

Chelsea Kelly-Reif

Engineering leader who never stopped building: 22-person organization, primary engineer on the platform

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Engineering leader with ten years building public-interest technology, most recently leading a 22-person engineering organization through five direct reports including three Directors, as one of three Senior Directors in a 50-person engineering org. For four years I was engineering lead and principal engineer on a statewide platform serving 1.8 million people, where I owned the production machine-learning recommendation engine and built the shared AI infrastructure now running on Amazon Bedrock. I came up inside California state government, and on my own time I build and run open-source data services in workforce, transit, and health.

Core competencies

- **Leading engineers:** 5 direct reports including 3 Directors; 9 promoted into senior and leadership roles, 4 to Director or Principal; 3 voluntary departures in 3 years
- **Full stack:** TypeScript and JavaScript, Python, C#, SQL; React and Next.js, Node and Express, FastAPI; PostgreSQL, SQL Server, DynamoDB, Snowflake
- **Cloud and platform:** AWS (Lambda, API Gateway, DynamoDB, S3/CloudFront, Cognito, KMS/IAM, Bedrock), GCP, Azure; AWS CDK, Terraform, Docker, GitHub Actions
- **Applied AI and ML:** production recommendation engine; Amazon Bedrock; retrieval-augmented generation with grounding enforcement; merge-blocking adversarial evaluation; Claude Code and Codex daily with team standards authored
- **Data and standards:** CTDL and FHIR interoperability; GTFS, GTFS-RT, and TODS transit standards; ETL and pipeline integrity; spatial statistics with confidence intervals
- **Regulated delivery:** FedRAMP, FISMA, PCI DSS, Section 508, WCAG 2.2 AA; federated identity with role-based access; audit logging; legacy mainframe modernization

Experience

Coforma | Senior Director of Engineering | Sep 2022 - Jul 2026 | Remote

Civic-tech digital services firm. Progression: Principal Software Engineer, then Director of Engineering (Mar 2023), then Senior Director (Apr 2025).

Leading through managers while staying hands-on

- Led a 22-person engineering reporting structure through five direct reports, three of them Directors running their own teams, while remaining the **primary engineer across three production codebases** and roughly two thirds of human commits in the main repository.
- Promoted 9 engineers into senior and leadership roles, 4 to Director or Principal. Three voluntary departures in three years through a period of company-wide change.
- Escalation point for production incidents and owner of the root-cause work that followed.

Statewide platform, four years, 1.8 million people

- Engineering lead and principal engineer for **MyCareer.NJ.gov**, New Jersey's first major workforce modernization in over twenty years: personalized career recommendations, 3,800+ training programs with real income and employment outcomes, career pathways, a job board, and a support-services directory. Bilingual English and Spanish throughout.
- Owned the **production recommendation engine**: double-debiased machine learning over resume and National Labor Exchange data covering 300,000 employers, ranking 3,800+ programs against each person's history, operationalized from a research partner's models into a live service.
- Designed and built the **shared AI infrastructure layer running in production** on Amazon Bedrock: pooled client, circuit-breaker state machine, input sanitization across 14 named OWASP-LLM01 categories, output validation, and pinned models behind per-feature flags with a master kill switch. The conversational features built on it remain proof-of-concept pending client pilot approval.
- Built the evaluation discipline behind that: a **~79-case merge-blocking adversarial CI gate** in English and Spanish, a 210-entry golden-answer harness, and grounding assertions that block a release on failure. Scaled the platform from a 400-file prototype to a **3,200+ file production system** with 100 Lighthouse accessibility enforced as a merge gate.
- **Diagnosed a nightly pipeline reporting success while silently suppressing hundreds of valid records**. No monitor was red. Found it by reconciling output against source, rebuilt it to run four times daily with failures surfaced, and ran that operation three-plus years without a lapse.
- Drove a state's adoption of **CTDL**, the national linked-open-data standard: the 2023 data modeling that mapped legacy program data onto CTDL classes. Those programs are live in the Credential Engine Registry today, comparable across agencies instead of siloed.

