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SUMMARY

Software designer and a dynamic technical team lead, still hands-on after 30 years.

A founder of several companies, I excel in environments where intelligence, initiative and creativity are valued. I believe that all successful software projects require effective customer-developer communication and rigorous testing.

An expert in relational database design, implementation, and administration and object-oriented software design, I have spent most of my career in the financial trading and services sector.

I have specialized knowledge in the design of both physical and technical/financial trading platforms and have authored several innovative platforms. I also have extensive experience with message-based, service-oriented, loosely coupled architectures.

PROFESSIONAL EXPERIENCE

RevZilla — Philadelphia, PA

Technological Engineer -- June 2012 to Present

Founded in 2009, RevZilla is already one of the world's largest Motorsports-related online retailers. Still growing rapidly, we recently launched Upshift, an independent importer and distributor of high quality motorcycle apparel, accessories and parts. The Greater Philadelphia Alliance for Capital and Technology named RevZilla "IT Innovator of the Year" in May 2014.

As the senior developer on our comprehensive eCommerce platform, my primary responsibilities include database design and optimization, integration with external vendors, logistics support and warehouse management systems. I also define best practices for coding and testing and mentor our junior developers.

Principal software technologies used include Ruby, Rails, PostgreSQL, Javascript, SOLR, Redis, and Memcache. Our environment is 100% Cloud based on Linux servers. We use ansible for automated deployment and configuration.

Comcast — West Chester, PA

Senior Manager -- August 2009 to June 2012

Led the Application Management Tools Team, part of Comcast's Infrastructure & Operations Department. The team was responsible for application configuration, monitoring, and performance tuning for many of Comcast's largest enterprise software platforms. Managed the CA Wily Introscope platform, the HP BSM Suite, and Tealeaf as well as an internally developed Configuration Management Database (CMDB), iTRC, described below. We were also platform owners for several application lifecycle-related platforms: Atlassian Confluence, Bamboo, and JIRA as well as our Enterprise Version Control system consisting of subversion and git.

I was initially hired as the software development lead on iTRC. This important, strategic, and heavily-used application was developed over many years in an ad-hoc manner by network engineers (non-developers) using PHP. Becoming a victim of its own success, it eventually became obvious that it could no longer be

adequately supported or new features added. I was hired to move this application to a sustainable platform and architecture and chose Ruby on Rails. This was accomplished with no loss of existing functionality while simultaneously delivering new functionality. I presented a well-received talk at Agile Tour 2010, Philadelphia, describing my strategies for this project.

The Team was transitioned to sustainable Agile software development practices, using Test-Driven Design, Continuous Integration (Bamboo), and Frequent Releases (every 2 weeks). All software is developed with an open source software stack using Linux, Apache and MySQL.

Argo Navis Trading, LLC West Chester, PA

CTO -- September 2008 to June 2009

Argo Navis was the General Partner of Argo Navis Fundamental Power, LLP, an electricity-trading partnership. We traded virtual electricity contracts in PJM, MISO, and NE-ISO.

I had ultimate responsibility for all Argo Navis software and hardware systems including generating monthly fund performance estimates and installation, development and administration of a Sharepoint Portal for team collaboration. I also administered all desktops, laptops, e-mail, file, backup, firewall, and http servers. The servers were a mix of Ubuntu Linux and Windows 2008 Server. The desktop and laptops were a mix of Windows XP and Vista.

The primary sottware development project was an integrated data acquisition, research (back-testing, blind-testing) and trading system using Ruby on Rails, “R” statistical software, and a PostgreSQL database. The power trading business is very data intensive and the database has several tables with many hundreds of millions of rows. This required careful query indexing, query optimization, index statistic optimization and Rails view design.

All software development was developed in close interaction with the customers (primarily traders) and strictly adhered to test-driven agile development principles. The unit and functional tests covered over 99% and 94% of all source code lines, respectively.

HedgeServ, LLC Manhattan, NY

Director, Integration Team -- *December 2005 to September 2008*

HedgeServ provides an integrated front-to-back office solution that leverages a single platform to dramatically reduce duplication while improving quality, speed, and accuracy. I was an early employee of this start-up Hedge Fund Administrator.

Led a nine-person team responsible for integrating all HedgeServ supported custom applications and operational processes. These include Python applications, Sungard Front ARENA, and communication with external parties such as Prime Brokers, OASIS, CTM, Markit, etc. all linked together via a J2EE-based Enterprise Service Bus (ESB). The team was managed in a fully XP process and, in addition to my management responsibilities, I participated as a full development pair.

