

Mike Hall

Principal Software Engineer

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 PDF Resume

Case Studies →

Formats (TXT / MD)

STRATEGIC SYSTEM CARTOGRAPHY & TECHNICAL LEADERSHIP

Principal Systems Cartographer & Platform Architect who discovers, maps, and modernizes critical software assets. Helps leadership make confident decisions about aging, undocumented architectures by constructing end-to-end dependency models—from browser and AI-agent interaction surfaces down through lateral state couplings, backend microservices, network access boundaries, and supply-chain risks. Works across Ruby on Rails, PostgreSQL, distributed services, and cloud infrastructure, combining technical cartography with OpenTelemetry observability, zero-downtime safety boundaries, and privacy-conscious AI-augmented investigation.

Experience

Development Manager

EMR-Bear, a MedSuite company | Remote | May 2026 - August 2026

Engaged to conduct rapid system discovery and operational risk assessment for a multi-tenant healthcare SaaS platform serving 130+ clinics following a founder transition.

- Architectural & Risk Cartography: Built a rapid 90-day system inventory and risk model spanning application codepaths, infrastructure dependencies, access boundaries, and operational risks.
- Production & Compliance Governance: Protected production safety across 130+ clinical environments by establishing explicit release verification gates for 36+ pending platform updates, ensuring unvalidated changes were blocked prior to business sign-off and HIPAA compliance review.
- Engineering Continuity: Created transparent component ownership, visible operational priorities, and collaborative decision rhythms for a distributed U.S.-Mexico engineering team.

Associate Director, Staff Engineer

OneMain Financial | Remote | January 2021 - February 2026

Served as Senior Technical IC and Software Architecture Lead for the Acquisition lane of a regulated financial enterprise, combining hands-on system cartography with production stability, modernization, observability, and cross-team technical direction.

- Full-Stack Dependency Cartography: Reconstructed end-to-end customer journeys spanning browser interaction surfaces, API gateways, application middleware, and legacy database layers, establishing a unified operational risk model for incident response and change governance.
- Incident Response & Technical Escalation: Served as final escalation point for high-severity outages, translating live root-cause investigations into stronger telemetry, explicit component ownership, and reusable system knowledge.
- Lateral State Coupling De-risking: Refactored fragile multi-step Rails workflow state machines, eliminating hidden lateral state mutations across asynchronous boundaries and resolving persistent data integrity failures in core acquisition flows.
- Platform Enablement & Responsibility Realignment: Realigned Acquisition engineering around explicit business boundaries, then founded and technically led ACQ Enablement to protect platform reliability, remediation, and modernization work from feature pressure.
- Observability & Boundary Instrumentation: Founded and led an enterprise OpenTelemetry initiative, instrumenting legacy microservices and third-party API supply-chain boundaries to convert dark system behavior into quantifiable telemetry and reduced MTTR.
- AI-Augmented Systems Investigation: Introduced privacy-conscious local AI workflows for legacy code analysis and engineering support, expanding investigative capacity while keeping human review, security constraints, and source evidence explicit.

Senior Backend Developer

SK Holdings, Inc. | Chicago, IL | January 2019 - December 2020

Led backend stability, performance, and modernization for high-traffic Rails products, improving full-text search, campaign delivery pipelines, and data layer reliability while systems remained under production load.

- Replaced complex, outdated external search dependencies (Sphinx) with native MySQL full-text search and optimized relational queries, simplifying deployment and reducing platform infrastructure footprint.
- Built and validated high-volume asynchronous messaging pipelines (SendGrid async batching) and managed IP warmup protocols for large-scale marketing campaign operations.
- Authored complex analytical SQL queries powering data-driven infographics and international media coverage for high-volume content catalogs.
- Led hands-on Ruby and Rails upgrades across multiple applications, sequencing legacy remediation to maintain service continuity through high-risk platform transitions.

Selected Current Work

AI-Augmented Systems Engineer (Phalanx Duel)

Independent | Remote | 2024 - Present

Designing and building a real-time tactical game platform as a current hands-on laboratory for deterministic systems, product architecture, and controlled AI-assisted engineering.

- Designed a deterministic engine with replayable action logs and server-authoritative state transitions, making complex outcomes reproducible and independently verifiable.
- Built replay validation, adversarial coverage, and CI verification gates so state transitions can be checked across the complete lifecycle.
- Uses controlled agent workflows with bounded tasks, acceptance criteria, automated checks, and human-reviewed outputs rather than treating model output as authority.

Core Capabilities & Technologies

TECHNICAL LEADERSHIP & CARTOGRAPHY

- System Cartography & Knowledge Recovery,
- Cross-Team Architecture & Technical Direction,
- Lateral State & Supply Chain Dependency Mapping,
- Evidence-Backed Technical Decision-Making

LEGACY SYSTEMS & MODERNIZATION

- Strangler-Fig Decoupling & API Contracts,
- Zero-Downtime Data Migration & Integrity,
- Incident Response & Root Cause Analysis,
- Distributed Systems & Asynchronous Processing

DELIVERY & OBSERVABILITY

- OpenTelemetry & Observability Architecture,
- Network Boundary & Access Control Auditing,
- Platform Enablement & Developer Velocity,
- Database Performance & SQL Analysis

AI-AUGMENTED ENGINEERING

- AI Agent & Automation Interaction Mapping,
- Codebase Discovery & Domain Rule Extraction,
- LLM Orchestration & Deterministic Evaluation,
- Bounded, Human-Reviewed Agent Workflows

TECHNOLOGIES

- Ruby on Rails,
- PostgreSQL (including pgvector),
- Sidekiq & Redis,
- AWS & Cloud Infrastructure,
- Kubernetes, Docker & Linux

Selected Earlier Experience

- **Senior Software Developer, BenchPrep** | March 2017 – February 2018 | Chicago, IL : Owned enterprise assessment workflows, leading correctness and platform security in a high-concurrency environment.
- **Senior Software Developer, ReachLocal** | March 2015 – November 2016 | Remote : Owned API design and modernization strategy, leading incremental legacy migration for a high-volume digital marketing platform.
- **Core Team Lead, Coderwall** | January 2014 – December 2014 | Remote : Owned platform modernization and open-source transition, leading infrastructure cost reduction in a community-driven ecosystem.
- **Engineering Learning & Development Business Partner, Groupon** | July 2011 – May 2013 | Chicago, IL : Owned core backend systems for fraud and taxonomy, leading global engineering enablement during hyper-growth.

Career Foundations

1999 – 2011

Built and operated enterprise integrations, transactional systems, and early web products across consulting and product organizations, establishing the production discipline and community-centered craftsmanship that still shape my leadership.

- **Revenue-critical commerce:** Designed real-time inventory, locking, and fulfillment services for a high-volume ticket marketplace later acquired by a major industry operator.
- **Consulting and software craftsmanship:** Delivered systems across client environments while mentoring engineers, adopting Ruby and Rails, and helping build Chicago's craftsmanship community.
- **Enterprise and operational systems:** Built integration and operational software across large organizations, grounded in .NET, SQL, messaging, production support, and direct user needs.