

# PATRICK (BRADFORD) BARNES

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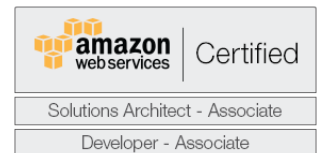
## STRENGTHS

- 20+ years of wide-ranging Web-based client-side and server-side development experience, with an excellent reputation for on-time delivery, reliability, code quality and attention to detail.
- Extremely resourceful, quick learner who thinks outside of the box and who is always seeking out the “best practices” approach.
- Excellent communication skills: published author of books and technical papers; often called upon to write tutorials and design specifications.
- Well-rounded and versatile: strong client-side and server-side skills in a wide variety of languages and technologies.

## EXPERTISE

### *Proficiency in the following:*

- NodeJS server development leveraging other technologies such as AWS Lambda, Kafka, Redis and RabbitMQ
- Amazon Web Services (AWS):
  - Certified Solutions Architect (Associate)
  - Certified Developer (Associate)
  - Solid experience developing and managing high availability clustered AWS environments that receive and process large amounts of data
  - Experience developing solutions that leverage AWS IoT, Lambda, DynamoDB, S3, EC2 and many other services
- Full-stack JavaScript, including NodeJS, AngularJS, some ReactJS and jQuery
- Data visualization / reporting using libraries such as D3.js, DC.js, Crossfilter and Google Flot, as well as Apache Zeppelin
- PostgreSQL, MongoDB, MySQL, MS SQL Server
- SQL Server Integration Services (SSIS), dimensional (star schema) modeling
- ETL operations using Pentaho Kettle
- Object-oriented programming using Visual C# and ASP.NET
- SOAP and JSON REST services
- Ruby, Ruby on Rails 3.x and 4.x
- DevOps
  - Experience building infrastructure with Chef
  - Certified Puppet Professional
- Healthcare Integration
  - Mirth Connect (setup, channel programming, integration)
  - HL7 message generation and processing
  - HIPAA-compliant data stores and programming
- Mobile Web / Responsive Design
- CSS3, Twitter Bootstrap, Haml and Sass
- Regular expressions
- SVN and Git



## EXPERIENCE

Sep 2001 – Present

### ***Savvy Integrations, Inc.***

Owner: I incorporated in 2001 as a freelance developer and author of technical training materials, working on a per-job basis for a wide variety of clients (mainly Microsoft in the initial years). Those earlier accomplishments are listed, below.

Apr 2017 – Present

### **FX Global, Inc.**

FXGI is a subsidiary of Fujifilm Holdings Corporation that provides cutting edge IoT solutions using a serverless architecture that leverages AWS IoT, Lambda (NodeJS), DynamoDB and other AWS services. Front end is AngularJS. Robust centralized logging mechanism using LogEntries.com. Currently very secretive work so I can't speak to specific accomplishments, but my roles encompass the

entire stack.

Mar 2014 – Mar 2017 **Conversa Health**

I was a senior engineer at this innovative healthcare startup, responsible for developing clinic- and patient-facing Web interfaces, as well as healthcare data integrations that adhere to HIPAA requirements. Major accomplishments include:

- Implemented an OAuth 2.0 solution for retrieving and storing patient health data from the Open Epic FHIR API. This involved numerous JSON-based FHIR Resources, which were then parsed and stored in a clinical data repository (CDR). End user feedback during the retrieval process was engineered using an AJAX polling mechanism to obtain percent complete status every second and render the progress visually using an Apple Watch-style SVG gauge.
- Built a custom mechanism to send Rails application data gathered for patients taking a Conversa Health “Digital Checkup” as an HL7 2.x MDM (and where appropriate, ORU) message(s) to partner clinics via SFTP for incorporation into their EHR systems.
- Set up Mirth Connect servers on AWS, with channels for processing incoming CCDAs messages and sending via HTTPS the PHI-expunged JSON results to a Mirth endpoint for storage in a custom clinical data repository (CDR), which I also built.
- Built a mechanism to request patient CCDAs messages via the Kryptiq Partner Chart Access (PCA) module, and then process the CCDAs attachments sent in email responses, POSTing them to a Mirth Connect endpoint. The email processor is a custom Ruby script running as a Windows service.
- Built an automated patient and risk profile import mechanism that monitors customers’ SFTP folders and imports CSV files found therein, adding new patients, updating existing patients, and automatically requesting their CCDAs in the process.
- Integrated the Validic API into a Rails app so that Conversa Health can use patient data from third-party sources (such as Bluetooth-enabled Withings cuffs) in their “Digital Checkup” process. I also built a custom marketplace UI to enable patients to authorize connections between Validic-supported apps and Conversa Health.
- Wrote unit and integration tests for all of the above, as well as numerous admin-facing reports for various parts of the Conversa platform.

