

# Resume for Charles Ocheret

648 Central Park Avenue, PMB 248

Scarsdale, N.Y. 10583

+1 (914) 722-0245

<[ocheret@panix.com](mailto:ocheret@panix.com)>

## Areas of Qualification

- Technology Management
- Hands-On Implementation
- Independent Technology Assessment
- High Availability
- Web Services/E-Commerce
- High Bandwidth Computing
- Secure Network Interprocess Communications
- Database Internals
- Interactive 3D Computer Graphics – OpenGL, Direct3D, Java3D, RenderMan
- Digital Signal/Image Processing
- Pattern Recognition
- Computer Languages – Java (JDBC, Swing, JAXP, Java2D, Java3D, NIO, EJB, Servlets, Velocity, Ant), C#/.NET, C, C++, Objective-C, Perl, Ruby, PHP, VBA, Tcl/Tk, JavaScript, HTML, CSS, XML, XSLT, Flash MX ActionScript, PostScript, A+, K, Scheme, LISP, FORTRAN, APL2
- Databases – Sybase, MySQL, PostgreSQL, Oracle, MS SQL Server
- Operating Systems – UNIX, Linux, Windows NT/2K/XP, MacOS, VAX/VMS

## Education

- The Johns Hopkins University, Applied Physics Laboratories, Columbia Maryland, M.S. Electrical Engineering, December 1985
- The Johns Hopkins University, Baltimore, Maryland, B.E.S. Biomedical Engineering, January, 1983
- Stuyvesant High School, New York City, June, 1978

## Full Time Experience

September, 2006 – Present

Bear, Stearns, & Co., Inc.

Senior Managing Director – Head of Global Portfolio Trading Technology, Chief Architect for Global Cash Equities

Responsible for the transformation of an 8 year old US-centric, cash equities, and agency-only portfolio trading system to become fully global, multi-asset class, and capable of principal trading. Decommissioned legacy applications for international portfolio trading. Spearheaded the design and implementation of the Sky Frameworks for high bandwidth computing. Designed and managed the implementation of the first Equities real-time Global Position System (GPS) at Bear Stearns using the Sky Frameworks as the starting point of a new global risk decomposition and portfolio optimization platform. Architected the next generation portfolio trading platform to support all agency, principal, and proprietary activities across regions. Focusing on stabilization and enhancement of the current platform in the face of quadrupled volumes over the past year. Rationalized all processes surrounding the central Equities security master, including centralization of all workflows, intelligent exception reporting, and automatic overrides. Chaired the Architectural Review Board to start the process of rationalizing all technology efforts across Equities. Put in place tools to support distributed agile development (e.g. Wiki, Subversion, CruiseControl). Took advantage of the changes required for Reg NMS and MiFID to help usher in a new target architecture for Equities, including a single OMS, strategy platform, internal marketplace, smart order router, crossing engine, market data platform, compliance platform, etc., leading to the decommission of redundant legacy systems. This transformation is nearly complete in the US and is proceeding in other regions. Implemented a proof-of-concept project to produce a black box monitoring tool utilizing GPS clock signals to measure local and global latencies to sub-millisecond accuracy, suitable for real-time monitoring and performance tuning. Participated in numerous technology due diligence efforts on external companies and products to support investment and purchase decisions.

January, 2005 – September, 2006

UBS

Executive Director - Head of Program Trading Development, Head of Single Stock Development, US Cash Equities Architect

Focused on revamping the technology platform for increased performance, capacity, stability, and flexibility. Program Trading support team size reduced from 8 to 1. Completed rewrite of Tetrus, the US Cash Equities real-time risk and position monitoring system in order to increase capacity and throughput, replace legacy technologies, add more flexible and dynamic visualization options, and to allow integration of real-time risk from the Derivatives area. Implemented Typhon, a high performance message aqueduct that receives drop copies of order flow from all US systems allowing distribution of filtered subsets to downstream systems in order to achieve a single reliable source for: position monitoring; risk management; credit limit checking; surveillance systems; execution flow to middle and back office; regulatory reporting. Adopted and started the redesign of large portions of the LOD/Aries market making system acquired from Schwab Capital Markets, which does over 1 million trades per day. Responsible for revamping Program Trading's high performance market links and market data infrastructure to allow expansion to other groups. Spearheaded a cultural change in the developer community to achieve global collaboration between projects, businesses, and divisions, service oriented architecture, test driven development, and design for supportability. Design and implementation of the Spice Frameworks, a set of modules for high bandwidth computing and interoperability between Java, C#, C++, and Perl. SpiceCollections vastly reduces issues of garbage collection in Java and C#. SpiceIO provides a high performance and deterministic threading model as well as multiplexed asynchronous IO. SpiceComms provides low latency/high throughput multi-language, multi-channel, multi-version protocols. SpiceData provides a real-time stream processing framework that facilitates real-time OLAP, reporting and aggregation, and other transforms. The Spice project is being run as an internal "open source" project to promote adoption and growth of the frameworks. Spice has been adopted across Cash Equities, Derivatives, parts of Fixed Income, and most recently Prime Brokerage. Managed Cadre, a common C# GUI framework that forms the basis for new front end applications being produced across Equities, Fixed Income, and now Prime Brokerage. Cadre provides a service and plug-in oriented environment that allows for common dashboards and diverse application interoperability. Worked with other group architects to build a global position management system around the Spice frameworks. Participated in the design of Lingua, a common data definition specification and process to facilitate unambiguous interoperability between systems. Initial implementations on top of JMS and Spice comms complete. Member of Equities Technical Council. Voting member of the US Equities Promotion Committee

