**PETER ALEXANDER, Ph.D.**

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## EDUCATION

Ph. D., Electrical Engineering, Massachusetts Institute of Technology, 1971
MS, Electrical Engineering, University of Illinois, 1967
BS, Electrical Engineering, University of Canterbury, New Zealand, 1965

## PROFESSIONAL AFFILIATIONS & AWARDS

Fulbright Scholar, 1965
National Science Foundation – Small Business Innovation Research, 1988
Dept. of Energy – Small Business Innovation Research, 1988
Member Association of Computing Machinery (ACM)
Member IEEE Computer Society

## PROFESSIONAL EXPERIENCE - SUMMARY

### Technical Expertise - Computer software design, development & deployment
- Forensic data acquisition and analysis
- Microsoft Visual Studio component and application design
- Web integration of authentication services, streaming media services, ad displays, content feeds
- Implementation of real-time and media streaming systems
- Architecture and design of complex business systems involving database back ends
- Oracle 8i, 9i, SQL Server 2000, and DB2 database technology.
- Java, C, C++, Visual Basic, assembly language programming
- Embedded microprocessor designs
- Network equipment design and manufacture (LAN cards, routers, bridges)
- Security, authentication, networking, firewalls, hacking countermeasures, backups, archives and service level agreements for customer-outsourced data.

### Domain Expertise - Client-server and web-based software applications
- ERP systems – financial, distribution, manufacturing, SF automation applications (Platinum Software)
- eCommerce - Secure web transactions, authentication  (InfrastructureWorld.com, Syntricity, Inc.)
- Semiconductor manufacturing – yield analysis, semiconductor defect analysis (Syntricity, Inc.)

## LITIGATION RELATED EXPERIENCE

- **Patent Litigation.** Contributions made to twelve different patent infringement cases., two of which required participation in claim construction for Markman hearings, including courtroom assistance to attorneys during claim construction. Authored three invalidity and four non-infringement reports. Authored two infringement and two validity rebuttal reports. Testified in deposition as an expert on ten occasions in eight of the patent cases regarding claim construction, infringement and invalidity.
- **Software contract disputes.** Analysis of desktop, Internet, and client-server software projects to determine adherence to industry-standard software development processes, and to evaluate architectural design decisions. Contributions made to numerous cases, including court testimony in one, and deposition testimony in four others. Wrote two expert opinions and two expert declarations.
- **Forensic analysis.** Provided forensic analysis of Internet and computer hard drive technology to recover deleted computer data and determine algorithms. Performed analysis of peer-to-peer file sharing servers for government agencies.

Testified in trial or deposition in the following matters.
**Testified in deposition for ten patent cases and seven contract disputes.**
**Testified in jury trial for a contract case (on behalf of CyberNET Engineering) and testified in court at a Markman Hearing (on behalf of Auction Management Solutions Inc.).**

**MicroStrategy Incorporated v. Business Objects Americas, Crystal Decisions**
**United States District Court, for the District of Delaware.**
Civil Action No. 03-1124-KAJ

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|---|---|
| Matter: | Web server report automation patent litigation. |
| Technical Issues: | Web server interaction with client browsers. |
| Responsibilities: | Analysis of source code to determine infringement issues. Wrote Infringement expert report and Validity rebuttal report. Contributed to claim construction. Testified in deposition regarding infringement and invalidity rebuttal. |
| Disposition: | Completed work in October 2005. |
| Law Firm: | Howrey Simon Arnold & White, Washington D.C. for plaintiff. |
| Opposing counsel: | Townsend Townsend & Crew |
| | Young Conaway Stargatt & Taylor LLP |

**Sky Technologies LLC v. IBM Corp. and i2 Inc.**
**U.S. District Court, Eastern District of Texas, Marshall Division**
Civil Action No. 2:03CV454-DF Judge David Folsom.

| | |
|---|---|
| Matter: | Supply-chain negotiation patent litigation. |
| Technical Issues: | Analysis of Java J2EE applications/ Enterprise Java Bean technology. |
| Responsibilities: | Conducted research concerning infringement position and claim construction. Testified in deposition regarding infringement. |
| Law Firm: | Townsend Townsend and Crew, San Francisco, and Susman Godfrey LLP, Houston, TX for plaintiff. |

