

**BRIAN G. PETERSON**

**773-459-4973**

**brian@braverock.com**

## **SUMMARY**

~~Currently seeking a position as a hedge fund or quantitative analyst in the alternative investment (hedge fund) industry.~~ Seeking to focus on fund analytics while utilizing my deep industry, process, and technical experience to increase productivity for myself and my team. Senior technical architect, quantitative financial analyst, and project delivery leader with broad-based consulting and line management expertise. Over fifteen years experience in design, construction, and integration of technically innovative systems in multiple industries including insurance, mortgage, health care, automotive, manufacturing, investment banking, brokerage, and alternative investments.

## **APPLICABLE SKILLS**

**Heuristic Fund Screening:** Investments in a portfolio of alternatives involve both heuristic and quantitative components. We assisted one of our large institutional clients in standardizing the heuristic process for screening managers, helping to set guidelines for describing what traits in a manager should be considered beyond direct performance analysis. Our client presented our process to the investment committee for approval, and subsequently hired a new analyst on his staff to be responsible for day to day implementation of the process.

**Quantitative Investment Screening:** Hedge fund returns for most styles and funds are not normally distributed, so statistical methods that rely on or assume a normal distribution are very fragile for analyzing hedge funds. I developed **R** statistical analytics functionality that match the latest econometric research in analyzing hedge funds and other asset classes for risk, autocorrelation (identifying problems of illiquid or manually marked books), persistence of returns, style analysis and style drift, factor modeling, and other areas.

**Portfolio Construction:** Choosing the size of an investment is a complementary process to choosing the instrument to invest in. I participated in creation and refinement of the portfolio construction methodology for the Explorer Global Macro Fund. I've developed hedge fund style selection optimizers for a fund of funds or institutional setting, as well as a utility function based optimizer for asset allocation (fund weighting) within a single or multi-style portfolio of hedge funds. I have evaluated or used multiple different optimizer methodologies to make sure that the correct optimization method is used for portfolio construction based on nature of the specific portfolio.

**Dynamic Hedging:** Both for Explorer and for one of our institutional clients, we developed quantitative models to calculate the correct hedging instrument for portions of the portfolio based on the correlations of the combined portfolio to several highly liquid derivatives. This capability gives a portfolio manager both the ability to "buy insurance" when there is a good return stream to protect, and to react to sudden changes in the markets without having to unwind a large number of positions that you might still be confident of over a longer time frame.

**Quantitative Modeling:** Developed and productionized quantitative models for long-cycle macro events. Economic cycles move in slow motion, subject to shocks and events, so the quantitative models for predicting these cycles and taking advantage of them are very different from the classic factor model, mean reversion, and arbitrage strategies for shorter cycle trading. This generally fits into the academic research in "dynamic or alternative beta". I have also tested and developed a number of more traditional "alpha" trading models, and can apply this knowledge to analysis, risk measurement/control, hedging, or replication of the returns of an existing manager or style.

**Portfolio Management and Trade Processing:** We developed and licensed to our clients a middle and back office portfolio management and trade processing system that handled 300,000-500,000 trades per month across more than 12 prime/clearing brokers and 50+ prime broker accounts. The system handled trade reconciliation, trading P&L, multi-currency, and multiple instrument classes.

**Process Discovery, Analysis, Automation:** Productivity growth often hinges upon the ability of an organization to discover, analyze, refine, and automate business processes that were once ad-hoc and manual. I have deep experience in process discovery and analysis from my years as a management consultant, and have applied these skills for the last four years in the hedge fund industry.

**Technology Expert:** I have deep technical implementation expertise across most modern computational technologies. Once processes have been identified as candidates for automation, an implementation path must be chosen that is both efficient and economical. I can manage and add value to the entire technology project lifecycle.

