BOB BRIODY | Engineering Leader

Some quick things to know about me:
- The teams I lead make stuff happen and we have a good time while we're at it!
- My approach to leadership is rooted in empathy, fairness, open communication, and teamwork.
- My approach to software development is rooted in user empathy and product focus. "Let's build the right thing!"
- People say that I bring energy, drive, and focus to every team that I'm a part of.
- I am one of the more customer/user/product-focused engineers you will come across.
- "Bob is leading the team to build a tool that everyone wants to use." -Anonymous Peer, 2017 Employee Excellence Award. I could not be more proud of that praise, especially from a peer.

Reliable Robotics   2018 - 2022

I joined Reliable as employee number 19 and software engineer number 4; the first non-flight-software engineer. I primarily joined to lead data services, but in stereotypical startup fashion I got to work on almost everything and took on a lot of additional roles. It was a fun ride!

(~1st 6 Months - Solo Effort) Principal Software Engineer, Architect - Data Services
The initial goal was to fully automate the aircraft telemetry data ingest process. Prior to this folks were manually uploading CSV's to google drive after each flight, each analyst would download these massive files for local analysis, then they would manually run all their post-flight jupyter notebooks and analyze the results. It took forever, required way too much attention, schema changes broke things, and it all cost *a lot* of time.
- Designed and implemented the aircraft telemetry ingest services, enabling a fully automated process for flight ops. They simply plug in the flight computer after landing and soon data was available for analysis.
- Designed and implemented a flight-specific DSL python client to enable analysts working in Jupyter notebooks.
- Designed and implemented an automated Jupyter notebook execution framework for automated post-flight data review. Guidance Navigation & Control / Flight Software / Avionics teams built the notebooks; I owned the orchestration framework, data services, and results management/presentation.
- Implemented a distributed simulation framework to execute monte-carlo and hypercube flight simulations at scale, ingest & persist output data, and present results.

Technologies: Python, Boto3, Jupyter Notebook, Papermill (Jupyter notebook execution), AWS EC2, AWS Batch, AWS Athena (PrestoDB), Docker, Bash

(~2nd 6 Months - Solo Effort) Principal Software Engineer, Architect, UI/UX - Internal Tools
Once the data management system was no longer the biggest fire I could fight, I transitioned to certification tooling. COTS solutions exist, but they are extremely cumbersome and no single tool covers the entire certification stack; i.e. one tool is used for requirements, another for system design & ICD, another for capturing FAA regulations/standards, etc, etc, and then there's usually a mess of glue and manual operations to synchronize the silo'd datasets and conduct change impact analysis. Reliable's biggest challenge is/was certification, so this was an extremely critical aspect of the company's success in terms of both safety and time-to-market. What started as a simple requirements capture tool quickly grew into a 6 person team and became the core management system for the entire certification and system design stack.
- Designed and implemented the T-Reqs MVP (patent pending), a web app that enables stakeholders/users to capture requirements, certification data, system designs (including ICD), and regulatory constraints. Then (and this is the real magic!) users were able to create various dependency relationships between these entities, which enabled automated ICD generation, design documentation output, and change impact control analysis and reporting; the importance of which cannot be understated in a safety-critical environment.

Technologies: Node.js, Javascript, HTML, CSS, React, GraphQL/Apollo, MaterialUI, Figma

(Years 2 - 4) Engineering Manager - Head of Internal Tools & Data Services (2 Teams)
Both the data management system and certification tooling MVPs were a huge success. The user base for each instantly became all of engineering. The visions had been proven and users were clamoring for more. It was time to scale up. I transitioned to "Head of Data Services & Internal Tools" and began to build the 2 teams. I became heavily involved with the hiring team and processes. I focused heavily on defining my future team's development processes. As the team grew, I delegated responsibilities to new team members based on interest, fit, and priority. I spent a little more time thinking about tuning the team, and a *little* bit less time on technical details. I got extremely focused on team health, user analysis & support, requirements capture, and our "long-term" roadmaps.
- Conducted weekly 1-on-1's with direct reports to solicit feedback, provide continuous feedback, and just generally keep in touch.
- Owned the product management and high-level UI/UX design responsibilities.
- Responsible for roadmap planning & progress reporting to ensure tight synchronization with the rest of the company. Met regularly with key product stakeholders/users and other team leads to ensure accurate focus, manage expectations, and coordinate priorities.

