# Michael Welsh

Phoenix, AZ area
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Senior Software Engineer with 20+ years of experience architecting high-scale distributed systems at Google, Amazon, and Microsoft. Expert in backend infrastructure, geospatial data ingestion, and workflow automation. Proven track record of delivering $50M+ in annual cost savings and scaling global services by >200%.

Languages: C++, Java, Python, Go, C#, SQL.

Infrastructure/Cloud: Google (Borg, Colossus, Spanner), AWS (S3, SQS/SNS), Azure.

Specializations: Distributed Systems, Geospatial Data Pipelines, Supply Chain Optimization, GenAI Integration.

## EXPERIENCE

**Senior Software Engineer, Google, Phoenix, AZ (April 2023 - Present)**

- **Lead Software Engineer** on the Overhead Sensor Data Platform team for aerial data in Google Maps.
- Architected and developed an end-to-end ingestion pipeline transforming 1P/3P raw aerial imagery into 2D/3D geospatial data that powers Google Maps and Google Earth.
- Implemented GenAI-based image quality automation to detect flawed imagery.
- **Increased annual refresh capacity by >200%** while reducing manual operations and engineering interrupts.
- Google Borg distributed systems, Gemini GenAI API, C++, Python, RPC, MySQL, Colossus

**Senior Software Engineer, Google, Pittsburgh, PA (September 2020 - April 2023)**

- **Technical Lead** of the Automation Platforms team, responsible for the Actions Service which enables internal users to define standard work and request work execution, typically in data centers
- **Scaled the Actions Service from 1 million to 2.5 million messages per day** while improving availability, latency, and traceability of action execution
- Google Borg with regional isolation, Java, C++, GoLang, Python, RPC, Spanner, SQL, Linux, and Bash

**Senior Software Engineering Manager, Microsoft, Redmond, WA (March 2017 - September 2020)**

- **Engineering Manager** of the Provisioning Team (6 directs) in the Azure Search cloud service product division, overseeing projects to provide high availability to Azure Search
- Automated build outs of new regions and weekly deployment of code changes to thousands of customer instances of Azure Search, **saving 20+ hours per week of manual work**
- Azure globally distributed system with regional and sub-regional isolation, C#, .Net, SQL.

**Software Engineering Manager, Amazon Web Services, Seattle, WA (July 2015 - March 2017)**

- **Engineering Manager** of the Hardware Monitoring team (5-8 directs), responsible for collecting telemetry from millions of servers running in the AWS cloud and triggering automated repair workflows
- **Increased AWS server telemetry coverage from 85% to 99%** by optimizing bare-metal collection processes and negotiating requirements with internal stakeholders for the Hardware Monitoring team.

- AWS globally distributed systems with regional isolation plus a local data collection process running on Bare Metal, Python, SQL, AWS, S3, SQS/SNS, Linux, and Bash

**Software Engineer, Amazon, Seattle, WA (September 2012 - July 2015)**

- **Technical Lead** for the Inbound Networking Optimization service.
- **Reduced inbound supply chain costs by $50 million per year** by optimizing reorder frequency and transportation networks
- AWS distributed system, Java, SQL, S3, Linux, and Bash

**Software Engineer, Sterling Commerce (IBM), Columbus, OH (September 2006 - August 2012)**

- **Scaled B2B EDI outsourcing systems to sustain 20% YoY growth**; engineered a service enabling high-volume request payload processing.
- On-prem distributed systems, Java, SQL, Linux, and Bash

**EDUCATION**

Bachelor of Science in Computer Science and Engineering, Ohio State University, Columbus, OH