## METHODS and TECHNOLOGIES

*Analytical Methods:* non-normal distribution analysis, Risk-adjusted return analysis, VaR (*see Risk below*), correlation analysis, Sharpe, Sortino, Omega, Hurst, Herfindahl, Ljung-Box, Bera Jarque, multiple pricing models (*see Pricing*), multiple regression methods (*see Regression*), multiple optimization methods (*see Optimization*)

*Risk:* drawdown analysis, semivariance, downside deviation, parametric mean-VaR, simulated scenario mean-VaR, Monte Carlo mean-VaR, Basel II VaR/capital metrics, Cornish-Fisher VaR, multivariate four moment VaR, Expected Shortfall (CVaR), Beyond VaR, Incremental, Component, and Marginal VaR, shock/slide scenario analysis

*Optimization:* Markowitz (mean variance), brute force, linear programming, resampling, heuristic rules, simulated annealing, threshold accepting, and utility based optimizer methodologies

*Pricing:* factor analysis, PCA, quadratic, cubic, Market Model, technical indicators (ranges, momentum, volatility, volume), Monte Carlo simulations, Bayes, Robust, ARIMA, GARCH, term structure(bonds), 2-4 moment CAPM, *Regression*

*Regression:* univariate and multivariate linear, least squares, nonlinear, quantile regression; vector autoregression

*Modeling:* technical indicators, arbitrage, mean-reversion, long-cycle macro models, industry/style portfolios

*Analytical Tools:* R/S/S-PLUS, Rmetrics, SPSS, Mathematica, Maple, MatLab, MathCAD, Octave, Quantian

## TECHNOLOGY SUMMARY

*Analytical Tools:* R/S/S-PLUS, Rmetrics, SPSS, SAS, Mathematica, Maple, MatLab, MathCAD, Octave

*Internet Technologies:* TCP/IP, Web Servers (IIS, Apache, WebLogic, WebSphere, Tomcat, Netscape, Sun One, BroadVision), Firewalls (see security), NTP, NNTP, SMTP (sendmail, Postfix, Exchange), IMAP, LDAP, CGI, ASP, JSP, PHP, Java (see Java), DNS (named/bind)

*Java:* J2EE, JMS, XML Parsers (Xerces and Xalan), Struts, Tomcat, Ant, Cocoon, Log4J, JUnit, JavaDoc

*CRM:* XRMS, SugarCRM, Siebel, Clarify, Vantive, Peoplesoft, SAP CRM, J.D. Edwards, and custom built CRM solutions

*Security:* Firewalls (packet filtering and proxying, ipchains, iptables, Cisco ACL, SonicWall, SunFire, many others), VPN, Secure Tunnels, SSL, SSH (SSH communications, DataFellows, OpenSSH), portsentry/trisentry, log file analysis, tripwire, cryptography (multiple algorithms, software packages, and protocols)

*Middleware:* MQ/MSMQ/Sonic MQ, JMS, EDI, Web Services, Vitria, Webmethods, SeeBeyond, TIBCO

*Telephony and LAN/WAN:* Broad experience with call center and enterprise telephony and network design and implementation, including data center design, CTI, Voice Over IP (H.323, SIP, etc.), ACD, IVR/VRU, speech recognition, network provisioning and redundancy.

*Unix:* system administrator for over 10 years: Solaris/SunOS, AIX, HP/UX, Linux (Red Hat, Mandrake, Debian, OS/390), BSD/OpenBSD/BSDi

*Operating Systems(Other):* Windows 98/NT/2000/XP Workstations and Servers, OS/400, OS/390, Cray

*Programming Languages:* Java, C++, C, Fortran, Ada, PHP, Python, Perl, Pascal, SQL, HTML, VRML, SGML, TeX

*Databases:* Oracle, DB2, Access, PostgreSQL, MySQL

*Methodologies:* Object Oriented, Patterns, Extreme/Rapid Prototyping, Functional Decomposition, RUP/UML, Use Case, SEI Software Capability and Maturity Model (CMM), JAD, Six Sigma

## REPRESENTATIVE PROJECTS

**\$35B mutual fund company:** Led the team to replace an obsolete CRM system with a customized open source solution for use by ~350 employees worldwide. Integrated the new system with existing internal systems for customer fund accounts, direct marketing of sales literature, VoIP phone system, and custom performance attribution.

