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Schedule a call

Summary

Experienced engineering leader and hands-on architect with 25+ years of building complex, full-stack systems - from embedded hardware and telecom to modern cloud-native infrastructure. Proven track record of delivering products from concept to production across startups, enterprises, and high-compliance environments.

Expert in scalable architectures, developer experience, observability, and product-aligned engineering. Equally comfortable writing infrastructure-as-code, mentoring high-performing teams, or shaping long-term technical vision. Known for bridging strategy and execution, with a bias for clarity, automation, and delivery.

Experience

Principal Engineer / Head of Innovation

Larkspur, California (Remote)
April 2022 – August 2025
noviconnect.com

As Principal Engineer and Head of Innovation at Novi Connect, I was responsible for architecting and delivering end-to-end solutions that directly supported the company's core infrastructure, observability and product innovation. I joined the company to lead foundational technical transformations.

Key Accomplishments at Novi Connect

Cloud Infrastructure migration

- Designed and implemented AWS multi-account architecture with Control Tower and the Well-Architected Framework
- 100% Infrastructure-as-Code using Terraform across services and environments
- Implemented secure-by-default IAM policies and automated tagging for billing and workload isolation
- Disaster recovery patterns and autoscaling applied to all core services
- Integrated Datadog (metrics, logs, traces) and Sentry (error tracking)
- Delivered SOC 2 compliant technical controls
- Migrated entire platform to AWS with 15 minutes of downtime

Rebuilt Novi Connect's core product vetting engine as a scalable, introspectable decision system

Designed and led the development of the next-generation rule-based decision engine that now serves as the operational core of Novi Connect, powering trust, compliance and product exposure across the entire platform.

- Replaced a brittle, opaque vetting process with a modular, decision-tree-based system capable of explaining exactly how and why each product passes or fails validation.
- Enables rapid diagnosis of policy mismatches, data gaps and integration issues - cutting resolution times from hours or days to minutes.
- Evaluates product data completeness, source trustworthiness and standards compliance across batch and real-time ingestion pipelines.
- Outputs fully introspectable verdicts with traceable decision paths, making audits, partner onboarding and debugging transparent and scalable.
- Powers all downstream workflows, including GS1 barcode resolution, SEO-optimized product pages and nightly partner data ingestion forming the backbone of Novi Certis and the broader Novi Connect platform.

Technical vision and execution for Novi Certis

Novi Certis is a high-trust product verification platform combining GS1 digital link standards with supply chain insights.

- Envisioned and architected the Novi Certis platform, a product data verification and exposure engine designed to bridge CPG manufacturers/brands, retailers and consumers using GS1 Digital Link standards.
- Built a GS1 2D barcode resolution system enabling dynamic, mobile-friendly product lookups using GTIN, EU DPP and additional structured identifiers.
- Integrated SEO-first product exposure tooling, allowing verified product pages to be indexed for search and accessed via branded short URLs.
- Enabled consumer transparency and brand trust by surfacing enriched, vetted product data through a secure and brand-aligned web interface.
- Implemented hybrid vector search (dense plus sparse) with reranking in Qdrant via Haystack-ai to enhance discovery of declared products from ingestion files, even in cases where exact matches were unavailable.

Product & Platform Engineering

- Crafted high-performance data ingestion pipelines for retailer data
- Nightly deliveries processed with full observability
- Managed external partner (retailer) relationships for integration of data pipelines
- Owned technical partner integrations and data ingestion reliability
- Led bidirectional Django to Rails communication patterns for hybrid backend orchestration

Observability, Monitoring & On-Call

- Primary incident commander for major incidents (AIRT)
- Defined and implemented SLOs and dashboards
- Datadog integration for full unified observability
- Designed alerting workflows for low false positive and high actionability

Developer Experience and CI/CD

- Built GitHub Actions pipelines for automated testing and deployments
- Dockerized all applications and dev environments to ensure parity and reproducibility
- Developed internal CLI tooling to manage releases and enforce issue hygiene pre-deploy
- Created self-service bootstrapping workflows for new developers