Originally, the system was built on top of the Sonic ESB and SonicMQ, but after encountering performance and scalability problems as well as for financial reasons, it was re-written using the open-source Java Apache ServiceMix (ESB) and ActiveMQ (Message Broker) projects. Also helped create an innovative ESB performance testing environment using the Grinder (Jython-based) open source software package.

The desktop client for our application had a very unique architecture with a .NET (C#) UI connected to Python controllers and models using Python.NET. It was developed using test-driven design principles and had

extensive unit tests. I implemented continuous integration initially using cruisecontrol and X11 controllers to remotely control red and green lamps for build failure notification.

Co-creator (with Laurent Ploix of Sungard) of Asgård, an innovative Python open source framework that allows Customers to write software Acceptance Tests using Microsoft Excel. The tests exercise the system under test through fixtures written in Python.

Was a key contributor to the Data Architecture team and designed many relational database schemas. The databases supported were Microsoft SQL Server, Sybase, PostgreSQL, and MySQL.

Brandywine Asset Management, Thornton, PA

Platform Author – *November 2003 to November 2005*

Had overall responsibility for all computer systems and software for this small hedge fund. We built up the fund's assets under management from $10 mm to $40 mm over the first two years.

The primary software deliverable was an integrated research, trading, and operational platform that provided for fundamental and technical analysis of trading strategies (backtesting) as well as real-time execution of the strategies once tested and accepted. All software development was customer-driven via agile processes and strictly adhered to test-driven development principles.

Customers accessed the system though a Java Swing application developed using eclipse and delivered to the desktop via Java Web Start. It was highly graphical and included sophisticated financial charting. The system also featured a web-based administrative interface developed using Ruby on Rails and was integrated with Bloomberg via their C API. Integration with brokers and external data sources using Ruby scripts. I designed and led the team implementing the entire system including the RDBMS schema.

I was also the primary administrator for all SQL, e-mail, file, backup, firewall, and web servers. These servers were initially a mix of Windows 2000 and NT which I moved to FreeBSD. The databases were Microsoft SQL Server and then migrated to PostgreSQL.

Eclipsys Corporation Malvern, PA

Software Development Director -- *March 2003 to November 2003*

Led a 28-person team developing the Orders, Clinical Decision Support (CDS), Patient Management and HL-7 Interface systems for the SunriseXA Clinical Healthcare Solution.

As Director, I had responsibility for personnel management, project estimation and schedules, as well as overall technical direction. I was the first Director to introduce test-driven development to my team using NUnit and introduce some XP techniques to Eclipsys.

Implementation was on the .NET platform, using ASP.NET (VB.NET), and SQL Server.

Exelon Power Team, Kennett Square, PA

Founder -- *October 1994 to March 2003*

Power Team was created as an entrepreneurial "business within a business" in 1994 with fewer than 20 employees. As a founding member and the 1st IT employee, conceived, designed, and built innovative, business-centric software systems that helped Power Team's Net Operational Profit increase 940% in first 5 years.

I was the lead DBA and data architect/ designer for all trading platform database schemas. Due to the hourly nature of power trading, our databases held tables containing billions of rows of data and needed to perform adequately for 24x7 real-time trading.

Conceived, designed, and directed the creation of a highly visual, Physical Power Trading System. The system featured point-and-click power trading and scheduling. It greatly increased their trade execution speed and efficiency. The system featured a C++ (MFC) front-end, C++ (ATL) COM+ business objects, and a Microsoft SQL Server data tier. Was a hands-on developer on the middle-tier and back-end of this system. The completed system had a feature article written about it in Computerworld and was also highlighted in the 2001 Exelon Annual Report.

Led the integration of all of Power Team's major applications using the TIBCO middle-ware platform. Analyzed integration needs, designed messaging architectures, designed database schemas, and prepared detailed documentation using UML. Coded custom TIBCO Integration Manager (IM) plug-ins using Java, specified and created IM processes, and defined and implemented Web Services interfaces to IM using WSDL and XML Schema.

Created a prototype for the transition plan from our COM-based enterprise architecture to the Microsoft .NET Framework. The prototype created web-based user interfaces using ASP.NET (C#), a middle-tier of business objects written in Managed Extensions for C++ (VC 7.0) accessed via web services using SOAP and XML. The data-tier was Microsoft SQL Server 2000. The generator outage scheduler (Gen Manager) portion of this prototype was considered so superior to the existing system that it was put into production immediately.

