J. Spencer Greene

Mr. Greene brings a wealth of financial expertise coupled with 32 years of commercial software experience. His deep knowledge of trading, exchanges, investment, and commercial banks has directly benefited many of the world's top financial institutions. An early proponent of crypto, he is frequently called upon to discuss not only technology and architecture but also the business, regulatory, and sovereignty issues facing modern financial markets.

He managed the development of NASDAQ Europe, multiple derivative execution venues, and various program and algorithmic trading systems. He has advised more than thirty of the largest global exchanges on issues from technology's role in market microstructure to business and regulatory trends. He has worked extensively on-site with liquidity venues and market makers all around the globe on optimizing their next-generation enterprise architectures from latency reduction to increased cyber security.

He currently runs Joompi Capital Management, a hedge fund he founded dedicated to automated trading strategies. An avid C++ developer, Mr. Greene designed and implemented an algorithm based on a modified GARCH process with custom liquidity calculations (using depth, immediacy, resiliency, transparency, priceability, and fungibility).

AREAS OF EXPERTISE

Exchanges/Liquidity Venues
- System Architecture
- Low-Latency
- Network Design
- Fault Tolerance
- Disaster Recovery
- Market Data Distribution
- Pricing Algorithms
- Clearing and Settlement
- Market Risk/Surveillance
- Margin Calculations

Distributed Systems/Architecture
- Exchanges
- Trading Systems
- Proprietary Trading
- Feed Handlers
- Order Routing
- Trading/Matching Engines
- Market Making
- Cloud/Hybrid Infrastructure

AREAS OF EXPERTISE CONT'D

Crypto Trading
- System Architecture
- Blockchain Technology
- Smart Contracts
- Tokenization
- DeFi Protocols
- Decentralized and Distributed Ledgers
- Enterprise Business Processes
- Cryptocurrency Wallets

EDUCATION

UC Berkeley Extension, Belmont, CA
Japanese

Foothill College, Los Altos Hills, CA
Mandarin Chinese, Japanese

San Mateo City College, San Mateo, CA
Japanese

California State University Sacramento, CA
Computer Science

INDUSTRY EXPERIENCE

JOOMPI CAPITAL MANAGEMENT, Las Vegas, NV   **2021 – Present**
Chief Executive Officer, Chief Technology Officer
Manage investment funds of family office (created in 2001). Oversee all investments, operations, and technology.
- Continuous analysis and improvement of the HFT system including layer 2 protocol integration, single block arbitrage, and updates to DIRTPFF liquidity calculations to account for crypto liquidity provisioning
- Tightened risk management to more accurately reflect crypto volatility and increased smart contract auditing
- Renovated feed handlers and order book management code to handle multiple crypto exchanges
- Shifted overarching fund priorities to philanthropy, asset protection, and legacy planning

MARKER TRAX, LLC, Las Vegas, NV   **2020 – 2021**
Chief Technology Officer
After the initial technology founders' hasty departure, the entire engineering group required reconstruction. The business was highly skeptical of technology and needed to see significant milestones achieved before agreeing to the new vision. The core product success relies heavily on 3rd party integration, forcing considerable effort interfacing with external groups.
- Oversaw all IT functions and 12 concurrent software development projects: core system development, distinct integrations with four corporate partners, three customer-specific implementations, and unique builds for two joint-venture partners, and two external system integrator partners
- Created corporate technology vision and road map to support and drive business strategy
- Hired full development and IT staff to cement expeditious and solid growth
- Built real-time pricing and calculation engine in C++ for revolving credit accounts
- Completely rebuilt the technology department to employ modern product development processes using Agile and CI/CD to drive engagement with the business and create achievable deliverables
- Actively engaged external (investors, media, partners) and internal stakeholders as system SMEs to ensure accurate communication of technology goals, roadmap, and timelines
- Created technology budget and closely monitored spending to ensure technology maintained a strong ROI
- Redesigned enterprise architecture based on changing business needs to be able to be run on-premises with physical servers, entirely in the cloud as SAAS, hosted within a customer's VM environment or any hybrid
- Added Jenkins and reengineered Kubernetes clustering infrastructure for system deployments
- Expanded AWS footprint with new services including, Aurora, ELB, Cloud Watch, EC2, Route 53, Fargate, S3, Lambda, and VPCs

JOOMPI CAPITAL MANAGEMENT, Las Vegas, NV   **2015 – 2020**
Chief Executive Officer, Chief Technology Officer
Manage investment funds of family office (created in 2001). Oversee all investments, operations, and technology.
- Moved the entire system from Windows (MFC) into Linux command line applications. Added MySQL database for historical data and warehouse storage
- Extended trading strategies by designing and implementing an algorithm based on a modified GARCH process embedded with proprietary DIRTPFF (Depth, Immediacy, Resiliency, Transparency, Priceability, Fungibility) liquidity calculations
- Changed fault tolerance model from hot-warm to hot-hot on pricing engine and order routing