Opposing counsel:      Fitzpatrick, Cella, Harper & Scinto
Disposition:          Settled. Completed work in Jan. 2006.
**Trilogy Software, Inc. v Selectica, Inc.**
**U.S. District Court, Eastern District of Texas, Marshall Division**
Civil Action No. 2-04-CV-160 (TJW).  Judge T. John Ward
Matter:               Internet eCommerce patent litigation.
Technical Issues:  Web server interaction with client browsers.
Responsibilities:  Research non-infringement issues in cross complaint. Testified at
                      deposition regarding Trilogy's proposed claim construction.  Wrote
                      expert declaration in support of claim construction.
Law Firm:             McKool Smith, Dallas, TX for defendant in cross complaint.
Opposing counsel:      Howrey Simon Arnold & White; Ireland Carroll and Kelley, PC.,
                      Jones & Jones; Brown McCarroll LLP.
Disposition:          Settled. Completed work in Jan. 2006.
**Datamize Inc. v. Charles Schwab & Co., CyberTrader, Inc.**
**U.S. District Court, Eastern District of Texas, Marshall Division**
Civil Action No. 2:03-CV-321 Judge David Folsom.
Matter:               User interface patent infringement.
Technical Issues:  Interpretation of software design and implementation for applications
                      involving graphical user interfaces (GUI) allowing various degrees of
                      built-in flexibility.
Responsibilities:  Assisted lawyers with interpretation of patent specification, and
                      contributed to claim construction terms as a computer expert. Testified
                      in deposition as an expert witness regarding indefinite terms. Wrote
                      tutorial and declaration in support of defendant's claim construction
                      brief. Attended Markman Hearing and assisted attorneys with
                      preparation.
Law Firm:             Orrick Herrington & Sutcliffe, New York, NY for defendant.
Opposing counsel:     McKool Smith
Disposition:          Settled. Completed work in Dec. 2004.
**Network Appliance v. BlueArc Corp.**
**U.S. District Court, Northern District of CA, San Francisco Division**
Case No. C 03-05665 MHP  Judge Marilyn Hall Patel
Matter:               Network file sharing patent infringement.
Technical Issues:  Interpretation of multiprocessor hardware/software architecture and
                      implementation for a Network File System data storage patent. The
                      technology involves multiprocessor operating systems, microprocessor
                      hardware, Internet protocols, and inter-processor messaging.
Responsibilities:  Advised lawyers on the interpretation of patent specifications,
                      contributed to claim construction for "means plus function" structure
                      definition, testified in claim construction deposition as an expert
                      witness. Wrote declaration in support of defendant's claim
                      construction brief; wrote rebuttal declaration in response to opposing
                      expert report.
Disposition:          Completed work in Dec. 2004.
Law Firm:             Keker & Van Nest, San Francisco, CA and

Bromberg & Sunstein, Boston for defendant.
Opposing counsel:     Howrey Simon Arnold & White

**E-Centives v. Coupons, Inc.**

**U.S. District Court, District of Maryland, Northern Division**

Civil Action No. RDB-02-CV3701

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|---|---|
| Matter: | Web software patent infringement. |
| Technical Issues: | Microsoft ASP web servers, user tracking and consumer web services. |
| Responsibilities: | Conducted technical research on software implementation, wrote expert opinion regarding invalidity, wrote rebuttal opinion re non-infringement, and testified at deposition on behalf of defendant. |
| Disposition: | Settled April 2005. |
| Law Firm: | Foley & Lardner, Washington, DC for defendant |
| | Rader, Fishman & Grauer, Washington, DC |
| Opposing counsel: | Mintz, Levin, Cohn, Ferris, Glovsky and Popeo |
| Disposition: | Settled. Completed work in Dec. 2004. |

**Acacia Media Technologies Corp. v. New Destiny Internet Group**

**U.S. District Court, Central District of California, Southern Division**

Case No. SA CV 02-1040 JW (MLGx)

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| Matter: | Streaming multimedia systems patent litigation. |
| Technical Issues: | Implementation of web-based multimedia encoding. |
| Responsibilities: | Conducted research, created technology tutorial for Markman hearings; wrote an expert declaration on video compression technology. Testified in deposition. |
| Disposition: | Completed work in Sept 2005. |
| Law Firm: | Hennigan Bennett & Dorman, Los Angeles, CA for plaintiff. |
| Opposing counsel: | Foley & Lardner, Fish & Richardson |