- Responsible for high-level architecture and system design.
  - Transitioned the system from being entity-specific to a fully abstracted, domain-agnostic, model-driven, template-based engine. This enabled a massive time savings (6-12 months) on building out newly requested entity types.
  - Designed the automated analysis framework to identify invalidities, discrepancies, conflicts, and change impact tasks. This resulted in a *massive* time saving for all of engineering and drastically reduced the possibility of a certification and/or design error.
- Hiring / Team Building
  - Interviewed all potential team candidates, and also participated in most candidate interview loops across the company as a cross-team interviewer. "Make sure they have a call w/ Bob."
  - Worked closely with the entire recruiting team to define hiring processes, define job personas, write job descriptions, review sourced candidates, screen/sell candidates, design interview loops and technical exercises, conduct technical interviews, assist with negotiations and closing... the works!
  - Responsible for capacity forecasting and team size/composition planning, i.e. how many people, and what roles to prioritize.

Miscellaneous

Reliable Robotics was the first, and as far as I know still the only commercial entity to fly autonomously over populated airspace with no pilot on board. This was a huge milestone for the company and preparing was an "all hands on deck" scenario, so I got to really spread out...

- Implemented remote pilot display functionality (mostly vue.js work), including taking the tech lead role going into the fully autonomous Cessna 172 flight demo. Collaborated with remote pilots and test pilots to design displays that could be relied upon in a safety-critical environment to remotely monitor and command the aircraft during autonomous flight.
- Implemented the automated redundant ground system deployment framework (lots of bash scripting, Docker, AWS EC2 integration, Terraform, networking configuration, etc).
- Implemented flight software features and bug fixes, but I still won't admit to knowing C-plusplus :)

DataStax Inc   2015 - 2018

(1st year - Solo Effort) Creator, Technical Lead, Architect - Datastax Studio

Studio is a Notebook-style developer enablement tool that DataStax Enterprise (DSE) users to develop applications against DSE Graph, CQL, Search, & Analytics. This actually started with some weekend hacking at my kitchen table just for fun, but eventually grew into a 15 person team and one of DataStax's flagship tool offerings.

- Designed full-stack system architecture.
- Implemented initial full-stack prototype - java/spring backend, javascript front-end.
- Participated heavily in all aspects of product design including UX workflow definitions, product design specifications, personas definitions, requirements capture, and usability observations.
- Designed & implemented...
  - Best-in-class graph visualization and charting interface with interactive customizations and exploration capabilities.
  - "Whiteboard inspired" property-graph schema viewer that enables a natural, interactive schema exploration experience.
  - Gremlin query profiler view, a bespoke D3-based visualization that provides critical insight into Traversal execution behavior.
  - Domain-agnostic, dynamic charting capabilities for on-the-fly data visualization.
  - Back-end graph query execution service.

Technologies: DataStax Enterprise (Cassandra, Graph, Solr, Spark), Java, JavaScript, TinkerPop, React, Redux, vis.js, D3, Spring Framework, JAX-RS, JSON, Junit, Git.

(Years 2-4) Engineering Manager

- Lead team of ~15 members: 7 SWE, 1 UI/X designer, 7 QA/Test.
- Instrumental in defining best practices, development methodologies, agile adoption, and general processes regarding release planning, deployment, and people management.
- Conducted weekly 1-on-1's with direct reports to solicit feedback, provide continuous feedback, and just generally keep in touch.
- Responsible for roadmap planning & progress reporting to ensure tight synchronization with the rest of the company. Met regularly with key product stakeholders/users and other team leads to ensure accurate focus, manage expectations, and coordinate priorities.
- Responsible for high-level architecture and system design.

(~6 months) Acting Product Manager

- Assumed temporary "Acting Product Manager" role (in addition to regular duties) during ProdM staffing transition. I care deeply about ensuring that my team builds the best product possible, and in this situation that

meant branching out my responsibilities.

Misc
- Extremely honored to be selected by peers for an annual "Employee Excellence Award". (Awarded to 6 of ~150 team members.) [See what folks had to say here.](#)
- Pioneered the forefront project, a customizable demonstration platform that provides the sales team with unprecedented ability to create pristine, customer-focused, interactive sales collateral that highlights key DataStax differentiators to high-value prospects.
- Volunteered to implement the Standalone schema viewer, an html/js app that is used to dynamically render an interactive property-graph schema view that can be embedded in blog posts, documentation, and github examples. (1.5 week side project to help developer relations team.)
- 2016 Cassandra Summit Speaker [Network Analysis with DSE Graph, Studio, and TinkerPop](#).
- DataStax Engineering Blog contributor: Graph Storytelling with Studio 2.0.0.
- Appeared on [DataStax Distributed Data Show](#).
- Educator for 4 units of [DataStax Academy Graph Course](#).