Security

- Security Incident Commander (SIRT)
- Implemented IAM boundaries and infrastructure access policies
- Provided secure external access gated by Cognito + Google Identity

Technologies Implemented, Maintained & Scaled

- AWS (ECS, EC2, ALB, S3, CloudFront, RAM, DMS, Aurora Postgres, IAM, Control Tower, Transfer Family) · GCP · Terraform (multi-provider, modular architecture) · Docker · Cloudflare
- Python · Django · Ruby · Rails · React · TypeScript · Bash · Golang · Rust · HTMX · Sidekiq
- Datadog · Sentry · PagerDuty · Fluent Bit · Fluentd · Vantage.sh
- PostgreSQL · Aurora · Valkey (Redis) · Elasticsearch · QDrant · Trino · Metabase

- GitHub Actions · Atlantis
 - Slack app creation · GraphQL · OpenAPI · HCL
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Tech Lead/Staff Engineer

San Francisco, California (Remote)
October 2017 - April 2022
scribd.com

Led strategic infrastructure modernization and compliance efforts across cross-functional engineering teams in a global SaaS environment.

Key Achievements

- **Cloud Infrastructure:** Migrated all services from colocation to AWS, optimizing for scalability, redundancy, and cost efficiency.
- **Compliance & Controls:** Spearheaded ITGC control implementation and achieved full PCI DSS compliance.
- **Developer Enablement:** Mentored engineers across teams, standardized Terraform-based IAC pipelines, and enforced CI/CD best practices.
- **Observability & Reliability:** Built comprehensive observability stacks (Datadog, Fluentd, Sentry) and introduced incident response automation.
- **Cost Optimization:** Designed and implemented cloud cost-saving strategies, including right-sizing, auto-scaling, and ingress routing improvements.
- **Service Architecture:** Authored service dependency graphs to model interactions, reduce latency, and improve on-call outcomes.
- **Agile Delivery:** Embedded in Agile teams to ensure smooth project execution and continuous delivery.

Technologies Implemented, Managed, and Maintained Cloud & DevOps

AWS · Terraform · Okta · Chef · GitHub · GitLab · OpenVPN Cloud · Okta ASA · Fastly

Programming & Frameworks

Python · Golang · Ruby · Rails · Sidekiq · Nginx

Observability & Incident Response

Sentry · Datadog · PagerDuty · Fluentd

Data Infrastructure

Cassandra · MySQL · ProxySQL · Redis · Memcached

Productivity & Process

Jira · Confluence

Senior Software Engineer

Hong Kong (Remote)
October 2017 - April 2018
singularitynet.io/

Collaborated with AI researchers Cassio Pennachin and Ben Goertzel to prototype decentralized AI infrastructure integrating blockchain, distributed systems, and peer-to-peer data networks.

Key Achievements

- **Decentralized Architecture**
 - Built a custom Distributed Hash Table (DHT) to support scalable, fault-tolerant peer-to-peer data exchange.
 - Developed a real-time communication protocol over WebSockets to enable bidirectional messaging between nodes.
- **Blockchain & Smart Contracts**
 - Authored smart contracts in Solidity to support decentralized consensus, network coordination, and governance mechanisms.
 - Contributed to the development of a decentralized application (dApp) interacting with smart contracts and on-chain logic.

- **Data Storage & Interoperability**
 - Integrated with the InterPlanetary File System (IPFS) for distributed, content-addressable data storage.
 - Supported AI agent interactions with the network through flexible and extensible messaging interfaces.
- **Cross-functional Collaboration**
 - Worked closely with R&D leadership to align technical implementation with long-term goals in distributed artificial general intelligence (AGI) systems.

Technologies Used Solidity · WebSockets · Ethereum · DHT · IPFS · Node.js · JavaScript · Blockchain Protocols JavaScript · Node.js · Blockchain Protocols

Director of Technology

Vancouver, BC (Remote)
 April 2014 - October 2017
 gslholdings.com

Led technical strategy and execution across a portfolio of 17 companies, delivering infrastructure, innovation, and operational excellence across physical and digital domains.