**Peninsular Technologies, LLC v. WinCan America**

**United States District Court, Western District of Michigan, Southern Division**

Civil Action No. 1:04-CV-0305

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|---|---|
| Matter: | Multimedia patent litigation. |
| Technical Issues: | Characteristics of MPEG video for visual inspection systems. |
| Responsibilities: | Wrote non-infringement expert report and contributed to claim construction. Testified in deposition regarding claim construction and non-infringement. |
| Disposition: | Completed work October 2005. |
| Law Firm: | Rader, Fishman & Grauer, Michigan for defendant. |
| Opposing counsel: | Piuce, Heneveld, Cooper, DeWitt &Litton, LLP |

**Inxight Software, Inc. v. Verity, Inc.**

**United States District Court, Northern District of California, San Francisco.**

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|---|---|
| Civil Action No. | C 05-01660 CRB  Judge Charles R. Breyer |
| Matter: | Contract dispute regarding licensed software products. |
| Technical Issues: | Software architecture. |
| Responsibilities: | Research C++ and Java software architecture. |
| | Wrote expert opinion on technical software implementation issues for large server-based linguistic analysis systems. Testified in deposition. |
| Disposition: | Settled Feb. 2006. |

Law Firm:  Manatt, Phelps & Phillips, LLP, Palo Alto, for defendant.
Opposing counsel: Orrick, Herrington & Sutcliffe


**Neoris de Mexico v. Ariba, Inc.**
**U.S. District Court, Northern District of CA, San Francisco Division.**
Case No. C 02 1670 JSW
Matter:  Breach of warranty and contract.
Technical Issues: B2B marketplaces and exchange design and development
Responsibilities: Wrote expert opinion and testified at deposition on behalf of
      defendant.
Disposition: Settled Jan. 2006. Completed work April 2004.
Law Firm:  Howard, Rice, Nemerovski, Canady, Falk & Rabkin, San Francisco,
      CA for defendant.
Opposing counsel: Legal Strategies Group

**Business-To-Business Markets Inc. v. Kshema Tech. Ltd.**
**Superior Court of the State of California County of LA, Central District**
Case No. BC280932, January 21, 2004
Matter:  Breach of contract.
Technical Issues The software development contract involved a complex, Java-based
      exchange web site. Apache web server, Weblogic application server,
      Tomcat application web server, Oracle 8.1 database server, Java JSP
      pages, Java EJB deployment, Linux operating system.
Responsibilities: Wrote expert declaration and testified at deposition on behalf of
      defendant.
Disposition: Motion for summary judgment in favor of defendant.  Jan. 2004
Law Firm:  Law Offices of Timothy Cronin, San Francisco, CA for defendant.

**Carma Consulting v. FileNet Corp and Farmers Insurance**
**United States District Court, Central District of California**
Case No. SACV02-115DOC (MLGX), July 16, 2003
Matter:  Theft of trade secret case involving the alleged unauthorized release of
      source code.
Technical issues: Two Windows Active-X server components, written in Visual Basic
      were supplied to Farmers Insurance as a run time OCX and a DLL
      respectively. Evaluated the reproduction cost and the potential
      economic damages for disclosure of source code.
Responsibilities: Wrote expert opinion and testified at deposition on behalf of
      defendant.
Disposition: Motion for summary judgment in favor of defendant.  2003
Law Firm:  Cummins & White, Newport Beach, CA for defendant.

**CyberNET Engineering v. Con-Way Transportation**
**Circuit Court of the State of Oregon, for the County of Multnomah**
Case No. 0107-07220, April 7-8, 2003
Matter:  Contract dispute.
Technical issues: Local area network design and implementation for 300 service centers.
Responsibilities: Researched relevant networking issues and testified at jury trial on
      behalf of plaintiff.

Law Firm:        Martin Bischoff Templeton Langslet, Portland, OR, for plaintiff
Disposition:       Jury verdict in favor of plaintiff. 2003

**Amer Jneid et al v. Novell Inc., Tripole Corporation**
**Superior Court of State of California, County of Orange**
Civil Action No.     02CC00182
Matter:            Breach of contract.
Technical Issues: Networking technology code analysis
Responsibilities:  Analysis of source code for Novell product implementations.
                    Testified at deposition on behalf of defendant Tripole Corp.
                    Testified in Jury trial, November 2006.
Disposition:       Current
Law Firm:        Waldron & Olson, Newport Beach, CA, for Tripole Corp.
Opposing counsel:    Workman Nydegger, UT.