Earlier development accomplishments include:

- Built a very feature-rich, Web-based network impairment emulation interface using the ExtJS JavaScript framework.
- Built two high profile custom SharePoint 2007 portals for internal Microsoft groups (one using managed-code Web parts, and the other using only JavaScript and SharePoint Web services)
- Created Web and desktop reference applications for Microsoft internal use and training, including Silverlight sessions for TechNet, one of which involved porting thousands of lines of Silverlight 1.0 JavaScript code to Silverlight 1.1 managed code (Visual C#)

Writing accomplishments include:

- Co-authored a popular book for Microsoft Press (*101 Visual Basic.NET Applications*)
- Wrote dozens of 60- and 90-minute technical presentations for Microsoft (MSDN and TechNet), as well as a series of courses on Web services for Intel Corporation
- Wrote numerous technical articles for various dev-oriented Web sites

Mar 2009 – Sept 2015 **IQzone, Inc.**

IQzone is a mobile application and advertising startup based in Scottsdale, AZ. I was a senior member of their server team, responsible for a high availability, high performance NodeJS Web service running on AWS, a customer-facing portal, an internal admin site and a custom reporting console.

Noteworthy accomplishments at IQzone:

- Helped build a Hadoop cluster on Amazon Web Services (AWS) using the HortonWorks 2.x stack. This cluster leverages Hive, Storm and Kafka to process billions of data entries per month for IQzone’s backend “Big Data” reporting system.

- Converted a legacy, in-house .NET ASMX Web Service to a cloud-based NodeJS API running on AWS. This API leverages RabbitMQ and Redis clusters (also on AWS) in order to provide a high performance, high availability endpoint capable of handling 100K requests per minute from mobile clients all over the world that are deployed with the IQzone Postitial Mobile Advertising SDK.
- Implemented and currently support a wide variety of AWS-related features for the IQzone platform, such as EC2 clusters, ELBs, IAM assets, security groups, S3 buckets (some of which are served by CloudFront), Route 53 zones and records, CloudWatch monitoring, etc.
- Used Pentaho's Kettle Extract, Transform and Load (ETL) tool to migrate a complex SQL Server database to a PostgreSQL database. I then built a Ruby on Rails JSON API that serves this data to a ReactJS single-page application (SPA).
- Used D3.js to build an interactive metrics console containing a wide variety of charts, including stacked bars with multi-line series overlay, numerous dynamic pie charts, and more. The charts are displayed in a tabbed UI, and most tabs have a "brush" component that connects the bar/series charts with their corresponding pie charts in order to provide synchronized focus + context zooming by date ranges.
- Used Square's Crossfilter, DataTables and Bootstrap to replace a cumbersome Excel-based reporting system with a set of Web-based reports that are critical for business analysis. These reports do client-side processing of many megabytes of raw JSON data in a performant manner, allowing for a very responsive analytics UX.
- Helped develop a robust SOAP-based API for one of their earlier products, PicDial, and their current Postitial Mobile Advertising technology.
- Helped build, extend and maintain three large ASP.NET sites: PicDial.com, an Admin portal with dozens of complex technical support and test pages, and a customer-facing portal for mobile advertisers (all MVC 4.0). The latter two include a custom reporting UI that leverages Flot for data visualization. These make extensive use of jQuery, AJAX, and to a lesser degree, AngularJS and Backbone.
- Spearheaded successful integration of Memcached using the C# Enyim library. This, in combination with scheduled job queuing, greatly decreased our server loads for our mobile advertising service.
- Was initially hired to finish building a Silverlight application they wanted to use for their mobile application, PicDial. They had already spent \$25,000 and were willing to put in another \$25,000 to finish it. After analyzing the code and their business requirements, I suggested they opt for a jQuery-based solution instead. I impressed them with a working prototype in three days, and they agreed. I then built a more robust version, and this is still being used on PicDial.com/my to manage mobile phone contacts and to match Facebook and MySpace friends with one's contacts.
- Built and maintain their corporate WordPress site at IQzone.com.

