

Michael L. Welles

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Overview

Hands-on engineering leader who builds platform teams and distributed systems from first principles. Proven track record scaling infrastructure and people: achieved 2.5× velocity increase at MediData, led 14-engineer platform team at Raytheon building real-time data pipelines, and delivered zero-downtime migrations and compliance-first CI/CD at Istari Digital. I think in systems—technical, human, and organizational—and partner closely with product and research teams to establish clean abstractions, scalable services, and crisp interfaces. Equally comfortable designing schemas, reviewing architecture, debugging hard problems, and coaching engineers through challenging growth moments.

Core Technologies

Languages & Frameworks: Python, Rust, Go, Typescript, Swift, Kotlin, Java ****Data & Infrastructure:**** Databricks, Spark, PostgreSQL, DynamoDB, Elasticsearch, Kubernetes, Docker ****Cloud & Platform:**** AWS (SQS/SNS, S3, SageMaker), Azure, Terraform, FastAPI ****Observability & Reliability:**** Distributed tracing, metrics/logging, SLOs/alerting, incident response, CI/CD ****Async & Scale:**** Event-driven architecture, pub/sub, message queues, concurrency, idempotency

Experience

Principal Engineer, Istari Digital

Feb 2024 - Jul 2025 · New York, NY

Istari Digital enables zero-trust digital collaboration for cyber-physical systems, connecting engineering tools to enable programmatic and AI-assisted automation of workflows.

- Led platform team building secure backend registry service (Python, FastAPI, SQLAlchemy, PostgreSQL, Zanzibar, Authzed) and SDK. Designed database schema for asset relationships and metadata, tuned queries for complex lineage traversal, and managed zero-downtime migrations.
- Designed cryptographically verified asset lineage and DoD-compliant control tagging—enabling zero-knowledge collaboration and frictionless sharing across teams and organizations. Cryptographic core written in Rust with bindings for Python and WebAssembly, wrapped by Python and TypeScript SDKs.
- Built CI/CD that validated all compliance requirements on each release, publishing results for ATO submission to minimize approval effort. Delivered all major milestones on time and successfully relaunched product for commercial and government clients.

Director of Software Development, Raytheon Technologies

Sep 2021 - Nov 2023 · New York, NY

Led development of next-generation platform for Raytheon aerospace applications at Enterprise Data Services.

- Technical lead for real-time flight telemetry platform processing thousands of sensors through fault detection and anomaly detection models. Built streaming data infrastructure (Databricks, Spark, Python) triggering severity-based automated alerts from emergency grounding to routine inspection scheduling.
- Designed ML model training and orchestration pipeline with comprehensive audit trails tracing every output back to specific code revisions or model versions. Implemented parallel evaluation of multiple models without adding latency using asynchronous patterns and concurrent processing.
- Established "inner-source" culture to address common problems: SDKs for parsing proprietary data formats, quickstart kits for platform adoption, and synthetic data generators. Led onboarding resources and migration support for 40+ teams adopting the new Databricks platform.
- Led team of 14 developers across three agile projects while maintaining high engineering standards, clear communication, and accountability.

Head of Technology, Dayforward

Jan 2020 - Sep 2021 · New York, NY

Head of technology for life-insurance startup. Led team that designed and built the company's algorithmic underwriting and policy-management platform.

- Built platform with Go microservices on Kubernetes, federated GraphQL API, and Vue.js frontend. Designed clean abstractions and crisp boundaries between services to enable rapid iteration without breaking downstream systems.
- Completed initial development in under ten months and launched platform the same day the company received regulatory approval. Architected for reliability and observability from day one with distributed tracing, structured logging, and automated deployment pipelines.

Director of Software Engineering, UTC Aerospace Systems

Feb 2019 - Jan 2020 · Brooklyn, NY

Managed team of 17 engineers at the UTC Digital Accelerator. Oversaw multiple project teams from IoT sensors and mobile apps to standardized design systems and developer tools.

- As frontend engineering director, led efforts to normalize, document, and evangelize engineering processes, standards, and best practices. Created environment where engineers were challenged, supported, and proud of their craft.

Lead Engineer / Chief Technologist, Riverdrop

Jan 2018 - Feb 2019 · New York, NY

Chief technologist for early-stage startup. Led team of three senior engineers building specialized product search engine.

- Designed and implemented ML-driven ETL pipeline (Python, spaCy, NLTK, scikit-learn) with image recognition models on AWS SageMaker. Built asynchronous data flow using AWS SQS/SNS for event-driven processing with DynamoDB, implementing retry logic, dead-letter queues, and idempotency.
- Architected system as microservices with discrete transformation steps, each packaged as Docker images and deployed via CI/CD to Kubernetes (built and managed with Terraform). Established simple, elegant system boundaries and performance standards.

Director of Engineering (Mobile), MediData

Feb 2017 - Jan 2018 · New York, NY

Led engineering teams for Patient Cloud platform collecting clinical trial data via mobile devices and wearable sensors.

- Managed products including ePRO (iOS/Android), Patient Cloud (iOS), AppConnect (native SDK), Sensor Link (wearables platform), and supporting backend. Launched two major mobile initiatives and migrated all native development to Swift and Kotlin.
- Instituted organizational and process improvements that increased average team velocity by 2.5x. Fostered culture of clarity, accountability, and feedback where problems were owned and learning was shared.

Principal Architect / Director of Mobile, Huge

May 2013 - Feb 2017 · Brooklyn, NY

- Led cross-functional team of 20+ iOS, Android, and backend engineers, QA analysts, designers, and product managers. Evangelized agile best practices, continuous integration, and continuous delivery.
- Instituted engineering guild system for cross-office knowledge sharing and formal sponsorship of guild-proposed R&D initiatives. One guild-led initiative generated new product proposal that secured \$5M development contract.
- Championed innovation through new technology investigations, engineering blog, meetups, and open-source contributions. Modeled authenticity and conviction while building culture of continuous improvement.

Manager of Mobile Technology, Consumer Reports

Jul 2011 - May 2013 · Yonkers, NY

Founded mobile applications group and built in-house team for iOS/Android development. Developed and launched flagship ratings application.

Senior Software Engineer – iTunes Store Video Workflow Group, Apple

Mar 2008 - May 2011 · Cupertino, CA

Senior engineer on team of five responsible for encoding and assembling all iTunes video media. Owned encoding toolchain for processing cluster, specified deliverable media formats, developed validation test suites, and created reference media for hardware compliance testing. Led two major workflow rewrites for HDTV launch and international video expansion.

Consulting Principal Engineer, CubeNexus.ai

Aug 2025 - Present · Remote

Advising on technical strategy and architecture for geospatial intelligence platform. Rebuilt ingestion pipeline to handle multi-terabyte datasets (PySpark, Pandas), added real-time telemetry streaming with event-driven architecture, hardened API backend (Python/FastAPI), and established CI/CD across repositories.

Education

Bachelor of Arts in History, The University of Chicago

Chicago, IL