcement in safety-critical environments
- Thermal, power, and connectivity constraint testing on edge hardware
- Multi-agent orchestration resilience under resource pressure

Test Domains

- **Connectivity Denial:** Airgap, intermittent connectivity, degraded bandwidth
- **Power Constraint:** Brownout simulation, thermal throttle, battery depletion
- **Compute Pressure:** Memory exhaustion, CPU saturation, storage failure
- **Cascade Failure:** Simultaneous multi-domain degradation

Validation Methodology

All AriaOS validation follows a structured stress-test protocol measuring latency distribution (P50, P95, P99), recovery time from failure detection to operational restoration, agent orchestration continuity, memory stability over 24/48/72hr endurance runs, and governance audit trail integrity.

Hardware Validation Approach

Platform-Agnostic Architecture: AriaOS validates across diverse hardware classes without vendor lock-in.

Current Validation: Apple Silicon (M-series), x86 commodity server hardware

Target Classes: NVIDIA Jetson, AMD EPYC/Threadripper PRO, Intel Xeon, Qualcomm edge platforms, Groq LPU, ruggedized tactical systems, industrial edge compute

Embedded Licensing: Hardware OEM partnerships available for pre-integrated validation and co-branded deployments

Published Artifacts

Available Now

- AriaOS Apple Silicon Stress Validation White Paper
- HP G8 Chaos Validation Report
- SEI Technical Brief
- Degraded Modes Matrices (interactive reference)

Research Deliverables

- Published benchmark data on target platforms
- Reference architectures for defense deployments
- Co-authorship credit on publications
- Quarterly research briefings and interim reports

Partnership Opportunities

ResilientMind AI structures research in tranches — focused validation campaigns targeting a specific domain, hardware platform, or capability. Research partnerships available at three tiers: Research Seat ($65K), Research Partner ($85K), and Anchor Partner ($150K). Hardware-in-kind and joint validation partnerships also available.

> **Current Tranche**
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> **Tranche 1 — Edge Sovereignty Validation:** AriaOS performance on AMD EPYC, AMD Threadripper PRO, NVIDIA Jetson, and Apple Silicon under DDIL conditions. First published DDIL benchmark framework on each platform.

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