Michael L. Welles

Address: 38 Covert St, Brooklyn NY 11207 | Phone: 917-586-9218 | Email: mlwelles@gmail.com

Overview

Hands-on engineering leader with 8+ years at Principal/Staff and Head of Engineering levels building safety-critical and data-intensive products at high velocity. Proven track record accelerating engineering teams (achieved 2.5× velocity increase at MediData) while maintaining code quality through pragmatic CI/CD, observability, and disciplined SDLC practices. Deep experience with distributed systems, asynchronous patterns (queues, DLQs, idempotency, backoff/retry, concurrency), and reliability engineering. I compress the build-ship-iterate loop by partnering closely with product and operations, setting pragmatic guardrails, automating quality signals, and modeling strong engineering culture—clear communication, code hygiene, and accountability.

Core Technologies

Languages & Frameworks: Python, TypeScript/Node.js, Go, Rust, React/Next.js **Data & Databases:** PostgreSQL, Databricks, Spark, DynamoDB, Elasticsearch **Cloud & Infrastructure:** AWS (SQS/SNS, S3, IAM, VPC, SageMaker), Kubernetes, Docker, Terraform **Reliability & Observability:** CI/CD, distributed tracing, metrics/logging, SLOs/alerting, incident response, infra-as-code **Async Patterns:** Message queues, pub/sub, event-driven architecture, DLQs, idempotency, retry/backoff, concurrency/eventual consistency

Experience

Consulting Principal Engineer, CubeNexus.ai

Aug 2025 - Present · Remote

Advising on technical strategy and architecture for a geospatial intelligence platform with LLM-based querying and 3D visualization. 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.

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 workflow automation.

- Led team building secure backend registry service (Python, FastAPI, SQLAlchemy, PostgreSQL). Designed database schema for asset relationships and metadata, tuned queries for complex lineage traversal, and managed zero-downtime migrations. Built TypeScript SDK for frontend integration.
- Designed cryptographically verified asset lineage and DoD-compliant control tagging to preserve dependencies and provenance—enabling zero-knowledge collaboration and frictionless sharing among engineers and organizations.
- Implemented asynchronous processing with idempotency, retry logic, and eventual consistency for distributed asset synchronization across organizations. Built observability stack with distributed tracing and metrics for debugging complex workflows.
- Ensured CI/CD validated compliance requirements on each release, publishing results for ATO submission. 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 data platform for Raytheon aerospace applications at Enterprise Data Services.

- Technical lead for pathfinder initiatives building real-time flight telemetry pipelines for Pratt & Whitney commercial jet engines. Built streaming data platform (Databricks, Spark, Python) processing thousands of engine sensors through fault detection models, triggering severity-based automated alerts.
- Designed ML model training and orchestration pipeline with comprehensive audit trails. Implemented parallel evaluation of multiple models without adding latency using asynchronous patterns and concurrent processing.
- Drove engineering velocity through lightweight planning/retros and tracked lead time, MTTR, and change failure rate across multiple parallel projects. Raised the bar on code quality, testing, and release discipline without slowing flow.
- Led effort to "inner-source" code: SDKs for parsing proprietary data formats, quickstart kits for platform projects, and synthetic data generators.

- Led team of 14 developers across three agile projects while managing onboarding and migration support for 40+ teams adopting the new platform.

Head of Technology, Dayforward

Jan 2020 - Sep 2021 · New York, NY

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

- Built platform with Go gRPC microservices on Kubernetes, federated GraphQL API, and Vue.js frontend. Designed PostgreSQL schema for policy data with complex business rules, tuned queries for performance, and managed migrations.
- Implemented asynchronous workflows with SQS/SNS for policy processing, including DLQs, idempotency, backoff/retry, and replay capabilities. Built observability with distributed tracing, metrics, and alerting for SLOs.
- Established pragmatic CI/CD pipeline with automated testing, security scanning, and release discipline. Set up infra-as-code with Terraform for AWS resources (VPC, IAM, ECS, RDS).
- Initial development completed in under ten months. Platform launched successfully the same day the company received regulatory approval—demonstrating ability to ship high-quality systems at high velocity under hard deadlines.

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 for industrial refrigeration to standardized design systems and developer tools. As frontend engineering director, led efforts to normalize, document, and evangelize engineering processes, standards, and best practices across organization.

Lead Engineer / Chief Technologist, Riverdrop

Jan 2018 - Feb 2019 · New York, NY

Served as chief technologist for an early-stage startup and led team of three senior engineers to build specialized product search engine.

- Designed ML-driven ETL pipeline (Python, spaCy, NLTK, scikit-learn) for product identification and NLP entity extraction, with image recognition models on AWS SageMaker.
- Built asynchronous data flow using AWS SQS/SNS for event-driven processing with DynamoDB for metadata storage. Implemented retry logic, dead-letter queues, and idempotency for reliable processing. Developed search API in Go against Elasticsearch indexes and React.js/TypeScript frontend.
- Architected system as microservices with discrete transformation steps, packaged as Docker images and deployed via CI/CD to Kubernetes (managed with Terraform). Established observability and alerting for system health.

Director of Engineering (Mobile), MediData

Feb 2017 - Jan 2018 · New York, NY

Led engineering teams responsible for Patient Cloud platform, which collects clinical trial data from patients and clinicians via mobile devices and wearable sensors.

- Managed products including ePRO (iOS/Android patient outcomes), Patient Cloud (iOS clinician outcomes), native SDK, wearables platform, and supporting backend.
- Instituted organizational and process improvements that increased average team velocity by 2.5×. Implemented lightweight planning, tight loops with Product/Design/Ops, and raised the bar on code quality and testing without slowing flow.
- Launched two major mobile initiatives and migrated all native development to Swift and Kotlin.

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 a new product proposal that secured a $5M development contract.
- Championed innovation through new technology investigations, engineering blog, meetups, and open-source contributions.

- Directed notable client projects including smart Bluetooth audio/video accessories with live streaming and voice commands, companion app for AAA game publisher, and numerous B2B and B2C mobile commerce applications.

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 and managed external vendors maintaining portfolio of legacy apps.

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 used by 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.

Education

Bachelor of Arts in History, The University of Chicago

Chicago, IL