August, 2003 – December, 2004

Amaranth Group

Head of Software Development/Head of Statistical Arbitrage Technology

Rescued a failing technology effort at this rapidly growing hedge fund (from \$4 billion under management and 125 employees in Greenwich and Toronto to \$6.5 billion, 260 employees, and offices in London and Hong Kong in less than a year). Over a 4 month period supervised a team of 35 developers and business analysts in the complete replacement of front, middle, and back office infrastructure previously being provided by Paloma Partners. Spearheaded the development of a new security master based around a bitemporal database model allowing full auditability of database changes and the ability to understand the state of the securities universe as of any time in the past or future. Put in place a streamlined development process including quality assurance at all phases (unit testing, integration testing, regression testing, user acceptance testing), source code control, and a formal release process. Evaluated a range of middleware solutions - selected and deployed a hybrid solution of TIBCO Rendezvous, TIBCO EMS, and a custom high performance system capable of delivering 200,000 messages/sec to automated trading systems. Rearchitected a FIX-based automated execution platform to achieve a 700 fold improvement in performance. Personally designed and implemented a primitive based replacement for the Java and C# collections classes that realizes a 50,000 fold improvement in garbage collection performance for large applications. Expanded the group's capabilities from a pure Java and Windows environment by introducing, C#, .NET, C/C++, and Linux and by providing training in the new technologies. Deployed a mix of short term tactical and long term strategic solutions for the business.

**September, 1999 – May, 2003**

**WR Hambrecht + Co.**

**Managing Director**

Head of Market Products group responsible for discovering and taking advantage of opportunities for leveraging technology to differentiate this startup online investment bank. Responsible for all corporate software architecture and development. Redesigned and implemented the core auction engine used for OpenIPO (IPO auction system) to support a spectrum of new auction based systems including OpenBook (corporate bond issuance system), OpenFollowOn (follow-on offering system), OpenBuyBack (stock repurchases), OpenBlock (block transactions), and more. Adapted core auction technology to implement Freddie Mac's auctions for reference note issuance, reopens, and repurchase operations (over \$120 billion has been transacted using this auction system). Rearchitected and implemented auction system servlet based web front end and achieved a 100 fold capacity increase (now supports 20,000 users). The company was awarded the 2002 World Technology Award for Finance by the World Technology Network for our auction technologies. Prototyped a Flash MX auction front end with XML/XSLT servlet back end. Invented and implemented a low-cost, high-performance, and completely deterministic local and wide area transaction replication architecture. Designed and implemented a sophisticated scenario analysis infrastructure and front-end used to analyze complex deals. Architected and started implementation of a highly optimized real-time automated trading infrastructure, including real-time messaging infrastructure, a tickerplant, and a feed handler for the S&P Comstock feed. Performed extensive research and prototyping of call auction and crossing network systems.

