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Executive Summary

Engineering executive and published author of eight books including *The Key and the Current* and *Privacy: The Architecture of Forgetting*. I build systems where privacy is a structural property, not a compliance checkbox: intermediary-blind workflows, capability-token authorization, zero-knowledge data flows. Former Director-track at Twilio (15B+ weekly requests, GDPR/HIPAA/FedRAMP), currently Head of Engineering at Wander. I also build the theory—organizational incompleteness, structural dysfunction, coordination physics—because understanding why systems fail is prerequisite to building ones that don't.

Select Distinctions

- **Published Author:** 8 books via Cage & Mirror Press. *The Key and the Current* (structural compression theory across substrates), *The Cage and the Mirror*, *Beyond Code* (#1 New Release), *Privacy: Architecture of Forgetting*, *Applied Synthesis* (3rd ed.), *Uncommon Leadership*, *Organizational Physics*, *City of Mercy* (literary fiction).
- **Academic Research:** 24 papers. Activation Geometry (6)—training trajectory structure (regime detection, ensemble collapse—consolidated), model composition, structural transfer, distillation surveillance, social cognition, geometry of failure (terminal measurement, concentration barrier, spectral geometry, SR channel capacity—consolidated). Multi-Agent Coordination (4)—causal basis discovery, compression barrier, dissociation of geometry and function (projection transmission, bandwidth-fidelity, continuation perplexity, ensemble gravity—consolidated), context management (mode switching, logarithmic chain saturation, adaptive priming harmful). Entanglement (3)—universal entanglement, entanglement theorem, entanglement under fine-tuning. The Cage and the Mirror (1)—bridge theory, organizational incompleteness, dysmemic pressure, meta-compliance. Organizational Theory (5)—multi-agent AI, stigmergic mesh, Emergence, Contraction Dynamics, Strategic RDP. Applied (3)—forced ranking (54K MC trials), structural immunity, topology of influence. Metascience (1)—inversion of doubt. Market Mechanisms (1)—welfare-optimal matching.
- **Patents:** US 12,041,145; 11,601,519; 11,720,396 (Twilio). USPTO Provisional #63/981,369 (stigmergic mesh, Feb 2026).
- **Triple Nine Society:** Member (99.9th percentile cognitive assessment).
- **Published Writing:** 300+ articles on LinkedIn covering AI safety, organizational theory, technology policy, and systems thinking.
- **Open Source:** *Signet* (personal sovereign agent stack—62K lines Rust, 1049 tests, MCP-native), *Tessera* (self-validating executable document format—Ed25519/SHA-256 hash chain, embedded Rhai scripting, 130+ tests; [GitHub/docs](#)), *Agent-Safe* (SPL capability tokens, 6 SDKs, ~2 μ s eval; [npm/PyPI/crates.io](#)), *Pact* (contract-first multi-agent framework; [PyPI](#)), *Apprentice* (adaptive model distillation; [PyPI](#)), *Stigmergy* (organizational intelligence via ART mesh; [PyPI](#)). MIT; github.com/jmcentire.

Professional Experience

Wander.com

Head of Engineering (VP Level)

Remote

Sep 2024–Present

- **Stabilized a failing system:** Inherited platform with daily database outages and API failures on every deploy. Diagnosed root causes, stabilized production, and designed architecture assessed as **top 5% of the short-term rental industry** for backend infrastructure.
- **Designed for 46 \times scale:** Architected 7-service backend (Availability, Pricing, Booking, Property, Payments, Sync, Event) targeting throughput from 16K to 750K—sub-60s sync (vs. industry 30–60 min), <3s booking flow (vs. 10–30s), 15 μ s per-property availability via bitmask system.
- **Found the money leak:** Identified critical pricing logic flaw where PMS Price Match risked paying partners on quoted rates rather than actual charges. Enforced transactional consistency (“price charged must be price paid”), eliminating negative-margin exposure.

