Michael L. Welles

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Overview

Distinguished engineer with 15+ years leading enterprise-scale cloud initiatives and large distributed systems. Proven track record migrating critical applications to AWS, designing highly scalable architectures, and driving technical excellence across engineering organizations. Deep expertise in cloud infrastructure (Kubernetes, Docker, AWS), CI/CD automation, and building high-performing teams. Combines strategic technical leadership with hands-on execution—from architecture and security to coding and infrastructure. Successfully delivered complex multi-year initiatives in regulated industries including financial services and aerospace, maintaining rigorous compliance and quality standards.

Core Technologies

Cloud & Infrastructure: AWS (extensive: EC2, ECS/EKS, Lambda, SQS/SNS, S3, RDS, IAM, VPC, CloudFormation), Kubernetes, Docker, Terraform, Azure **Languages & Frameworks:** Go, Python, Rust, TypeScript, Java, Swift, Kotlin **Data & Databases:** PostgreSQL, DynamoDB, Elasticsearch, Databricks, Spark **Architecture & Scale:** Microservices, event-driven systems, distributed tracing, CI/CD, observability, SLOs/alerting **Security & Compliance:** Zero-trust architecture, DoD compliance, audit trails, regulatory frameworks

Experience

Consulting Principal Engineer, CubeNexus.ai

Aug 2025 - Present · Remote

Technical advisor for geospatial intelligence platform. Rebuilt ingestion pipeline for multi-terabyte datasets (PySpark, Pandas), implemented event-driven telemetry streaming, hardened API backend (Python/FastAPI), and established CI/CD across repositories. Architected scalable cloud infrastructure for real-time processing and 3D visualization workloads.

Principal Engineer, Istari Digital

Feb 2024 - Jul 2025 · New York, NY

Led technical strategy for zero-trust digital collaboration platform serving defense and aerospace sectors. Delivered enterprise-scale secure registry for cyber-physical systems.

- Built secure backend services (Python, FastAPI, PostgreSQL) with cryptographically verified lineage tracking and DoD-compliant controls. Designed schema for complex graph traversals, optimized queries for enterprise scale, and managed zero-downtime migrations.
- Architected cryptographic core in Rust with Python and WebAssembly bindings. Developed SDKs for automation and frontend integration.
- Established CI/CD pipeline validating all compliance requirements per release, publishing ATO documentation for classified network deployment. Delivered all milestones on schedule, relaunching product for commercial and government clients.
- Collaborated with security and architecture teams to ensure platform met stringent regulatory requirements while maintaining developer velocity.

Director of Software Development, Raytheon Technologies

Sep 2021 - Nov 2023 · New York, NY

Technical lead for next-generation enterprise data platform at Raytheon aerospace division (Enterprise Data Services, formerly UTC Digital Accelerator). Led 14-person engineering team across three agile projects while supporting 40+ teams migrating to new cloud platform.

- Designed and built real-time flight telemetry platform (Databricks, Spark, Python) processing thousands of jet engine sensors through fault detection and anomaly models. Architected streaming pipeline with severity-based automated alerting from emergency grounding to routine maintenance.
- Built ML orchestration platform with complete audit trails tracing every output to specific code/model versions. Implemented concurrent model evaluation without latency impact using async patterns and parallel processing.
- Led "inner-source" initiative creating shared SDKs for proprietary data formats, Databricks quickstart kits, and synthetic data generators—accelerating adoption across 40+ engineering teams.
- Mentored 14 engineers while establishing quality standards, architectural patterns, and best practices across the organization.

Head of Technology, Dayforward

Jan 2020 - Sep 2021 · New York, NY

Head of technology for life-insurance startup operating in highly regulated financial services environment. Led small team designing and building algorithmic underwriting and policy-management platform from inception to production.

- Architected cloud-native platform using Go microservices on Kubernetes (AWS EKS), federated GraphQL API, and Vue.js frontend. Delivered from greenfield to production in under ten months, launching same day as regulatory approval.
- Designed system to meet stringent insurance regulatory requirements while maintaining velocity and engineering best practices. Implemented comprehensive audit trails, data security controls, and compliance frameworks.
- Built automated testing, CI/CD pipelines, and observability infrastructure to ensure reliability and rapid iteration in regulated environment.
- Collaborated directly with regulators, business stakeholders, and external partners throughout multi-year delivery cycle.

Director of Software Engineering, UTC Aerospace Systems

Feb 2019 - Jan 2020 · Brooklyn, NY

Managed 17 engineers at UTC Digital Accelerator. Oversaw multiple project teams including IoT sensors, mobile apps for industrial systems, design systems, and developer tools. As frontend engineering director, standardized processes and evangelized best practices across organization.

Lead Engineer / Chief Technologist, Riverdrop

Jan 2018 - Feb 2019 · New York, NY

Chief technologist for startup building specialized product search engine. Led three senior engineers delivering cloud-native architecture on AWS.

- Architected event-driven system using AWS SQS/SNS for asynchronous processing with DynamoDB for metadata, implementing retry logic, dead-letter queues, and idempotency for reliable large-scale processing.
- Built ML-driven ETL pipeline (Python, spaCy, scikit-learn) with image recognition on AWS SageMaker. Developed search API (Go) against Elasticsearch indexes and React/TypeScript frontend.
- Deployed microservices as Docker containers to Kubernetes (Terraform-managed) with comprehensive CI/CD automation for testing, security scanning, and deployment.

Director of Engineering (Mobile), MediData

Feb 2017 - Jan 2018 · New York, NY

Led engineering teams for Patient Cloud platform collecting clinical trial data from mobile devices and wearable sensors in regulated healthcare environment.

- Managed products including iOS/Android apps, native SDKs, wearables platform, and supporting backend. Launched two major mobile initiatives and migrated all development to Swift and Kotlin.
- Implemented organizational improvements increasing average team velocity by 2.5× through process refinement, automation, and quality practices.

Principal Architect / Director of Mobile, Huge

May 2013 - Feb 2017 · Brooklyn, NY

- Led cross-functional team of 20+ engineers, QA analysts, designers, and product managers. Championed agile practices, continuous integration, and continuous delivery.
- Established engineering guild system for cross-office knowledge sharing and R&D initiatives. One guild proposal generated $5M development contract.
- Directed projects including Bluetooth accessories with live streaming, game publisher companion apps, and B2B/B2C mobile commerce applications.

Manager of Mobile Technology, Consumer Reports

Jul 2011 - May 2013 · Yonkers, NY

Founded mobile applications group, built in-house iOS/Android team, launched flagship ratings app, and managed external vendor portfolio.

Senior Software Engineer – iTunes Store Video Workflow, Apple

Mar 2008 - May 2011 · Cupertino, CA

Senior engineer responsible for encoding and assembling all iTunes video media. Owned encoding toolchain for processing cluster, specified deliverable formats, developed validation suites, and led two major workflow rewrites for HDTV launch and international expansion.

Education

Bachelor of Arts in History, The University of Chicago

Chicago, IL