Robert E. Beaty, Ph.D.

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Resume

Education

Bachelor of Science in Electrical Engineering, May, 1982; Purdue University, West Lafayette, Indiana

Master of Science in Electrical Engineering, May, 1984; Purdue University, West Lafayette, Indiana

Doctor of Philosophy in Electrical Engineering, August, 1988; Purdue University, West Lafayette, Indiana

Employment History

December 2020 - Present   **Flexbase – Naperville, IL**

Principal Engineer working with start-up Founders to build Financial Services and Cash Flow solutions focused on the small to medium-sized Construction company market. Enabling easier access to credit, better cash flow management, and drastically simplified paperwork for the accounts receivable/ accounts payable cycle.

- Architect, Designer, and Developer for *postgrid-node-client*, a Node JS/Typescript client for easier access to the PostGrid services. Primary Tools: Node/JS, Typescript, Mac OS X, npm.

- Architect, Designer, and Developer for *creditsafe-node-client*, a Node JS/Typescript client for easier access to the Creditsafe API services. Primary Tools: Node/JS, Typescript, Mac OS X, npm.

- Architect, Designer, and Developer for *notarize-node-client*, a Node JS/Typescript client for easier access to the Notarize.com services. Primary Tools: Node/JS, Typescript, Mac OS X, npm.

June 2020 - December 2020   **Vodori – Chicago, IL**

Director of Engineering working with senior leadership to help empower the development group with the hard-won lessons of several decades of experience in the industry. Making the most of the Clojure-based development toolset to create stable, reliable, maintainable services in a minimum of time.

May 2018 - June 2020   **The Climate Corp – Chicago, IL**

Principal Engineer in the *Insights* team responsible for coordinating the architecture of all projects in the group with the corporate architecture. This includes web, iOS, Android, and service apps as well as covering cross-cutting concerns like internationalization and localization, and testing and testability. Representative to the corporate architecture group. As part of the shift to a Platform Group, became the Client & Partners Architect which contained many of the same duties for all Client apps at Climate.

June 2015 - April 2018   **Guaranteed Rate – Chicago, IL**

Senior Engineer in charge of leading migration from monolithic legacy app to SOA functional language-based system of small services.

- Architect, Designer, and Developer for *Trident*, a system to enable the TRID-compliance requirement of Closing Document collaboration between title company agents and lender agents. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.04-16,04), Postgres, AWS.

- Architect, Designer, and Developer for *Polaris*, a service to enable RESTful access to all versions of each loan in the Guaranteed Rate world. This includes at least one version of *every* loan in the company's history. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.04-16,04), Postgres, AWS.

- Architect, Designer, and Developer for *Sulley*, a service to enable RESTful calls to the Optimal Blue mortgage pricing service, which is SOAP and XML-based. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.04-16,04), AWS.

- Architect, Designer, and Developer for *The Tube*, a service to enable RESTful calls to the Fannie Mae *Desktop Underwriting* service, while keeping a historical record of each call for data mining purposes. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.04-16,04), Postgres, AWS.

- Architect, Designer, and Developer for *Mulder*, a service to enable RESTful calls to the LenderX appraisal ordering service, again, keeping historical records of all activity on the appraisal. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.04-16,04), Postgres, AWS.

- Architect, Designer, and Developer for *Rockford*, a service to enable RESTful calls to FormFree *AccountChek* verification of assets service, and the Equifax service for verification of employment and income, again, keeping historical records of all activity on each call. Security concerns regarding the data required interesting design choices. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.01-16.04), Postgres, AWS.

- Architect, Designer, and Developer for *Underdog*, a service to assist in the creation of completely automated loan application packages for borrowers. This includes fronting SmartFees service, LenderLive service, and quite a bit of business logic to save considerable time in the initial phases of the process. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.01-16.04), Postgres, AWS.

- Architect, Designer, and Developer for *Simon*, a service to handle all the legal consent for eSigning of the Appraisal Package by the borrowers. Close cooperation with the Compliance Office to cover all legal angles was interesting. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.01-16.04), Postgres, AWS.

- Architect, Designer, and Developer for *Newsroom*, a service to locally sync all loan and contact data, as it's updated, to, and from, *Total Expert* a Mortgage CRM. Primary Tools: Clojure, Mac OS X, Linux (Ubuntu 14.01-16.04), Postgres, AWS.

- Architect, Designer, and Developer for *NS Toolkit*, a clojure library to enable services to be quickly built without having to handle the low-level details of interfacing with other services and resources. Primary Tools: Clojure, Mac OS X.

January 2015 - June 2015   **Centro – Chicago, IL**
Senior Principal Developer in creating firm-wide data acquisition and analysis platform for customer ad performance data.

- Architect, Designer, and Developer for *Bartender*, a system to access multiple external sources of client data, handle fail-overs, retries, and storage so that systems could refer to this data internally, as opposed to hitting external sources. Primary Tools: Clojure, Mac OS X, Linux (CentOS 5), Storm, Redis, Postgres.

July 2012 - January 2015   **Groupon – Chicago, IL**
Expert Engineer in Sales and Planning Group creating demand-merchant matching and demand processing software hooking into the Salesforce.com data as well as internal demand generation systems to enable the sales representatives to be more efficient with their time.