Designed and built a 3-tier financial trading package for energy derivatives. It featured a DHTML front-end, COM/MTS business objects, and an MS-SQL Server data-tier. This application performs trade capture, analysis and reporting. Integration with 3rd-party financial software (FEA) to perform Book valuation and Mark-to-Market was accomplished by wrapping C DLLs with COM Components.

Was the Technical Lead for many 3-5-person projects, including a "Position Viewer". This application allowed traders to view their physical and financial energy trading position across the entire United States for any time period. By creating an innovative self-updating graph of nodes bound to the underlying relational data, we were able to allow the traders to dynamically re-order and re-create their position views as desired.

Conceived and designed a custom-built Enterprise Application Integration architecture ("Metacenter") to achieve rules-based, bi-directional integration between in-house and third party applications. This system was primarily implemented in Smalltalk and perl.

PECO Energy Philadelphia, PA

Senior Engineer/Programmer -- *September 1991 to October 1994*

Designed, built, and maintained PECO's production cost model. The program was a utility system simulator that used complex mathematics (Lagrangian relaxation) to solve the power system unit commitment problem by predicting future power system prices and fuel cost expenditures. The program was written in FORTRAN on an IBM Mainframe (MVS/TSO).

PJM Interconnection Valley Forge, PA

Engineer -- *June 1987 to September 1991*

Performed Unit Commitment Optimization Analysis and wrote computer programs to assist the operation of the power grid. Programs were written in PL/1 and FORTRAN on IBM Mainframes (VM/CMS).
Performed Power System Analysis. This included extensive statistical analysis and reporting using SAS, primarily for Power System demand forecasting.

OTHER EXPERIENCE

Technical Book Reviewer for Addison-Wesley:

- *"Design Patterns in Java" by Metsker and Wake*
- *"Essential ASP.NET" by Fritz Onion*
- *"VB.NET" by Matt Crouch*
- *Applied .NET" by Ronan Sorensen, et. al.*

Open Source Projects created:

- *VCUnit, MS Visual Studio 6 C++ Unit Testing Framework.*
  (Available at the Yahoo! Test-driven Development Group)

Open Source Projects contributed to:

- *Apache ServiceMix and ActiveMQ*
- *Generic Lightweight Object-Relational Protocol (GLORP) Smalltalk ORM project*
- *Instiki, a Ruby on Rails based wiki.*
- *SPUnit, MS SQL Server stored procedure unit testing framework.*

Conference Speaker

- "Don't Replace That Old Application, Re-upholster It!"
  Agile Tour Philadelphia, October 2010

- *Keynote: Demonstration of Test Driven Development*
  Pennsylvania Software Engineering Conference, 2006

EDUCATION

Masters of Engineering, Computer Design, Penn State University
Graduated Magna Cum Laude (3.9 / 4.0 GPA)

B.S., Electrical Engineering, Duke University

TECHNICAL SKILL SUMMARY (in descending order of skill/experience)

Languages

- Ruby
- JavaScript, HTML, DHTML
- Python
- Java
- Smalltalk
- Erlang / Elixir
- R, SAS, SPSS (I am very strong in Statistics)
- perl
- C#
- PHP
- C++ (Windows) - ATL, COM+, MFC; C (Unix)
- ASP, and ASP.NET (C#)
- Visual Basic (v3-6), Delphi (v2-4)
- Assembler (6502/8086-P6), FORTRAN, PL/1

RDBMS

- PostgreSQL
- Microsoft SQL Server [4.2, 6, 6.5, 7, 2000, 2005] (+Transact-SQL)
- MySQL
- Sybase
- Oracle

OS

- Macintosh OS X
- Linux (Ubuntu)
- FreeBSD
- Windows
- Sun Solaris
- HP-UX, MVS/TSO, VM/CMS

Platforms / Servers

- Nginx
- Redis
- memcache
- SOLR
- Apache HTTP Server
- Apache ServiceMix and ActiveMQ
- TIBCO [Rendezvous, Integration Manager, Designer, Adapter SDK]
- Sonic ESB
- Microsoft .NET - ASP.NET and ADO.NET
- Microsoft DNA - COM, COM+, COM, and MTS