Key Achievements

- **Strategic R&D Initiatives:** Delivered in-house projects involving **AI/ML**, **VR/360** content, and **user engagement platforms** for web and mobile.
 - **Datacenter Infrastructure:** Designed and built a production-grade datacenter at Save-On-Foods Memorial Centre, including network backbone, UPS systems, and diesel generator failover.
 - **Observability & Environment Monitoring:** Implemented centralized observability stack and engineered environmental data collection across all facilities.
 - **Enterprise Networking:**
 - Architected and deployed Software-Defined Networking (SDN) and WAN strategy.
 - Rolled out facility-wide WiFi services and VoIP infrastructure with QoS controls.
 - **IT Operations Management:**
 - Managed and maintained all web properties and digital assets.
 - Provided full lifecycle support for over 100 Windows and Mac workstations across companies.
 - Delivered secure and scalable network services for high-traffic external events.
 - **Innovation & Compliance:**
 - Drove new R&D efforts tailored to each facility's operational needs.
 - Executed and documented corporate **SR&ED** (Scientific Research and Experimental Development) activities.
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Senior Software Architect/Team Lead

Vancouver, BC February
 2010 - April 2014
 officepools.com

Led architecture, infrastructure, and team operations for a real-time fantasy sports platform, delivering major improvements in performance, reliability, and developer productivity.

Key Achievements

- **Performance Optimization**
 - Rewrote core computation engine using BLAS, reducing processing time from **18 hours to 5 minutes**.
 - Refactored database design to support persistent year-over-year statistics (eliminated annual purges).
- **CI/CD & Developer Workflow**
 - Built Jenkins + Ansible pipelines across all environments to ensure consistent builds and deployments.
 - Developed automated unit testing with commit-level code coverage integration.
 - Aligned Agile workflows with Jira for epic/sprint tracking and execution.
- **Availability & Reliability**
 - Architected geo-redundant database replication with time-lag fallback.
 - Served as 24/7 incident responder ensuring high availability under load.

- **Team Leadership**
 - Hired and mentored developers and support staff.
 - Generalized backend schema to support expansion beyond NHL to additional sports.
- **Full Feature Delivery**
 - Shipped and maintained core features: Boxpool Games, Realtime Stats, Site-wide Chat, Mobile Compatibility, Nightly/Marketing Emails, Audit Log, Online Draftroom, and PayPal integration.
 - Delivered multilingual support across UI components.

Colocation Infrastructure & Systems Management

- **Rack Infrastructure:**
 - Personally designed and built all server racks in the colocation facility.
 - Specified and sourced compute, storage, and networking hardware end-to-end.
- **Monitoring Stack:**
 - Deployed and managed infrastructure monitoring using **Munin**, **Nagios**, and **Sentry**.
- **Hands-On Systems Operations:**
 - Performed physical server maintenance, including **disk swaps**, **memory upgrades**, and general **hardware diagnostics**.
 - Ensured uptime through direct, on-site systems administration.

Technologies Used Python · NumPy · Bash · Java · SQL · RabbitMQ
Angular · LESS · Jenkins · Ansible · Munin · Nagios · Sentry

Software Architect

September 2009 - January 2010
Vancouver, BC
teligence.net

Designed and implemented core infrastructure and analytics capabilities for voice-based ad services, driving the company's transition to modern development and deployment practices.