Led the team in requirements gathering, system design, and delivery of real time bid/ask exchange platform for the trading of near-commodity **sports ticket futures** using an enterprise scale J2EE/JMS/XML platform. Interviewed and hired technical delivery team. Negotiated with major sports organizations on business development and technology issues. Led business process design and business strategy teams.

**Financial services arm of a major automobile manufacturer:** Led the team to update the architecture to a modern **J2EE portal** using **XML** to aggregate and present data from over 30 different business units and over 20 outside business partners. The system utilizes a **Siebel CRM** back end to track employees, suppliers, and their family members, and presents information and discounts based on the relationship that the individual has to the organization. This multi-channel portal extends the original work referenced below and provides B2C and B2B portal functionality for a broad-based loyalty incentive and benefits program.

**Major brokerage firm:** Provided the technical architecture and QA to integrate call center systems with a new enterprise-wide **XML web services** middleware that we developed to link peripheral systems and business units (like the call center) to back-end customer account and trading platforms. The system utilizes **J2EE**, **JMS**, **ERMS**, a browser self-service interface for customers, and integrates to a browser based **J2EE** call center agent desktop.

**Major mortgage bank:** Led the team in design of a multi-channel customer service architecture that utilizes **Internet**, **email**, and **IVR** customer service for the mortgage servicing division. This architecture is being implemented in a multi-year initiative to update processes and technology from homegrown terminal based applications to consistent **Siebel CRM** processes, and multi-channel customer service.

**Financial services arm of a major automobile manufacturer:** Provided technical architecture and project management services for a strategy and implementation project to create a branded employee loyalty and benefits program for the company's five million plus employee and family base. The architecture included **Genesys CTI**, **Siebel CRM**, **Siebel ERMS**, and web collaboration as well as content management and personalization for the internet/intranet web site. The contact center utilizes a "hub and spoke" paradigm to distribute work to experts in over ten internal employee benefit departments.

**Major student loan guarantor and servicer:** Served as chief technical architect in a number of large projects. The **ERMS** project integrated **eGain ERMS** into a production **eLoyalty Cockpit** agent desktop application (**VB/browser client**, **J2EE server**) and utilized by over 500 contact center agents at three contact centers. For the enterprise strategy project, my role involved working with senior IT and business executives to develop a technical architecture that would help to focus the entire business on customer service and loyalty. The enterprise architecture involved leveraging existing state-of-the-art technology components across the enterprise to gain a single view of the customer relationship across all channels and business units. The solution integrated components from **Vignette**, **eGain**, **Cisco**, **ePiphany**, **WebLogic**, **IBM MQ**, **eLoyalty**, and others

One of the largest **chemical manufacturers:** Technical architect for several projects to update the architecture of their global customer service call centers, to utilize **Six Sigma** methods to re-engineer their customer service processes, and to develop "dashboards" to track customer satisfaction and customer loyalty with distributors, industry customers, and consumers globally. The systems and processes developed are now used globally by over 2000 contact center agents, and provide the company with a view of the true cost of sales and customer retention.

Largest **mutual fund research** company: Provided QA, architecture, and project management on an enterprise technology strategy project focused on **eCRM** multi-channel contact management. The architecture assessment also included assisting the client in implementing **eGain ERMS**, as well as an integration strategy for integrating **ePiphany**, **Vignette**, and **EBPP** systems into the architecture.

One of the world's largest **manufacturers:** Developed the **CRM strategy and roadmap** for the **Aircraft Engine** Division. This **Six Sigma** project involved working closely with the direct reports to the CEO of the division and their key line managers to build consensus and present a strategy to the division CEO and top corporate management.

Major **financial institution**: Provided technical architecture and project management expertise on a project to create an Internet mortgage servicing and origination system. The application involved building an integrated **Customer Interaction Center** for 200 agents that implemented an eLoyalty **agent desktop** to blend **eGain ERMS, Lucent** phone, and web collaboration contacts with customers, mortgage lenders, and various property service vendors to create a highly efficient loan processing system. The system also involved implementation and integration of a **J2EE BroadVision** web application portal to the agent desktop and ERMS systems.