**Dongjin Semichem v. EmailFund**
**American Arbitration Association**
AAA Case No. 50 T 168 0013403
Matter:            Software development contract dispute.
Technical Issues: Elliptic Curve Cryptography for wireless handheld devices.
                    Encompasses Wireless Public Key Infrastructure, ECC algorithms,
                    RSA algorithms, equivalence of Public Key and Symmetric Key
                    encryption strengths, and WTLS.
Responsibilities:  Wrote expert declaration. Conducted research on technical issues for
                    plaintiff.
Disposition:       Testified at deposition on behalf of plaintiff.
Law Firm:        Lee, Kim & Song Professional Law Corporation, Los Angeles, CA for
                    plaintiff.

**Coupons Inc. v. Indian Harbor Insurance Company**
**American Arbitration Association**
AAA Case No. 74 133 Y 91922 94 /DEAR
Matter:            Patent insurance contract dispute.
Technical Issues: Web server software implementation and patent infringement issues.
Responsibilities:  Testify on technical issues analyzed during E-Centives v. Coupons
                    Inc. patent litigation while representing Coupons. Testified at
                    deposition on behalf of plaintiff, May 2006.
Disposition:       Case settled, Aug. 2006.
Law Firm:        Farella Braun & Martel LLP, San Francisco, CA for plaintiff.
Opposing counsel:    Sonnenschein Nath & Rosenthal LLP, San Francisco, CA

**Auction Management Solutions Inc. v. Manheim Auctions Inc. et al**
**U.S. District Court, Northern District of Georgia, Atlanta Division**
Civil Action No.     05-CV-0639 (RWS)
Matter:            Online auction technology patent litigation.
Technical Issues: Communications protocols and streaming media
Responsibilities:  Research claim construction issues. Testified in deposition regarding
                    claim construction in May, 2006. Testified in court during claim
                    construction hearing, August, 2006.
Disposition:       Current.

Law Firm: Finnegan Henderson Farabow Garrett & Dunner for plaintiff.
Opposing counsel: Ropes & Gray LLP, Morris Manning & Martin, Covington & Burling, Dow Lohnes & Albertson

**Lending Tree LLC v. LowerMyBills, Inc.**
**United States District Court, Western District of North Carolina**
**Charlotte Division**
Civil Action No. 3:05CV153-C
Matter: Patent Infringement – credit analysis.
Technical Issues: Technology and code analysis for web sites
Responsibilities: Wrote infringement and invalidity rebuttal reports. Testified in deposition regarding infringement, September 2006. Testified in deposition regarding Invalidity rebuttal report, November, 2006
Disposition: Current.
Law Firm: King & Spalding LLP, Atlanta, GA for plaintiff.
Opposing counsel: Sonnenschein Nath & Rosenthal LLP, Chicago, IL

Has also served as an expert during the last three years:

**Rasterix Holdings LLC v. Research In Motion, Ltd., Arizan Corp.**
**Superior Court of Fulton County, State of Georgia**
Civil Action No. 2003-CV-76785
Matter: Breach of Agreement, Misappropriation of Trade Secrets.
Technical Issues: Technology and code for document filters for hand-held devices.
Responsibilities: Source code analysis.
Disposition: Early stages.
Law Firm: Howrey, Chicago, IL, for defendant.
Opposing counsel: Kilpatrick Stockton LLP, Atlanta, GA.

**Beilstein Institut Zu Forderung der Chemischen Wissenschaften v. MDL Information Systems, Inc.**
**U.S. District Court, Northern District of CA, San Francisco.**
Civil Action No. C 04-05368 SI
Matter: Breach of contract.
Technical Issues: Database design and implementation
Responsibilities: Analysis of organic chemistry database system.
Disposition: Current
Law Firm: Carroll, Burdick & McDonough LLP, San Francisco, CA, for plaintiff
Opposing counsel: Andrew Gold, Bogatin, Corman & Gold, Oakland, CA

**American Calcar Inc. v. BMW North America, LLC**
**United States District Court, Southern District of California.**
Civil Action No. 04CV00614 DMS (LSP) Judge Dana M. Sabraw
Matter: User interface patent litigation.
Technical Issues: User interface characteristics, broadcast FM radio systems, GPS navigation.
Responsibilities: Research non-infringement issues. Wrote invalidity and non-infringement expert opinions for two patents.