Key Achievements

- **Voice Ad Serving Platform**
 - Developed in-call ad server integrating external providers (VoodooVox, Jingle) and internal audio ad inventory.
 - Engineered Nexidia-based speech recognition and caller profiling pipeline to power real-time personalization and analytics.
 - **DevOps & Deployment Engineering**
 - Designed a **multi-environment global configuration management system** supporting reliable deployments across staging and production.
 - Built a fault-tolerant **BizTalk deployment system**, inspired by BizTalk Deployment Framework (BDF), enabling simple and consistent rollouts.
 - **Agile Transformation**
 - Championed shift from waterfall to Agile (Scrum) with full Continuous Integration adoption.
 - **Data Engineering & Compliance**
 - Implemented robust data warehousing structures with improved ETL design through normalized schema strategies.
 - Architected systems, databases, and networks to meet **PCI DSS Level 2** compliance standards.
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Software Development Manager

Vancouver, BC
March 2009 – September 2009
teligence.net

Led a senior development team through major platform upgrades, CI/CD implementation, and telecom payment system integration, driving modernization across engineering workflows and service offerings.

Key Achievements

- **Team Leadership & Process Modernization**
 - Managed a team of 5 senior developers and fostered engineering excellence through documentation, standards, and collaboration.
 - Introduced the company's **first Continuous Integration server**, improving release reliability and developer velocity.
 - Migrated version control from **VSS to SVN**, increasing team productivity and code traceability.
 - **Telecom Payment Integration**
 - Integrated a new **Premium SMS payment platform** using VeriSign and MXTelecom APIs into the BizTalk architecture.
 - Implemented additional payment solutions via BSG Clearing and Experian PreciseId for fraud detection and user verification.
 - **System Upgrades & Interoperability**
 - Architected and deployed a bolt-on solution to extend a legacy NPA-NXX-only system to fully support **E.164 international numbering**.
 - Led migration of a complex **II-application BizTalk** environment from 2004 to 2006R2, including conversion from COM to C#.
 - **Community & Industry Engagement**
 - Participated in ClueCon, expanding telecom and VoIP expertise.
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VP of Technology

Vancouver, BC
July 2007 – February 2009
verbx.com

Led all technical strategy, team operations, and infrastructure architecture for a high-scale mobile messaging and telecom services company.

Key Achievements

- **Leadership & Execution**
 - Managed a team of 5 senior developers and 1 QA; owned a \$700K technical budget, delivered under cost.
 - Defined product roadmap, prioritized business-critical features, and drove rapid delivery of customer-facing applications.
 - Cultivated an Agile + TDD environment with continuous delivery, user stories, and measurable QA outcomes.
 - **Telecom Infrastructure & Messaging**
 - Registered and managed shortcodes across CWTA, CSCA, CTIA; integrated with SMS aggregators (MyThum, Magnet Mobile, Dyocore, OpenMarket, Verisign).
 - Built custom **Least Cost Routing (LCR)** engine with multi-dimensional route optimization (cost, latency, geography, performance).
 - Implemented and maintained **Kannel**, SMPP, and direct HTTP-based messaging pipelines with delivery reports and sender ID handling.
 - **VoIP & Realtime Comms**
 - Integrated Asterisk and Freeswitch with .NET backends; managed H.323 and SIP (g729r8 codec).
 - Developed XMPP components interfacing OpenFire with .NET and Flex/AIR clients.
 - Delivered Outlook .NET integration to sync contacts and support XMPP chat.
 - **Networking & Systems**
 - Architected and managed all infrastructure: Active Directory, LDAP, DNS, DHCP, ISA firewall, and site-to-site VPNs.
 - Deployed and maintained 24-server footprint across **Peer1** and **Metrobridge** datacenters via NI Solutions.
 - Built internal system monitoring suite using custom probes; also leveraged Nagios, Zenoss, and Cacti for SNMP monitoring.
 - **Fraud Prevention & AdTech**
 - Designed and deployed fraud detection for both service and payment vectors.
 - Integrated with OpenX ad server APIs for dynamic ad delivery and tracking.
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Senior Software Architect

Vancouver, BC
January 2006 – July 2007
upsidewireless.com

Architected and delivered scalable messaging systems, web integrations, and infrastructure upgrades for a mobile services platform, while leading a cross-functional dev team.