Sep 2000 – Jan 2002

***Geonetric Technologies, LLC***

- Lead Developer: Built a variety of e-commerce Web applications. Most noteworthy was role as Architect and Development Lead on a large (\$150,000) Web application for the Genesis Health System (GenesisHealth.com). Lobbied for the use of ASP.NET, which was then still in Public Beta. This turned out to be a huge success, enabling Geonetric to add more extensive functionality than possible with ASP, all within their original timeline. Key features included a robust Content Management System with role-based security and a health content integration system using the FullText Search feature of SQL Server.

Nov 96 – May 99

***Microsoft (Consumer Division), Simulation Games Product Unit***

- User Interface and Game Designer: Designed and documented all user interface screens for Microsoft's first entry into the modern air combat genre of computer simulation games. Later tasked with designing the military campaign and mission engine, and its complex user interface, for *Combat Flight Simulator 2.0*. Used Visual Basic extensively to provide screen mockups and working prototypes. Very few design changes were made prior to code complete, attesting to the quality and thoroughness of the written design specification.

May 96 – Oct 96

- Software Test Engineer: Tested lessons, adventures, scenery, and the user interface for *Flight Simulator for Windows 95*. Was quickly recognized as highly productive, with a strong attention to detail. Joined team late, but ended up finding the second highest number of bugs out of all seven software test engineers.
- Product Planning (Marketing) Consultant: Prepared numerous reports for the Simulation Games

Product Planning unit, consisting of information from game reviews, Internet email forums and newsgroups, and personal comments based on extensive experience with simulation games. These reports led directly to the establishment of a significantly revised marketing strategy.

- Intranet Site Designer: Created an Intranet knowledge base for the Simulation Games Group containing detailed information about all competitor air combat simulation products.
- Software Designer: Designed and documented numerous core and user interface features for an air combat simulation game. (This game, however, was eventually cancelled.)

July 95 – Apr 96

Dec 91 – Mar 94

***United States Navy, Strike Fighter Squadron 106***

- Combat Plans Staff Representative: Selected for highly visible and demanding assignment at the Joint Task Force Southwest Asia Headquarters in Riyadh, Saudi Arabia. Directly involved in the development of Top Secret combat plans employing over 180 military air assets. Routinely briefed U.S. and British senior officials on the content and status of those battle plans. Served concurrently as the Operations Administration Officer for a 7-person detachment.
- Operations Schedules Facilitator: Coordinated the activities of 40 aircraft, 6 simulators, and 120 pilots on a daily basis. Helped facilitate the implementation of an automated scheduling system, which increased overall readiness and reduced support man-hours by 50 percent.
- Weapon Systems Instructor: Taught courses in complex weapon systems. Researched and wrote much of the material for these courses.
- Military instructor pilot: FA-18 Hornet.

May 89 – Nov 91

***United States Navy, Strike Fighter Squadron 87***

- Aircraft Maintenance Division Manager: Managed a 30-man aircraft maintenance division. Personal leadership and foresight directly responsible for a marked improvement in division morale and four of five division branches receiving top scores during annual air wing inspection.
- Squadron Weapons Systems Trainer: Handpicked during Operation Desert Storm for the most prestigious and demanding junior officer assignment in the squadron. Praised by the Commanding Officer as possessing the most comprehensive FA-18 weapons system knowledge of any pilot in the squadron. Recognized expert in the tactical employment of the FA-18. Received Navy Achievement Medal.
- Operational, aircraft carrier-based, fleet pilot: Selected as combat section leader. Flew 36 successful combat missions in support of Operation Desert Storm. Awarded two Air Medals and two Navy Commendation medals for performance during various combat missions.

**EDUCATION**

Jul 82 – May 86

***United States Naval Academy, Annapolis, MD***

- Bachelor of Science degree: Aerospace Engineering, with distinction (Top 10 percent of class both academically and professionally).