Disposition: Defendant won non-infringement Motion for Summary Judgment Work completed Oct. 2005.
Law Firm: Howrey Simon Arnold & White, Irvine, CA, for defendant.
Opposing counsel: Knobbe Martens Olson & Bear LLP

**Orion IP, LLC. v. Home Depot USA Inc., Harley Davidson, Inc., Toyota Motor Sales, USA, Inc.**

**U.S. District Court, Eastern District of Texas, Marshall Division**
Civil Action No. 2:04-CV-297 LED. Judge Leonard Davis
Matter: eCommerce patent litigation.
Technical Issues: Implementation of Internet browser technology.
Responsibilities: Research non-infringement issues
Disposition: Settled January 2006.
Law Firm: Vinson & Elkins, LLP, Houston, TX for defendant Harley Davidson.
Opposing counsel: Williams, Morgan & Amerson, Ireland Carroll and Kelley, PC

**epicRealm Licensing, LLC v. Autoflex, Macerich Co.**

**U.S. District Court, Eastern District of Texas, Marshall Division**
Civil Action No. 2-05CV-356 DF
Matter: Web technology patent litigation.
Technical Issues: Web site implementation
Responsibilities: Research non-infringement issues.
Disposition: Initial stages.
Law Firm: Sidley Austin Brown, Dallas, TX, for defendant.
Opposing counsel: Baker Botts; Ireland Carroll; Brown McCarroll; Jones & Jones

**AtHome Bondholders v. AT&T Corporation**

**Superior Court of State of California, County of Santa Clara**
Civil Action No. CV 812506
Matter: Theft of trade secrets.
Technical Issues: Implementation AT&T ISP network for Internet and mail services.
Responsibilities: Analysis of e-mail and Internet traffic capacity planning; analysis of migration technology used to transfer 850,000 Internet accounts from AtHome network to AT&T Broadband network.
Disposition: Completed work in April 2005.
Law Firm: Sidley Austin Brown, Washington D.C. for defendant.

**Scienton Technologies Inc. v. Computer Associates Intl.**

**United States District Court, Eastern District of New York**
CV 04 2652
Matter: Breach of contract, theft of intellectual property.
Technical Issues: Database integration and artificial intelligence software for filtering of data from physical and IT security monitors.
Responsibilities: Assisting lawyers with an understanding of software technology.
Disposition: Completed work 2004
Law Firm: Heller Ehrman White & McAuliffe, Washington D.C. for defendant.

**Teleflora LLC v. Florists' Transworld Delivery (FTD)**

**U.S. District Court, Northern District of CA, San Jose Division.**
Case No. C-03-5858-JW (HRL)

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|---|---|
| Matter: | Trade secret misappropriation, copyright infringement, fraud and unfair competition. |
| Technical Issues: | Examine source code for florists' shop floor management software to determine basis for alleged claims of copyright. . |
| Responsibilities: | Conducted research wrote expert declaration for the court, created a tutorial for use in hearings by lawyers. |
| Disposition: | Settled. Completed work in 2004. |
| Law Firm: | Silicon Valley Law Group and Techmark, San Jose, CA, for defendant. |

**APX Express, Inc. f/k/a Western Parcel Express v. Excell Data Corp., Novell Inc.**
**Superior Court State of Washington, County of King**
Case No. 03-2-17765-2-KNT

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|---|---|
| Matter: | Software development contract dispute. |
| Technical Issues: | Breach of Contract for deployment of an order entry, billing & shipping software system based on Microsoft ASP and COM technolo gies. |
| Responsibilities: | Conducted research and advised client on technical issues |
| Disposition: | Settled. Completed work in 2004 |
| Law Firm: | Parsons Behle & Latimer, Salt Lake City, UT for defendant. |

**Sequent Technologies v. Insight Video Networks**
**American Arbitration Association**
Case No. 72 166 00895 02 JAFA

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|---|---|
| Matter: | Theft of trade secrets. |
| Technical Issues: | Video encoding, storage and retrieval software for an 802.11 wireless network application |
| Responsibilities: | Conducted research and advised client on technical issues |
| Disposition: | Settled. Completed work in 2003 |
| Law Firm: | Fulbright and Jaworski, Los Angeles, CA for plaintiff |

**United Devices, Inc. v. David Anderson**
**Superior Court of the State of California, County of Alameda**
Case No. RG 03088498

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| Matter: | Theft of trade secrets |
| Technical Issues: | Distributed multi-processor architectures developed in C++. |
| Responsibilities: | Performed forensic capture of files from a software developer's hard drive and analyzed the source code for a network distributed multiprocessor scientific application. |
| Disposition: | Settled. Completed work in 2003 |
| Law Firm: | Fulbright and Jaworski, Los Angeles, CA for plaintiff |