Key Achievements

- **Team Leadership & Process Improvement**
 - Managed and mentored a team of 4 developers (Java, C, C++).
 - Migrated version control from CVS to SVN, standardized IDEs, and formalized software lifecycle processes.
- **Messaging & SMS Infrastructure**
 - Built and maintained **bidirectional SMS routing** with SMPP and modem interfaces.
 - Developed Premium SMS and binary content delivery system, including billing, reporting, and auditing layers.
 - Improved delivery reliability and introduced real-time network status monitoring.
- **Product Development**
 - Engineered multiple products and integrations:
 - * **Outlook plugin, Internet Explorer toolbar, Google Gadget** for SMS
 - * Picture and ringtone storage/delivery platform
 - Transitioned major user-facing interfaces to **AJAX-based UIs** for enhanced interactivity.
- **Platform & Backend Engineering**
 - Built near real-time dashboards and monitoring tools.
 - Led high-availability database reorganization and ETL pipeline development.
 - Conducted schema redesigns, implemented data warehousing, and performed physical hardware installations.
- **Technology Stack**
 - Java (Struts, Spring, Hibernate) · .NET 2.0 · SOAP/REST (JSON) · ETL · AJAX
 - SVN · SMPP · SQL · Windows & Linux infrastructure

Product Manager

Seattle, WA
July 2004 – December 2005
implicitnetworks.com

Directed development and delivery of embedded multimedia platforms and networked media devices for global OEMs, blending product management with deep hardware-level expertise.

Key Achievements

- **Embedded Systems & Microcontroller Platforms**
 - Managed development of **embedded media players** built on AMD AU1200 and Intel PXA-270 SoCs.
 - Debugged and enhanced **Board Support Packages (BSPs)** and **boot PROMs** with integrated **fail-safe mechanisms** to ensure secure, reliable startup on custom hardware.
- **Media Playback & Synchronization**
 - Oversaw engineering of Implicit's **Media Metadata Synchronization Web Service** using REST, SOAP, XML-RPC, and XSLT to support seamless video/audio playback across devices.
 - Collaborated closely with vendors (e.g., **Thomson, Philips, Canon, nVidia, Intel**) to integrate with custom decoders and optimize for hardware-accelerated playback.
- **Networking & Interoperability**
 - Delivered network-connected devices with **interactive AJAX interfaces** for both desktop and embedded targets.
 - Ensured robust networking support across constrained devices with focus on protocol interoperability and fault tolerance.
- **Product & Program Management**
 - Led product lifecycle for Implicit's **Server, Desktop Player, and Embedded Media Client**.
 - Coordinated feature development, QA, and build pipelines with continuous/concurrent integration strategies.
 - Managed client relationships and delivered technical specifications for enterprise deployments.
- **Team Leadership**

- Recruited and mentored developers; translated complex hardware and software requirements into actionable development plans.

Technologies & Platforms · AMD AU1200 · Intel PXA-270 · Embedded Linux · BSP Debugging · Multimedia Playback · REST/SOAP · XML-RPC · AJAX · Python · PHP · Networking Protocols

Senior Software Engineer / Co-founder

Austin, TX
April 2003 – May 2004
Tribalfire Software

Led product enhancements and deployment of core enterprise software for major aerospace and investment clients.

- Delivered and maintained core platform installations for clients including **Jet Aviation, Airbus, Boeing, and Kingdom Holdings.**
 - Contributed to first-round funding efforts through technical prototyping and stakeholder engagement.
 - Gathered requirements and authored detailed technical specifications to drive product evolution.
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Partner

Austin, TX
November 2001 – April 2003
Orbik Corporation

Led the company's strategic shift from service-based consulting to product development while managing client-facing software initiatives.

- Delivered custom web and application solutions for clients including **Studio RD, Interland, and Waveset.**
 - Built interactive software for projects like **Bingo Books**, handling full lifecycle from RFP to deployment.
 - Acted as liaison between business stakeholders and technical teams to ensure clear execution on strategic goals.
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Lead Programmer

Austin, TX
September 1999 – October 2001
Human Code

Led development of interactive media and educational software for high-profile clients and public installations.