Top-tier **Property and casualty insurance** company: Served as technical architect and project manager to implement an Internet interface for quoting auto insurance. The project, once in production, was the first system to offer real-time interactive auto insurance quotes over the Internet, debuting in television ads in the 1997 Superbowl.

Major **regional bank**: Provided technical architecture, project management, and systems administration expertise in developing an Internet site that included marketing information, account inquiry functionality, and personal financial management transactions. My role included architecture for the front-end interfaces, connectivity to back end host systems through object oriented **CGI** applications, and **IBM MQ series** message based middleware. This application was the **first online banking application** on the Internet, was used by over a thousand customers in the first month, and had over 300,000 regular customers per month until it was replaced by a newer system in 2001.

### OTHER EXPERIENCE

Project leader, technical architect, and lead coder for one of the top open source CRM projects. XRMS CRM is used by thousands of companies worldwide with deployments of up to several hundred users. XRMS is routinely in the top projects on Sourceforge, the largest repository and tracking service for open source applications. Feature-competitive with mid and top-tier CRM applications from SugarCRM, Oracle, Onyx, Siebel, etc.

Project leader, technical architect, and lead coder for an open source project to add GNU Privacy Guard /OpenPGP encryption capability to one of the world's most widely used browser email clients, Squirrelmail. The system is written in PHP, JavaScript, and HTML, and operates as a plugin to the Squirrelmail system. Member of IETF OpenPGP and SPF Standards Committees.

Participated in the drafting of the VRML standard as a member of the VRML Consortium, where I contributed to the scalable rendering model and adoption of a plain-text geometry description.

National Center for Supercomputing Applications: Provided programming and algorithmic assistance in non-linear systems analysis for the first simulation of the formation of a thunderstorm.

Fermi National Accelerator Laboratory: Held the position of guest researcher on the CDC (Top Quark) project, which involved workgroup orientation and advanced graphics simulation and detector data filtration programming. In addition to scientific duties, I served as an informal liaison between IS and researchers, facilitating communication among the essentially foreign languages of physics and computer science.

## PROFESSIONAL EXPERIENCE

- DiamondManagement Consultants**, Chicago, IL **2007**  
**Thought Leader – Finance**
- Lead strategy and technology projects for global Financial Services clients.
  - Provide industry leadership in quantitative methods and product development for alternative investment.
- Explorer Fund Advisors**, Chicago, IL **2003-2006**  
**Explorer Technology Services**, Chicago, IL  
**Chief Technology Officer, Lead Analyst**
- Developed quantitative investment models, portfolio construction algorithms ,and portfolio optimization
  - Calculate risk and valuation metrics: Automate specific hedge selection for a portfolio or instrument
  - Managed the technology and strategy consulting business and resources for Explorer's institutional clients
- CryptoRights Foundation**, San Francisco, CA **2002-2003**  
**Lead developer – Highfire**
- Lead design and development of a secure cryptographic communications platform for use by human rights workers around the world.
  - CryptoRights is a nonprofit, nongovernmental organization (NGO) dedicated to the protection of human rights workers and the information they collect and communicate for the public good.
- eLoyalty**, Lake Forest, IL **1994-2002**  
**Vice President – Technology** (*started as a Programmer/analyst/Sr. Consultant*)
- Designed and developed large, technically complex systems using a wide range of technologies.
  - Project Lead for teams of up to 30 eLoyalty and 20 client resources with budgets of \$2-20 million/yr.
  - Subject Matter Expert and QA across multiple technology projects, in addition to line delivery and sales.
- PD&C, Inc.**, Madison, WI **1989-1994**  
**Owner**
- Grew the company from a 1-15 employees. Successfully sold the company to my largest client.
  - Designed and developed several applications in the virtual reality and scientific simulation fields.