## PROFESSIONAL EXPERIENCE

**2003 to Present** **Independent Computer Consultant**

Independent computer technology consultant since February 2003, offering advisory services for information technology organizations, venture capital groups and the legal profession. Services have been provided for projects in the following areas:

- Computer software development contracts for Internet and client-server software implementation.
- Disaster recovery for large scale IT operations.
- Definition of product design and market positioning for a "distance learning" product designed to enable training of employees via a web server application.
- Forensic analysis of computer data and electronic discovery from computer disks.
- Definition of a web-based eCommerce system to provide secure business transactions. Developed architectural plans and database schema for Oracle database implementation.
- Provided technical consulting services regarding the behavior of certain scripts used for a mIRC chat server (Jedi 2.1). Analyzed the internal architecture of the Jedi relay chat system. At issue was the behavior of a Jedi server when a remote user (client) uploaded a file for distribution to other clients. Analyzed the upload scripts and formed a preliminary opinion regarding the functional behavior of the code.
- Provided research on spyware products that are downloaded to a user's client computer while browsing the web. Determined the behavior and installation mechanisms for this class of spyware products, and provided consulting on ways of removing them.
- Provide consulting services to eBusiness clients for the creation of SOAP integration of database services. Provided planning assistance for a large, ASP (Active Server Pages) web site to implement live business information feeds.
- Analyzed web application server prototypes from Apache Software Foundation reference implementations such as the Apache HTTP server project, Jakarta Tomcat Project (J2EE Servlet and JSP Web container), Turbine a servlet based application framework, and the Velocity Template Engine reference designs

**2001 to 2003**            **Syntricity, Inc., San Diego, CA**
                            **Vice President Technical Operations**

Syntricity is a supplier of application software to the semiconductor industry. Its customers include Intel, Sun Microsystems, Broadcom, Qualcomm and Conexant. Products are installed on Unix and NT 4.0 web servers at the customer site as Intranet solutions (Enterprise), or on Unix servers at the Syntricity data center, which offers an ASP style subscription services.

Developed a large capacity warehouse architecture and deployable warehouse solution to support defect, FBM, lot history, non-lot equipment, and other data storage requirements to support analysis of yield and production forecasts from test data acquired in the semiconductor manufacturing environment. This system was built on Oracle 8i and 9i commercial RDBMS products. Implemented a comprehensive set of statistical analysis tools including multivariate regression and confidence level testing to facilitate yield trend and production scheduling for semiconductor manufacturers. Developed a messaging transaction system - "Integration Server" for WIP/MES back-end business

processes. Various technologies were incorporated including: RMI, from a JMS input queue and JNDI for naming services.

The design was implemented with Oracle 9.2 loader and schema validation technology, and required user ETL data to be formatted as XML documents. Java 2 SE was the implementation platform language. The web server, based on the Tomcat open source code from the Apache Consortium, was enhanced to provide comprehensive access control according to user class, and included integrated end-user script-based customization (using the open source Python interpreter). XML objects were used extensively to represent web server data structures in the core implementation. High volume datalog insertion (ETL) back-end functionality was implemented for user uploads via FTP. An earlier generation C-coded CGI version was also supported. All products developed were web server solutions, with access via a standard browser. Responsible for creating and managing design teams as well as quality assurance, configuration management, technical hosting operations, and technical documentation groups. Responsible for product functional specifications, source code control, defect tracking, configuration/build management, and application validation.

Responsible for a team of 40 people across four groups that included software engineering, database design, quality assurance and technical operations. Java 2 was the implementation platform language, and Oracle 8.1.6 was used for the warehouse database. All products were designed as web server solutions, with access via a standard browser. Responsible for creating and managing design teams as well as quality assurance, configuration management, technical hosting operations and technical documentation groups. Detailed understanding of source code control, defect tracking, configuration management and build tracking.

Customers using the hosting subscription center run under contractual Service Level Agreements (SLA). The ASP hosted service is currently implemented on an E4800 Sun application server running Solaris 8, connected to an Oracle database server (Oracle 8.1.6). Storage totaling approximately 1 Terabyte is provided through a combination of the EMC Clarion System 1 storage arrays (Raid-5) accessed via fiber channel, and network attached storage using the Network Appliances NetApp devices. Veritas SANPoint Foundation Suite HA for Solaris is used as the storage management tool.