- **Killed complexity:** Systematically simplified over-engineered systems—sagas to synchronous flow, soft holds eliminated, Lua scripts to simple cache, CQRS to read-through cache. Forcing function: “the user is standing at checkout with a credit card. We have 3 seconds.”
- **Rebuilt a burned-out org:** Restored velocity in a demoralized 30-person team through lightweight governance (intake controls, scope freezes) while preserving engineer autonomy. **Zero attrition of top performers** during Series C preparation.
- **Built organizational intelligence tool:** Designed and deployed stigmergic mesh processing live engineering signals (GitHub, Linear). System self-organized to detect coordination failures, knowledge silos, and normalized deviance invisible to individual reviewers.
- **Designed booking reconciliation protocol:** Created the Universal Booking Reference (UBR)—an event identity standard enabling deterministic reconciliation across PMSs, channel managers, and OTAs, eliminating the availability thrash cycle that causes ghost bookings industry-wide.

Appreciate

Chief Product & Technology Officer

Remote

Mar 2022–Dec 2023

- **Pivoted roadmap to customers:** Refocused a tech-first organization on customer-facing deliverables. Directed 42-person global team across product and engineering.
- **Designed cryptographic provenance architecture:** Built backend for an **AI/ML fingerprinting system** authenticating luxury handbags—intermediary-blind workflow where the service processes items without accessing underlying data. Architecture published in *Privacy: Architecture of Forgetting* (Ch. 11). Systems in Go and Rust; mobile via React Native.

Twilio

Senior Engineering Manager → Director-track, Edge Services

San Francisco / Remote

Apr 2017–Apr 2022

- **Built from zero:** Created Edge Services organization from inception to 16+ engineers across three specialized teams (Edge Platform, Helper Libraries, Concurrency Monitor).
- **Scale & reliability:** Ensured **99.999% API uptime for 15B+ weekly requests** across 9 global data centers. Re-architected the network layer (CLB to NLB migration), architected Interconnect/Direct Connect enabling private enterprise connectivity for regulated industries. Owned incident response for outages with \$10M+ revenue exposure.
- **Patented innovations:** Co-inventor on 3 US patents: edge server handshake optimization reducing network latency, adaptive API throttling preventing service overload, and edge delivery request management.
- **Compliance as moat:** Implemented OFAC, HIPAA, PCI, FedRAMP, ISO, SOC2, and GDPR frameworks. Turned regulatory compliance into a strategic competitive advantage that accelerated enterprise sales.

Earlier Career

Attentional Inc.	Head of Engineering	Stabilized MarTech/AdTech; redesigned pipelines for determinism.
StyleSeat	Eng. Manager	First management role; team leadership in marketplace platform.
Sosh	Software Architect	Redesigned core data model; identified the business was a ticketing company, not a social one.
Norse	Principal Engineer	Cybersecurity threat intelligence platform.
Intel / Mashery	Software Engineer VII	API management platform (pre-acquisition).
Mercantila	Sr. Eng. / Architect	Monte Carlo pricing optimization; selected MuleSoft ESB adopted company-wide.
AdKnowledge	Software Engineer	Built budget dampening system preventing \$10M+/yr in ad spend overages.

Technical Expertise

- **Languages:** Python, TypeScript, Go, Rust, Java, C#, C/C++
- **Architecture:** Distributed systems, event-driven, microservices, adapter/hexagonal patterns
- **Infrastructure:** Kubernetes, Terraform, PostgreSQL, Redis, Kafka, GKE
- **AI/ML:** LLM agent systems, multi-agent coordination, model distillation, NER/PII detection pipelines, capability-token authorization, swarm intelligence, emergent coordination

- **Compliance:** FedRAMP, SOC2, HIPAA, PCI, GDPR, OFAC
- **Operations:** SRE, DevSecOps, incident management, observability, distributed tracing

Education

University of Oklahoma

Advanced coursework in Pure Mathematics (142+ credit hours)

Oklahoma School of Science and Mathematics

State STEM residential program