- Architect, Designer, and Developer for the real-time data feed *Unified-Click Stream*, as well as the analytics tools that are based on it: *You Viewed*, *Disruption Detector*, and *Finch Analytics.* These are all systems based on the the real-time logs of all client-facing systems in Groupon, and are all processed in Kafka/Storm clusters written in Clojure. Primary Tools: Clojure, Mac OS X, Linux (RHEL 5), Storm, Kafka, Redis, Postgres.

- Designer, and Developer for *Quantum Lead*, a demand-merchant matching system hooking into Salesforce.com as well as internal demand generation systems to enable the sales team to be more efficient. Primary Tools: Ruby/JRuby, Mac OS X, Linux (RHEL 5), CouchDB, Salesforce.com.

- Architect, Designer, and Developer for *Dark Magic*, a demand processing and adjustment system based on immutable datasets serving up demand data for Quantum Lead. Primary Tools: Clojure, Linux (RHEL 5), Mac OS X, Hadoop, Storm.

June 2010 - March 2012   **PEAK6 – Chicago, IL**
Senior Software Architect in Messaging and Data Feed Group creating next generation firm-wide ticker plants and greek pricing server using direct exchange data feeds, as well as in-house valuation libraries and an overall architecture emphasizing low-latency processing.

- Architect, Designer, and Developer for *DataBusII*, a next-generation suite of ticker plant tools emphasizing event-driven exchange data processing and modular feed handlers. Primary Tools: C++ (GCC), Linux (Ubuntu), ZeroMQ, and exchange datasources.

- Architect, Designer, and Developer for *PricingServerII*, a next-generation greeks pricer built on *DataBusII* internal ticker plants to minimize network hops feeding low-latency processing and in-house valuation libraries. Primary Tools: C++ (GCC), Linux (Ubuntu), ZeroMQ, in-house valuation libraries.

- Developer for *MMD*, a messaging middle-ware built around services and clients meant to decouple and balance client usage from service providers. Built at PEAK6 but open-sourced. Primary Tools: erlang, erlmongo, mongoDB.

March 2009 - June 2010   **Chicago Trading Company – Chicago, IL**
Senior Developer in Risk Analytics Group creating firm-wide risk and P/L applications for the senior management.

June 2001 - March 2009   **UBS O'Connor – Chicago, IL**
Consultant/Developer on Risk Management applications and Market Data services for the trading floor. Projects and activities at this position have included:

- Architect, Designer, Developer and Lead Support for live, ticking, risk display and reporting tools delivered through a three-tier, clustered system. Primary Tools: Java (J2EE), RMI, CORBA, JDBC, XML and associated datasources.

- Architect, Designer, Developer and Lead Support for live, ticking, risk engine tracking ticks and positions as well as calculated greeks and theoretical values feeing a display and reporting system. Primary Tools: C++ (GCC), in-house valuation libraries.

- Architect, Designer, Developer and Lead Support for data collector/aggregator/distributor of non-fast-tick data throughout the organization including proprietary signals, and external data vendors. Primary Tools: Java (J2EE), MQ Series, Sun ONE Message Queue (JMS), RMI, CORBA, JDBC, XML and associated datasources.

- Architect, Designer, and Developer for access APIs and web pages based on the data from the above two systems to deliver content in clients not initially intended. Primary Tools: Java (J2EE), Tomcat, PHP.

- Architect, Designer, Developer and Lead Support for Market Data services delivered through centralized resources to a variety of language APIs. Primary Tools: C++ (GCC), Java, Bloomberg API, Reuters RMDS, internal historical price sources and tick feeds.

- Architect, Designer, Developer and Lead Support for a caching price feed that allows applications in the organization to obtain a consistently good price from a Reuters data feed. Primary Tools: Java, Reuters RMDS, internal price tick feed.

- Architect, Designer, Developer and Lead Support for analytics engine used to provide complex group/basket analytics in a high-speed, high-reliability environment for feeding collector/aggregator/distributor. Primary Tools: C++ (GCC), in-house market data sources.

- Developer and Support for components and integration of FRONT ARENA to replace several of the in-house tools. This included new calculations, attributions, and connectors to in-house systems not being replaced. Implemented custom reports in ACM, ADFL and C++. Primary Tools: Python, C++ (GCC), in-house services, SunGuard FRONT.

February 1996 – June 2001   **BankOne - Chicago, IL**
Vice President/Senior Systems Architect in the Commercial Banking Systems Group at BankOne, Chicago IL. Projects and activities at this position have included:

- Member and Manager of a Technical Architecture Group which focused on all aspects of reuse within the Capital Markets Group. This included delivery of infrastructural libraries and documentation. Primary Tools: NeXTSTEP, OPENSTEP, Solaris, NT, Obj-C, Sybase, scripting tools (sh, perl, make), OOA&D, Management and Sales Skills.

- Coordination and Certification of Year 2000 Vendor products used within the Commerical Banking group. Primary Tools: Highly Effective Communications, Access 97/SQL Server.