**December, 1994 – August, 1999**

**Thinkbank, Inc.**

**Managing Director/Cofounder**

Cofounded this custom software and consulting company specializing in assisting clients with hard unsolved problems. Designed and led the implementation of the OpenIPO web-based auction system for WR Hambrecht + Co in Java using Sun's Java Web Server (servlets), RMI, JDBC, and Sybase. Codesigned and implemented a Java based tickerplant and line reader for Bridge market data and news for Xigo (formerly BrokerBot). Performed assessment of a wide range of new technologies for UniversityVentures, Venture Vortex, Hambrecht and Quist, US Venture Partners, and other venture capital firms in order to guide investment decisions. On retainer with several venture capital firms to perform technical evaluations of business plans, engineering teams, and to provide technical guidance. Designed and built an engine for communicating using FIX (versions 3.0, 4.0, and 4.1) which is being used by several applications including an automated basket trading system. Rearchitected and ported an automated equities execution engine for an executing broker which routinely processes 8% to 12% of the daily NYSE volume. Independently designed and implemented the FAME Relational Gateway (FRG), a Sybase Open Server front end to FAME time series databases including a SQL parser and an optimizing object-relational query engine. Implemented pieces of the automated intelligent scheduling infrastructure for NASA's highly successful Deep Space 1 (DS-1) probe. Worked on the architecture and implementation of SchedKit, an intelligent scheduling toolkit built as part of a phase II NASA SBIR. Participated in the implementation of a high performance and convenient platform for network interprocess communication (versions in C, C++, Java, Perl5). It allows for rapid prototyping and deployment of new protocols, is completely asynchronous, and provides support for encrypted and compressed message oriented streams. Worked on the infrastructure for the next generation of Thinkbank's Bayesian Problem-Solver (BPS) a decision theoretic search and optimization system which many experts feel may breathe new life into the field of Artificial Intelligence. Served on the Program Committee for the "10th Annual Technical Conference on the X Window System." Built an assembler for the Java Virtual Machine (JVM). Developed an array oriented language as an alternative to the Java language. Completed a photorealistic rendering engine (RenderMan compliant) in Java suitable for distributed execution around the web. Worked on a musical composition system based around L-systems and finite automata.

**July, 1991 - December, 1994**

**Moore Capital Management Inc./Investment Management Services Inc.**

**Director of Technology**

Responsible for all technological matters for a 24 hour hedge fund with over \$8 billion under management. Reimplemented a wide area network of Sun SPARCstations using Cisco routers to connect sites around New York City, Connecticut, the Bahamas, London, Ireland, Paris, and Zimbabwe. Inherited software from FD Consulting to collect and distribute market data but replaced all of it with custom software in order to satisfy research staff's ambitious requirements. Designed and coded with 1 other programmer what is believed to be the industry's highest performance tickerplant running on inexpensive equipment. The tickerplant maintains complete time and sales and

retains history for any number of days. Line readers were completed for Reuters MarketFeed 2000, Reuters Select Feed and Select Feed Plus, Telerate Digital Page Feed (TDPF certification from Telerate), Market News Feed, Associated Press, and the Knight-Ridder Digital Data Feed. The tickerplant ties into proprietary Sybase and FAME databases to provide long term interval data storage. A proprietary asynchronous network procedure call system was developed to implement client/server communications. Led team of 10 programmers in design and implementation of custom widgets for trading and research applications under X Windows (X11R5/X11R6) using the Xt Intrinsics. These support: display of Reuters, Telerate and Knight-Ridder pages; display of market quotes (a la CQG or Quotron); charting applications; scrolling news; order entry; and position management. Personally developed an innovative 3D graphics widget which provides real-time access to market data and proprietary studies. Provided research department with a Dyalog APL based environment for running simulations and for rapidly prototyping algorithms for systematic trading. Designed and implemented a proprietary object and array oriented language to replace APL in order to suit our research staff's unique needs. Products have been commercialized to compete with vendors like Tibco, Reuters, Bridge, Market Vision, etc...

**July, 1988 - June, 1991**

**Morgan Stanley & Company, Inc., Analytical Proprietary Trading  
Senior Staff Engineer**

Member of Technology Group responsible for implementation of real-time automated trading and research environments on a large network of Sun, Solbourne, Silicon Graphics and IBM workstations and servers. Provided a graphical user interface framework for application conferencing upon which all new trading applications were being constructed. Independently designed and implemented a fully programmable hierarchical graphics system which runs under Sunview and X11R4. Hardcopy is produced on PostScript and HPGL devices. Graphics system handles full 3-D and real-time and was faster than any commercial product not running on special hardware. Designed and constructed a parser and execution engine for an internal implementation of an APL-like language, now famous as 'A+' and available as an open-source product. This interpreter was the implementation vehicle for all new trader workstation applications. Provided assorted utilities for the interpreter: ability to dynamically load C modules into the interpreter at run-time; C structure access from APL; APL interface to X-Windows, Xt Intrinsics, OSF/Motif widget set; high level graphics interface for researchers and traders; interface to Sybase from APL; formatted output package. Provided special purpose widgets for interacting quickly with very large databases. Optimized and enhanced existing tickerplant software which is the heart of the trading operation. The tickerplants are real-time databases for global market data and for data generated internally by analytics including an expert system.

