

John SJ Anderson

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Summary

Experienced technical team leader, systems architect, software developer, and conference speaker with over 20 years of experience coordinating and leading teams, on-site and remotely, to build and deliver Open Source-based projects and infrastructures.

Experience

Neochromosome / Pandemic Response Lab / Opentrons (remote)

- *VP, Software Engineering at Neochromosome (Apr 2022-present)*
- *Director, Software Engineering at Neochromosome (May 2021-Apr 2021)*
- *VP, Software Engineering (acting) at Pandemic Response Lab (Nov 2021-Apr 2022)*
- *Director, Software Engineering at Pandemic Response Lab (Apr 2021-May 2021)*
- *Lead Software Engineer at Pandemic Response Lab (Nov 2020-Apr 2021)*

Currently, I manage 3 direct reports and an overall team of 12 working on a variety of projects to support laboratory operations inside Neochromosome, a wholly owned subsidiary of Opentrons. I function as a “player-coach”, mentoring team leads and individual team members while continuing to make individual contributions to software projects.

My major work in 2023 has involved renovating an inherited collection of sequence analysis and processing software after the wind-down of Pandemic Response Lab at the end of 2022. This involved extensive re-architecting and re-writing of a series of Python and RMarkdown programs, involving extensive pandas usage and large amounts of data largely within AWS. In addition to making these processes significantly more robust and documenting them, I was also able to reduce AWS spend in the processing environment by 40% (so far).

Prior to this, I architected and initially bootstrapped development on Rosalind, a custom-built laboratory information management system (LIMS) designed for extreme flexibility, to support the Neochromosome DNA Foundry. Rosalind is written in Typescript and uses the Node runtime and the Svelte web application framework, as well as the PostgreSQL database. Rosalind runs entirely within AWS using exclusively serverless technologies (e.g., Lambda, Aurora Serverless, S3, etc.) Work is underway to extend Rosalind to support the Neochromosome Sequencing Core.

While at Pandemic Response Lab (PRL), another wholly owned subsidiary of OpenTrons, I was the primary architect and developer of DAVID, a custom-built LIMS system designed to track Covid samples through PRL's PCR testing line. DAVID was written in Typescript, using the Node runtime and the Vue application framework, and was backed by PostgreSQL. DAVID ran entirely within AWS, using largely serverless technologies. When I was initially brought on board at PRL as a contractor at the beginning of August 2020, DAVID did not yet exist. PRL did their first production tests on September 7, 2020, using DAVID, and eventually went on to perform more than 10 million PCR-based Covid tests, all tracked and recorded in DAVID.

In addition to software development, I also provided front-line user support in the initial months, assisted with product design and development, and oversaw a team that grew to over 25 software developers. After transitioning to the Neochromosome business unit in May 2021, was asked to return as acting VP of Software Engineering until a replacement could be hired.

Infinity Interactive (remote)

- *VP, Technology (Apr 2014-Nov 2020)*
- *Senior Programmer & Consultant (Jun 2012-Apr 2014)*

Currently manage four direct reports and an overall team of eight (has been up to 12) to track multiple projects and client engagements. Maintain frequent contact, internally and externally, to identify and surface issues before they become critical problems. Mentor and guide career development efforts; coach reports on better approaches to solving technical and non-technical problems in their client engagements.

Responsible for researching new technologies and proactively learning about them to identify areas of interest for the company to pursue, either for business development or skill acquisition. Responsible for (when appropriate and possible) encouraging Open Sourcing company-developed software.

Was tech lead and primary client contact on a multiyear, \$3MM/yr project to develop a tax return preparation-related consumer product. Led a team of 15 developers, QA specialists, and project managers to build a complex system consisting of a cross-platform end-user-facing mobile app, an end-user-facing website, a back office website, an API to tie the mobile app and websites together, and multiple integrations with other third party services. It was originally developed to run on AWS. When it became necessary to migrate to Azure due to client compliance requirements, I led an off-season migration project to replace all AWS usage with equivalent Azure services. The system was built using a variety of technologies, including Node, Xamarin/.NET, XMPP, React, Angular 1.6, and other modern web and mobile software frameworks. We used agile project management methods to ship new releases on a weekly basis from late October to early April; in the final year of the contract (2019), we shipped 26 releases in that time frame. Over the 3 year span of the engagement, under my direction, we refined our software development methodology to include full code reviews for all changes, fully documented code style guides, automated

pre-commit linting and validation for compliance with our style guides, and a completely automated CI/CD pipeline that deployed the weekly releases into multiple cloud environments.