- Design, Development and Testing of the back-end systems for a web-based credit card management system for the Commercial Card Services group. Primary Tools: NT, Solaris, Java, MQSeries, SQL Server, scripting tools, OOA&D.

- Design, Development and Testing of the back-end systems for a web-based deal tracking system for bankers and traders in the Commercial Banking group. Primary Tools: NT, Linux, Java, SQL Server, PostgreSQL, scripting tools, OOA&D.

June 1991 - February 1996   **Port-to-Port Consulting - Indianapolis, IN**
Founding Partner, Executive Vice President, Technical Director and System Consultant, Port-to-Port Communications Corporation, Indianapolis, Indiana. Duties included advising clients on Personal Computer hardware and software purchase decisions, developing database and telecommunications applications.

August 1988 - June 1991   **Auburn University - Auburn, AL**
Assistant Professor of Electrical Engineering, Auburn University, Auburn, Alabama. Position involved teaching, research, publication, and supervision of graduate students. Total contract dollars overseen in excess of $450,000.00. Supervisor: J. David Irwin, Head, Department of Electrical Engineering.

February 1982 - Present   **The Man from S.P.U.D. - (various)**
Owner, Operator, Developer. This company has been the umbrella under which considerable academic, public domain, Open Source, and charity development and systems work has been accomplished. Projects run the gamut from circuit simulators to eCommerce web sites to talking alarm clock/calendars to decrypting software.

Tools Expertise
Considering only those tools, applications, methods and practices that have been used in production-level capacities, the list includes, but is not limited to:

- **Operating Systems** - RedHat Linux 6.x/7.x/FC 3-7, CentOS 5-6, Ubuntu 10-16, MS-DOS, Windows 3.1/95/98/NT/XP, Solaris, NeXTSTEP, OPENSTEP, MacOS 6.x/7.0/X

- **Development Languages** - Node, Typescript, C, C++, Objective-C, Swift, Clojure, Ruby/JRuby, Java, Python, FORTRAN, Pascal, VB/VBScript, 16-bit ASM, PHP, ASP, csh, bash, perl (including CGI)

- **Developer Tools** - Git, GitHub, CVS, PVCS, SourceSafe, MQSeries, GNU Make, AutoDoc, JavaDoc, Glade, UML and Rational Rose, Apache

- **Databases** - CouchDB, MongoDB, Hadoop, Oracle (PL/SQL), Sybase (T-SQL), SQL Server (T-SQL), PostgreSQL (PL/pgSQL), Paradox 3.5/4.0, Access (VBScript), ODBC, JDBC

- **Networking** – TCP/IP, IPX, Novell, Windows NT/2000/XP, NFS, Cisco, NAT, Routers

Descriptions of the different projects these tools were used on is available.

Publications

R. E. Beaty, J. C. Suhling, C. A. Moody, D. A. Bittle, R. W. Johnson, R. D. Butler and R. C. Jaeger, "Calibration considerations for piezoresistive-based stress sensors," *Proceedings of the Electronic Components and Technology Conference*, pp. 797-806, May 1990.

D. A. Bittle, J. C. Suhling, R. E. Beaty, R. C. Jaeger and R. W. Johnson, "Structural analysis of electronic packages using test chips with integral piezoresistive stress sensors," *1990 ASME Winter Annual Meeting*, paper 90-WA/EEP-12.

R. E. Beaty, R. W. Johnson, J. C. Suhling, D. A. Bittle, J. C. Pope and R. C. Jaeger, "Stress measurement in electronic packaging using silicon piezoresistive sensors," *SRC TECHCON Digest*, pp. 413-416, October 1990.

D. A. Bittle, J. C. Suhling, R. E. Beaty, R. C. Jaeger and R. W. Johnson, "Piezoresistive stress sensors for structural analysis of electronic packages," *Journal of Electronic Packaging*, pp. 203-215, September 1991.

J. C. Suhling, R. E. Beaty, R. C. Jaeger and R. W. Johnson, "Piezoresistive sensors for measurement of thermally-induced stresses in microelectronics," *Proceedings of the 1991 Spring Conference of the Society for Experimental Mechanics*, pp. 683-694, Milwaukee, WI, June 10-13, 1991.

R. E. Beaty, R. C. Jaeger, J. C. Suhling, R. W. Johnson, and R. D. Butler, "Piezoresistive coefficient variation in silicon stress sensors using a four-point bending test fixture," *IEEE Trans. Components, Hybrids and Manufacturing Technology*, vol. 15, no. 5, pp. 904-914, October 1992.

D. M. Richey, R. E. Beaty and R. C. Jaeger, "Observations on low temperature NPN bipolar transistor simulations using BILOW," *Proceedings of the 1991 ECS Symposium on Low Temperature Electronic Device Operation*, pp. 75-81.

R. D. Butler and R. E. Beaty, "MOS fabrication process integrating self-aligned polysilicon gate and post-processed metal gate devices on a single die," *Proceedings of the 1991 University/Government/ Industry Microelectronics Symposium*, pp. 199-203, 1991.

Other
Three children: Joanna, Marie and Adam.

Activities
Dad, and Homeowner