Healthcare portfolio (final six months)

- Owned engineering, federal compliance, and delivery for the **CMS MDCT suite**, the Medicaid and CHIP data-collection tools every state and territory reports through: seven applications on AWS CDK micro-services. Teams merged **774**

human-authored pull requests across 21 contributors in one half-year, and a net-new federal application went from **empty repository to production in roughly 8 weeks**.

- Led the firm's **FHIR and health-data interoperability** specialization and authored its engineering checklist for systems handling PHI.

Platform health and delivery

- Test coverage **zero to 93-96 percent**, security vulnerabilities down **94 percent** (163 to 10, backend to zero), CI platform replaced, and a **zero-downtime cloud-to-cloud migration** with 200+ schema changes and no service disruption.
- Engineering business-development lead: authored the technical volumes and solution architectures for federal and state proposals.

California Energy Commission | Lead Software Engineer | Feb 2019 - Apr 2022 | Sacramento, CA

- Architected and shipped the Commission's cloud (AWS) **Data Submission Portal**, through which petroleum and energy operators file regulatory data underpinning California's statewide energy-demand forecasts.
- Operated the **statewide appliance-efficiency certification system of record** and built its ETL pipelines and policy-facing analytics.

California Public Utilities Commission | Principal Software Architect | Feb 2021 - Aug 2021 | Sacramento, CA

- Directed the statewide **Transportation Carrier Portal** (Salesforce, AWS, Snowflake) to its June 2021 launch, used by charter-party passenger carriers for operating permits and equipment records, and set organization-wide architecture standards.

California Department of Social Services | Software Engineer | Oct 2016 - Feb 2019 | Sacramento, CA

- Built and operated California's public **Home Care Aide Registry** (170,000+ records, two-factor auth, DOJ and FBI Live Scan integration) and a **PCI DSS compliant payment portal** for 140,000+ licensed facilities bridging to a legacy mainframe.
- Delivered CalFresh (SNAP) and background-check analytics, automated WIC and TANF batch distributions, and contributed to the Legislative Analysis System (ASP.NET MVC with Angular).

Open source (own time, public)

- **Afterward** (afterward.chelseakr.com): joins **3,266 California training programs** to their federally reported outcomes and the state's ten-year occupational projections. No account, no tracking, English and Spanish. Roughly a third publish no outcome data and the site publishes that count rather than hiding it; a suppressed measure renders null and never zero.

- **fhir-scorecard** ([live](#)): grades the public discovery surfaces of payer, provider, and EHR FHIR APIs. Deterministic findings tied to cited spec text, drift tracked between runs, multi-vantage probing, daily CI publishing, and an MCP server.
- **gtfs-scorecard** (gtfsscorecard.org): a live data service scoring **2,182 of its 2,185 curated feed records daily**, with a published GitHub Marketplace Action and a read-only MCP server.
- **tods-validate** (PyPI): a published validator for the Transit Operational Data Standard, shipping a CLI, Action, container, and browser playground at a 90 percent branch-coverage gate.
- **nearmiss** and **swelter**: exposure-normalized road-safety statistics; self-hostable heat and air-quality sensing with an OGC SensorThings API.

Recognition

- **Labor Market Information Institute (LMI Institute) Award, 2026, winner:** MyCareer.NJ.gov, Best State LMI Focus on Impact and Sustainability, awarded to the New Jersey Department of Labor.
- **NASWA Workforce Innovation Award:** nominee, Data Insights and Innovations category (2025).
- **Harvard Kennedy School, Project on Workforce** (2023): cited the platform's Training Explorer as a "promising potential model."
- **National press:** Fast Company essay on the platform's AI (2024); Royal Statistical Society's Real World Data Science feature on Career Navigator (2024).

Education

- **M.S., Software Engineering**, CSU Fullerton (completed while working full-time in state government) · **B.S., Computer Science**, University of Oregon · **ITIL Foundation** · **Credential Engine CTDL Advisory Group** registered member, 2025-2026