Based on learnings from that multi-year tax prep product project (see above), I refined and generalized our approach into guidelines for scalable, modular technical processes. The overall goal was to design a set of adaptable ground rules that can be leveraged to rapidly set up a new project with the appropriate amount of process, depending on the size, complexity, toolset(s), and expected lifespan of the project.

Responsible for web site development and content management. Re-built site in 2014 using Perl-based static site generator (SSG). Re-built again in 2020 using a Node-based SSG (Eleventy). Also own social media outreach for the company and brand.

FlightNetwork (remote)

- *Tech Lead & Senior Developer (Apr 2011 - Jun 2012)*

Served as tech lead on a five-person team of remote developers, based across the US, Canada, and India. Reimplemented backend APIs of FlightNetwork.com to modernize use of Perl language and reduce existing technical debt and code repetition. Concurrently, led introduction of Git source code management system (replacing CVS). Provided workflow guidance and code review on other projects within FlightNetwork.com.

National Institute on Drug Abuse (NIDA) / National Institutes of Health (Rockville MD)

- *Chief, Information Engineering Branch and Chief Technical Officer (Dec 2009-Mar 2011)*
- *Senior Systems Architect, under contract from Kelly Government Services (Oct 2009-Dec 2009)*

Led long-term effort to integrate clinical trial support services into a single contract, involving extensive review of multiple existing contracts to define which services were essential to re-home under new consolidated contract. Took active role in long-term working group chartered to harmonize common clinical trial data items into a unified standard. Led a project to replace a workflow and data management system used by drug discovery program with an internally developed alternative based on Open Source software. Managed, directed, and provided technical leadership to a team of three contractors to develop additional software applications for internal use. Worked closely with the Director of newly formed Office of Bioinformatics and Information Management to evaluate existing IT infrastructure and projects, resulting in a project to build a new Linux-based infrastructure to support "private cloud" virtualization. Lead a project to develop web site to showcase research projects funded by NIDA.

United States Census Bureau (Suitland MD)

- *Lead Systems Architect, under contract from Quotient Inc, (May 2008-Oct 2009)*

Served as technical lead of team working on the Centurion system, a web-based data collection application. Centurion was used by a wide variety of survey customers and responders for accurate and effective data collection for Census Bureau reports. Developed internal educational/training programs to introduce and reinforce best practices-based software development methods. Placed large legacy code base (approx. 45K lines of Perl code) under revision control using Subversion. Deployed Trac project management software to coordinate and manage work on both new and legacy code bases. Other responsibilities included day-to-day on-site management tasks for five Quotient, Inc. FTEs at this site: collection of task reports, coordination of leave requests, interaction with government customers to assure contract objectives were being met, reviewing and interviewing job candidates prior to government customer interviews, and other routine managerial tasks.

National Center for Biotechnology Information / National Library of Medicine / National Institutes of Health (Bethesda MD)

- *Principal Systems Analyst & Senior Linux Systems Administrator, under contract from IS Mavens (Jan 2002-May 2008)*

Responsibilities included technical leadership and management of a five-person team responsible for operating a Linux/UNIX environment for C/C++/Perl/Python bioinformatics development. Tasks included server provisioning, overseeing the help desk system, and regularly meeting with users and management to determine software and hardware requirements. Planned and led deployment of CfEngine automation tool to centralize and standardize configuration management and change tracking.

Education

IRTA Postdoctoral Fellow (2000-2001)

- *National Center for Biotechnology Information (Bethesda MD)*

Under the mentorship of Dr. David Landsman, continued research and development of large-scale comparisons for computational identification of regulatory elements.

Ph.D., Molecular and Cellular Biology (1993-2000)

- *University of Arizona (Tucson AZ)*

Dissertation work (advised by Dr. Roy Parker) involved the development and implementation of a method to identify potential regulatory elements in DNA sequences. Also responsible for deployment and administration of Macintosh and Linux computers in the Parker lab.

B.S., Biology (1989-1993)

- *University of Iowa (Iowa City IA)*

Community Involvement

- Founder and organizer of Hack Salem, a local meetup group for software developers and interested hobbyists in and around Salem, Oregon
- Past organizer of SeaGL, a Free & Open Source Software conference in Seattle
- Past organizer of YAPC::NA, the premier North American Perl conference
- Member, Perl Foundation Grants Committee
- Pre-pandemic, frequent (>4 times/yr) Open Source conference speaker. Conferences I have spoken at include OSCON, All Things Open, Southern California Linux Expo (SCaLE), SeaGL, LinuxFest Northwest, and The Perl Conference