**2000 to 2001**          **InfrastructureWorld, San Francisco, CA**
                              **Chief Technology Officer**

Infrastructureworld, a spin off from Bechtel Enterprises, offered services through a collaborative web site for large-scale construction projects. Managed development staff of 10, and operational staff of 3 to create, enhance and maintain the live web site. Responsible for a new web server implementation based on NT4.0 and Windows 2000 technologies, to support authentication through certificates, user access control via

authenticated account login, SSL extranet connections and document encryption. Investigated Public Key/Private Key encryption authentication mechanisms before selecting Windows NT integrated challenge/response authentication as the preferred authentication technique.

Each business client was hosted as a separate virtual web site with secure access to content that described the client's projects offered for bid. Functionality included insurance and financing RFP's, document management, and project collaboration. In addition, each web site offered integration of multimedia content for promotion of client projects, including steaming video and audio content. Implemented a secure data access system using native NT operating system authentication services. All documents and files were transmitted via 128-BIT SS using server side certificates for server authentication to the client browser. Automatic virus scanning and cleaning was implemented for all documents and files uploaded to the users to the web server. The operational web server site was implemented with a two-tier server configuration using Raid (redundant) storage.


**1999 to 2000**          **CareerPath.com, Los Angeles, CA**
                          **Senior Vice President, Technology**

Management of Operations and Development teams. Lead the company's Web site re-architecture project, providing higher levels of Web server and Oracle database performance. Implementation of methodologies for project management, code review, quality assurance, and defect tracking. Managed the operations group (40) supporting the production Web site, encompassing wide area networking, Unix administration, Oracle DBA support, HTML authoring and quality assurance teams. Managed the software development staff (25) which created new technology infrastructure and dynamic page content using Java middle tier servlets, Java Beans, JSP presentation components, and Oracle technology. Object oriented programming techniques were applied through use case analysis.

Created a feed management system, written using server-side Java parsing technology, to processes Web job postings harvested from Web spider technology. Later enhancements included development of a Content Management system (using XML page representation), vertical affiliate co-branding system, transparent registration and login across a federation of partnership Web sites, and a comprehensive on-line reports server.

**1999**                 **Charles Schwab Online Trading, Phoenix, AZ**
                         **Independent Consultant**

This project involved disaster recovery cold site planning for the Charles Schwab Online Web Trading facility. The web capability was capable of handling 200,000+ concurrent users, and was implemented with 300 load-sharing IBM gateway servers working behind eight Cisco Catalyst 7500 routers. The traffic was distributed across the front line servers and routed to an ensemble of 200 middle tier servers, which manage the business objects

and execute the trades.  In the third tier, customer financial and demographic data was maintained on a group of seven IBM mainframes running DB2. A design was formulated that gives the Schwab organization a contingency backup system in the event of catastrophic failure of the main site.

**1997 to 1999**          **Platinum Software Corp., Irvine, CA**
                        **(Re-named as Epicor Software Corp)**
                        **Vice President, Development**

Reported to the President until 7/1/98, then reporting to the Executive VP of Product/Marketing.  Member of the Executive Committee (top 8 executives in Platinum).

Managed a team of about 100 contributors working on Windows NT-based Client-Server systems.  The Department was organized into five functional groups each headed by a Director-level manager, and includes ERP application development, technology/tools development, Windows/DOS legacy systems, QA and documentation teams.

This scope of the development effort encompassed the Platinum ERP client-server product suites, which include financial and distribution applications.  These applications, based on Microsoft SQL Server technology, are implemented within a two-tier tool set, and involved 500 tables and more than 2000 stored procedures.  Responsibilities also included all ERP integration tools and application content.  The ERP integration suite allows remote transaction integration of customer relationship management, sales force automation, distribution, manufacturing, and financial applications, as well as OLAP business intelligence reporting via client-side components and Microsoft DSS.

Direct management of teams deploying MS Message Queue, MS Transaction Server, MS SQL Server 6.5 and 7.0, NT 4.0, XML, and business object technology.  Successfully launched a high volume test group to establish performance of the client-server products under stress, and to determine their scalability.  Built an architectural team to design and implement 3 tier, thin-client framework, using Java business objects running on an application server. Established effective methodologies for fostering cooperation in development projects requiring the participation of geographically remote design and development teams.