**December, 1986 - July, 1988**

**Market Vision  
Senior Software Engineer**

Project Manager for the MVLINK system which provides an efficient mechanism for distributing real-time and historical trading data throughout a network. Responsible for the original design. Supervised 5 engineers in the UNIX implementation. Extensively used System V interprocess communications and TCP/IP network communications. MVLINK was implemented and demonstrated on an IBM RT under AIX, and IBM AT under XENIX, a SUN Microsystems 3/160 under SUN OS4.3, and a microVAX GPX11 running ULTRIX 2.0. Software ports in progress included Apollo and HP. Also designed and supervised the enhancement of Market Vision's flagship product, MVCHARTIST a real-time system for color display of commodity trading data. Enhanced system is a device independent window based system which allows multiple users to obtain graphical and tabular displays of trading data and functions of trading data. Display formats are completely specified by the user. System operates on the previously mentioned UNIX platforms using a METHEUS Omega series graphics processor.

**July, 1986 - December, 1986**

**American Data Systems, Inc.  
Director of Engineering**

Designed and implemented a prototype system for automating the pre-press industry. Work was done on a microVAX under VMS in FORTRAN and C and with Gould IP8500 and IP9000 image processing hardware. System facilitates entire pre-press process including: scanning in of photographs; 2D Graphics; 3D texture mapping; digital painting; contrast enhancement and color modification; text; linework; stencils; image warping (scaling, rotation, bending, etc.); page layout; color extraction and correction; and production of half-tone negatives.

**January, 1986 - July, 1986**

## United States Naval Academy, Computer Aided Design and Interactive Graphics Computer Systems Specialist

Did work designing and implementing a language for solid modeling and animation of computer generated images. System operates on a VAX 11/780 running Berkeley UNIX 4.2 utilizing an Evans and Sutherland PS300 and an IKONAS frame buffer. Implementation includes development of high speed rendering techniques for three dimensional shaded scenes with reflection, refraction, and shadows. Primary job responsibilities included instructing midshipmen about advanced topics in computer aided engineering, image processing and computer graphics.

January, 1983 - January, 1986

### Allied Bendix Environmental Systems Division Engineer

Team member of the Bendix Algorithm Development Group generating hardware/software systems for interactive and non-interactive pattern recognition and digital signal processing. Independently managed project with two hundred thousand dollar budget and 5 engineers doing research into self-training pattern recognition algorithms. Wrote several successful proposals in response to government requests. Supervised 7 engineers in an implementation of algorithm software on a real-time microprocessor based system using MIL-STD-1679. Trained in-house and government personnel on algorithm mathematics. Independently designed and implemented systems for interactive signal processing and pattern recognition using extensive computer graphics. Personally responsible for the design of several stand-alone minicomputer and microcomputer based data acquisition stations.

### ***Consulting and Part Time Experience***

September, 1990 - December, 1994

#### Gigadactyl, Inc. Principal

Assisted Precision Visuals, Inc., in an effort to port the acclaimed front end to their PV~WAVE data visualization software to X Windows (X11R5) using OSF/Motif. Developed a prototype text and image document management system for a major New York law firm. Also served, by invitation, on the Program Committee for the "5th Annual Technical Conference on the X Window System."

December, 1986 - February, 1988

#### Digital Constructs Consultant

Served on an advisory team to Monarch Knitting Machinery Corp. in the evaluation of computer graphics technology for the fabric design industry. Team specified hardware and software requirements to support the development of a 3-D system for fabric design, manufacture, and distribution.

### ***Publications***

- C. Ocheret, J. Hayes, "The Xt Intrinsic as a General Purpose Application Development Platform," USENIX Applications Development Symposium, April, 1994.
- O. Hansson, J. Hayes, C. Ocheret, "Old and New Ideas for Integrating Planning and Execution," NASA Planning and Scheduling Workshop, Oxnard, California, October, 1997.

### ***Professional Affiliations***

- Institute of Electrical and Electronics Engineers (IEEE), Computer Society
- Association for Computing Machinery (ACM), SIGGRAPH
- USENIX Association

### ***Hobbies***

- Music – Guitarist since age of 5; Piano/Keyboards; Drums, Electronics
- Computer Animation – 2D and 3D
- Martial Arts – Kung Fu (Tai Chi Chuan, Hsing I Chuan, Pakua Chang)
- Inline skating