- Built web-based learning platforms for the **University of Texas** and media experiences for **Becomm at CES 2001.**
 - Delivered an interactive exhibit for **Motorola at Epcot**, from project scoping through signoff.
 - Oversaw technical execution and coordinated closely with creative teams to ensure on-time, spec-compliant delivery.
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Proprietor (Self-Employed)

Austin, TX
1996 – 1999

Delivered interactive multimedia and UI design services to major B2B clients across tech, entertainment, and industrial sectors.

- Designed and prototyped **human interfaces**, SAP/R3 interaction models, and rich media experiences.
 - Clients included: **Human Code, Compaq, Dell, Disney, Frog Design, GSD&M, Halliburton, IBM, Motive, Motorola, National Instruments, and Mattel.**
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Director of Technology

Austin, TX
1995 – 1996
Digital Arts

Led technology strategy and innovation for a growing multimedia agency, driving business expansion and technical delivery.

- Provided vision for emerging technologies, new product concepts, and strategic opportunities.
 - Designed user interfaces and developed interactive software for B2B and creative projects.
 - Contributed to rapid company growth from **5 to 25 employees** through technical leadership and business development.
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Programmer

Austin, TX
1992 – 1994
frogdesign.com

Developed interactive multimedia software for CD-ROM platforms, supporting high-profile design and tech clients.

- Created Director-based experiences and prototypes, including the **Dual project** for frogdesign's innovation group.
 - Delivered multimedia solutions for major clients including **Texas Instruments, Commodore, AMD, and Grundig.**
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Systems Administrator

Austin, TX
1989 – 1992
RJL Graphics

Managed production systems and support workflows for a graphics and prepress studio, ensuring reliability and client satisfaction.

- Handled **instrument calibration, process control, and PostScript/debugging** for design pipelines.
 - Managed **workflow coordination, resource allocation, and client support** across print and digital operations.
 - Delivered file conversion services and **image retouching** for high-fidelity output.
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Systems Manager

Holiday, FL
1986 – 1989
Holiday Diagnostic Clinic

Oversaw IT infrastructure and process optimization for a busy medical clinic, blending systems administration with operational efficiency.

- Managed over **32 Macintosh systems** and maintained a robust **AppleTalk network**.
 - Installed and maintained **redundant S-100 CP/M minicomputers** for clinical operations and data redundancy.
 - Handled **report generation, daily backups, telephone systems**, and improved **patient flow processes**.
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Apprentice

Tarpon Springs, FL
1984 – 1986
Electronic Systems Processing

Supported electronics design and PC system assembly for a hardware services company, gaining hands-on experience across technical and operational tasks.

- Assisted in **electronic design**, repair, and resale of **Micom leased line multiplexers**.
- Built and configured **custom PC systems** for commercial use.

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- Contributed to general production duties, including **vehicle painting** and shop operations.
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Technical Proficiency

Languages: Python, Ruby, TypeScript, Bash, Terraform, Golang, Java

Frameworks: Django, Rails, HTMX, React, Vue

Cloud & DevOps: AWS (ECS, S3, IAM, etc.), Docker, Terraform, GitHub Actions, GitLab CI/CD

Infrastructure: Kubernetes, Control Tower, VPC, VPN, SDN, QEMU, VMWare

Data & Storage: PostgreSQL, Aurora, Redis/Valkey, MySQL, Elasticsearch, QDrant

Observability: Datadog, Sentry, Fluent Bit, Nagios, Munin

Messaging & APIs: Kafka, RabbitMQ, SMPP, OpenAPI, GraphQL

Tooling & IDEs: PyCharm, IntelliJ, VS Code

Operating Systems: Linux, macOS, Windows

Specialties: Barcode/GSI systems, Voice/SMS Integration, Embedded Systems, Edge Networking

Other Interests

Hands-on builder with a passion for complex systems at all scales - from analog electronics and microcontrollers to CNC machining and RTOS development. Ongoing projects span chemistry, audio amplifier design, high-voltage electronics, 3D printing, and home automation. Enjoy blending hardware, software, and physical fabrication to create functional, beautiful, and durable systems.