Aurelius   2014 - 2015 (Acquired by DataStax)

Consultant & Core Developer - TinkerPop / Titan
As one of just seven developers at Aurelius, the company behind the [Apache TinkerPop Graph Library](#) and [Open Source Graph Database, Titan,](#) I wore a lot of hats and participated in many aspects of the Aurelius ecosystem. Core responsibilities were primarily split between TinkerPop Development and customer consulting services.
- Advised clients on all GraphDB-related matters such as modeling / schema design, query development & optimization, system architecture, concurrency, scalability, development practices, and testing.
- Designed and implemented intuitive graph analysis and visualization applications.
- Implemented RESTful enterprise Java applications built around TinkerPop, Titan, ElasticSearch, and Cassandra.
- Lead/Solo developer - Gremlin Dashboard, a graph visualization web app built on TinkerPop.
- Designed & implemented the TinkerPop 3 Traversal Profiling Framework, which is used by developers to gain critical insight when optimizing Traversals.

Technologies: Java, JavaScript, TinkerPop, Titan, Neo4J, Cassandra, ElasticSearch, vis.js, sigma.js, D3, Angular, Spring Framework, JAX-RS, JSON, Junit, Git, YourKit.

Rovi   2013 - 2014

Technical Lead / Architect - Search & Recommendation - Data Services
Rovi (now TiVo) is an entertainment meta-data services company. I participated heavily in the architecture, system configuration, and implementation of Rovi's next-generation Search, Recommendation, and Real-Time Data Delivery system.
- Lead developer: Core Search Component. Implemented the real-time search and recommendation engine.
- Implemented graph-like expansion mechanics over Solr for unprecedented API flexibility. (I basically built a GraphQL backend before GraphQL existed.)
- Decoupled the domain expert and development team workflows by implementing a fully configuration-driven model design (words like "movie" & "person" do not appear in the codebase). This enabled a massive time-savigs for the modeling and operations teams.
- Designed and implemented an asynchronous message-driven data ingest component to enable real-time data ingestion at the service layer.
- Utilized MongoDB for message archival and system bootstrap.
- Incorporated batch recommendation analytics by pulling mined data from Cassandra.
- Enabled "similar items" and "for you" recommendation services by augmenting Solr search logic with latent factors and relevance data.

Technologies: Java, MongoDB, Solr, RabbitMQ, Python, Spring, Cassandra, EHCache, Zookeeper, JAX-RS, JSON, Junit, Tomcat, Artifactory, Team City, Subversion, VisualVM.

ITT Exelis Inc.   2005 - 2013

Creator -> Solo Engineer -> Engineering Manager - Scout
Scout is a client-server data visualization application used by Dept of Defense (DoD) analysts for rapid screening and technical analysis of high-bandwidth signal data. Scout began as a research and development project proposed and prototyped by myself, and eventually grew to 6 full time engineers. I'm told that analysts still use Scout for mission critical operations on a daily basis because despite there being no new development in many years, it's still the best and fastest spectral processing application available. In addition to my technical duties such as architecting the system

and leading the development team, I was also responsible for interacting with "The Customer", gathering requirements from analysts, proposing new features, managing schedules, and delegating tasks to the development team.

- Provided unprecedented performance by designing a scalable multi-GPU-based approach to a processing paradigm that had remained serialized on high-cost custom FPGAs in competing applications for over a decade.
- Designed and implemented complex server-side data sifting algorithms that reduced network traffic and greatly increased performance.
- Eliminated hours from analyst's daily work-flow by proposing and implementing batch pre-processing.
- Integrated native hardware processing modules via custom IPC.

Technologies: Spring Framework, Spring Web MVC, Spring Security, Spring Data, MongoDB, NoSQL, EHCache, JAX-RS, JPA, JSON, JSP, JSTL, HTML, CSS, JQuery, JUnit, JBoss, Gradle, Ivy, Artifactory, Hudson, Subversion, VisualVM.

Rookie Software Engineer -> Senior Software Engineer -> Technical Lead - Platinum
Platinum is the standard signal data file format used for data exchange across the Department of Defense. I proposed, designed, and developed the Java Platinum reader/writer library that is currently released as a DoD "Open Source" project to application development teams that require Platinum I/O capability. As of 2013, every JVM-based application that produced or consumed Platinum data used this library.

Personal, Hobbies, Education

- Jennifer Holena - a.k.a The Little Lady. Gifted School Counselor, my most trusted advisor, and the love of my life. A bit of a strange entry in this list, but talking this much about myself without mentioning her would be absurd.
- Backpacking - in 2017 Jennifer and I completed the John Muir Trail, hiking over 250 miles in 19 days during a record snowfall year, and yes, it was absolutely amazing! Since then much of our recreational time has been spent climbing mountains, exploring slot canyons, and hunting glaciers.
- Surfing - I'm still terrible at it after all these years, and I still don't care..
- Playing Music / Guitar - I'm actually not so bad a this one :)
- Dirt Bikes - Because sometimes I make the grown-up decision to embrace my inner teenager.
- Education: Bachelor of Computer Science, Pennsylvania State University, 2005 - though it could be argued that my *real* education came from waiting tables and playing semi-pro poker to pay the way :)

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