Developed a pure Java client-server system to support an end user form builder application. The objective of this project was to demonstrate an application server-centric 3-tier architecture. Application servers are dispensers of services, and a Java compilation service was the central technology being demonstrated. The pilot development showed building block to support a broad variety business object models, forms architectures, and rules engines. (JDK 1.1)

A full-functionality GUI in Java was also developed, along with a Java-based Customization Workbench, built, using the form class metaphor, which is familiar to

users of Visual Café, JBuilder, or J++ 6.0. The Java Swing classes were used in the implementation.

Created a prototype OLAP decision support analysis system. The Platinum Info Report pack contained OLAP cubes specific to the Platinum ERA financial, distribution and manufacturing data. OLAP cubes were implemented on top of core Platinum applications to enable multi-dimensional analysis on key business drivers such as sales activity. Reports contained in the Info Report Pack were designed to leverage graphical, WYSIWYG reporting and analysis capabilities of Crystal Info, a third party reporting package, including: presentation-quality formatting, charts, graphs, drill-down, top "N" analysis, search, sort and criteria selection.

**1994 to 1996** **Quixote Corp., Chicago, IL**
**Vice President, Technology (Reporting to the President of Legal Technologies, Inc.)**

Legal Technologies, a subsidiary of the Quixote Corp., was formed as a consortium of four companies operating in the legal vertical market to address law office automation, and related legal services.

Formulated opinions and strategies for technology-related products being considered for acquisition or development by the company. Assisted the corporate legal counsel in the interpretation of patent claims for the purpose of defending or initiating lawsuits. Participated in negotiations with plaintiffs to bring about resolution of legal conflicts.

Managed teams developing Windows client-server database applications for the legal/judicial markets. These products involved MFC C++ and Visual Basic 4.0, NT/SQL Server and Btrieve technology.

Development of video deposition applications. Encoding of VHS tapes from video depositions into MPEG using Real Magic encoders. Annotation of video to allow rapid search of content and synchronization of video to the written transcript. The user was provided with the ability to jump to a specific page and line in the written transcript with automated tracking to the correct location in the displayed video. Similarly, the rolling video stream would automatically scroll the text display.

**1989 to 1992** **Fibronics International, Lowell, MA**
**General Manager, Spartacus subsidiary**

Successfully developed software products for TCP/IP and Unix-related networking applications. These products performed routing and bridging functions for Internet packets, at data rates of up to 100Mbps across FDDI fiber networks. Technology involved embedded C-coded Intel RISC CPU's and Motorola 68K series

microprocessors. In addition, a suite of Internet-protocol software packages was developed for integration of mainframes with other Fibronics TCP/IP LAN and WAN products.  Networking software developed for mainframe computers included: TCP/IP protocol stack; Network File System (server) package; File Transfer Protocol (FTP) server module; Simple Mail Transfer Protocol (SMTP); 3270 terminal emulators; X-windows client functionality.

The NFS application was the result of a nine month development effort involving a team of six software developers. The complete design, including all architectural components, was formulated from Sun Microsystems documentation, and the resulting concept was implemented from scratch in C++. A parallel research study of the competing Andrew File System was also carried out. The NFS product was deployed by several large Fibronics customers.

**1982 to 1988**          **Numerix Corporation, Newton, MA**
                                    **President/CEO**

Founder and CEO of a high-technology computer company with 130 employees.  Led the company from its startup in May 1982 through rapid growth.  Revenues grew from $0 to $10M in three years.

Supervised a software and hardware development team of 50 people, and a total employee headcount of 130.  Lead contract negotiations with vendors, partners and investors.  Intimately involved with product engineering, quality assurance and field reliability problems.

**1975 to 1981**          **CNR, Inc., Newton, MA**
                                    **Vice President**

Managed software and hardware design teams for defense-related projects.  These included: real-time data acquisition using microprocessor systems, real-time communications channel simulators, embedded Intel and Motorola microprocessor systems, designs for the application of the Global Positioning System to air traffic control, synchronization of the DOD world-wide communication system using atomic clocks to facilitate the distribution of a high-precision time reference.

**1972 to 1975**          **Univ. of Auckland - New Zealand**
                                    **Asst. Prof., EE**

Performed teaching and graduate research responsibilities for electrical engineering and computer science.  Taught graduate level courses on control systems, communication

systems, microprocessors and integrated circuit design.  Taught undergraduate courses involving electromagnetic theory, electronic circuit design and mathematics