TIBCO SOFTWARE, INC., Palo Alto, CA   **2004 – 2015**
Chief Technology Officer, General Manager Global Financial Services
Provided technology, architecture, best-practice, and industry subject matter expertise for financial service customers leveraging TIBCO's 120 products and technologies, including:
- Created exchange vertical and grew revenue to $23 million in the first five years
- Trading solutions - high-velocity trading, internalization, market-making, predictive STP, risk management, real-time P&L and clearing and settlement, front-office solutions
- Financial exchange solutions - order routing, risk analysis, core matching, trade reporting, and market data

INDUSTRY EXPERIENCE (continued)

- Presentations on Industry trends - technology of investment banking in developing economies, the role of technology in market micro-structure, trends, and technologies in the business of global financial exchanges
- Ultra and Extreme low-latency architectures and emerging technology solutions - appliances, embedded coding, out-of-band architectures, extreme low-latency messaging, distributed caching, and CEP
- Banking solutions - core banking, single view of the customer, cross and up-sell, real-time customer service, treasury, and payments
- Demonstrated thought leadership at industry functions, speaking engagements, and media interviews
- Monitored and anticipated new technologies and trends to guide strategic corporate directions
- Advised sales, marketing, and engineering teams on business and technology trends and product direction
- Oversaw engineering and R&D projects focused on customer challenges in financial markets
- Performed technical assessments and due diligence for mergers & acquisitions
- Initiated and managed strategic and technology partnerships, and joint ventures with vendors and customers

JOOMPI CAPITAL MANAGEMENT, Redwood City, CA   **2001 – 2004**
Founder, Chief Executive Officer, Chief Technology Officer
Created family office to manage investment funds focused on automated trading strategies. Oversaw all investment decisions, taxation and legal issues, operations, infrastructure and wrote all code for the platform.
- Built real-time statistical analysis engine, complemented by offline, deep learning to trade multiple financial instrument pairs
- Researched, created, tested, back-tested and forward-tested (including sliding windows to limit possible curve fitting) numerous quantitative trading strategies
- Designed, built, and tested all components including feed handlers, pricing engine, real-time risk monitoring, reporting and order routing
- The entire system was written from scratch in clean C++ and optimized for low-latency trading

REUTERS PLC, TIBCO FINANCE TECHNOLOGY INC., Palo Alto, CA, London, Tokyo   **1998 – 2001**
Senior Director Business Development, Senior Director of Engineering
Managed vital software development projects. Identified new business opportunities with technology partners and internal business groups, then drove these projects through to completion. In charge of technology and business relationship with Cisco, TIBCO Software, and Radianz. Built business plans, gained internal executive sponsorship, and managed projects to ensure all business targets were met.
- Direct responsibility of NASDAQ Europe core trading system development - managed all phases of this $37 million project with 80 full-time staff from initial analysis through design, implementation, and rollout.
- Successfully managed Instinet's first electronic interface into the Japanese stock market. Drove a $3.2 million project from initial discussions with prospective partners through analysis, design, and development to implementation and final project acceptance integrating four internal groups, eight external groups, and three companies in five time zones.
- Brought in as rescue specialist for two critical projects gone awry, a derivatives exchange (Blackbird.net) for institutional investors and a complex market data rollout for Charles Schwab. Both projects required extensive negotiations with legal, development, marketing, and corporate executives to create new plans. Managed new projects through to completion.
- Conducted high-level corporate discussions and negotiations with technology and business partners in Asia regarding equity investments and joint ventures.
- Managed the development of a Cisco/Reuters joint-value proposition that showcased high-priority areas for solid revenue growth. Held technical sessions across product groups, business units, and essential customers (encompassing London, New York, Chicago, Tokyo, and California). Positioned plan with executives who quickly understood the value and pushed the project through to completion.

INDUSTRY EXPERIENCE (continued)

COLUMBINE JDS SYSTEMS, INC., Redwood City, CA, New York, NY, Denver, CO   **1995 – 1998**
General Manager BMP Division, Senior Director Product Development
Managed life-cycle software development of the company's television station product line, including analysis, design, development, testing, end-user deployment, and hiring and training all staff. The development group consisted of six separate teams in three time zones.
- Shipped seven commercial full-scale software products, including three new products, plus five new interface products, increasing corporate revenue by $9.6 million
- Reduced budget by 20% while increasing employee morale by adeptly reshuffling IT hardware coding, out-of-band architectures, extreme low-latency messaging, distributed caching, complex event processing
- Banking solutions - core banking, single view of the customer, cross and up-sell, real-time customer service, treasury, and payments

BROADCAST MANAGEMENT PLUS, Redwood City, CA, New York, NY, Denver, CO   **1993 – 1995**
Director of Development, Board Member
Oversaw all software development efforts (two separate teams, three contracting groups), including staffing, training, analysis, design, development, testing, and day-to-day problem resolution. Drove product development and marketing strategy for all software products and projects. Main product design withstood massive customer load increases with minimal scaling. Direct responsibility of NASDAQ Europe core trading system development - managed all phases of this $37 million project with 80 full-time staff from initial analysis through design, implementation, and production rollout.

US WEST INC., Redwood City, CA, New York, NY, Denver, CO   **1995 – 1998**
Development Manager, Broadcast Management Plus Division
Responsible for software development of the company's television station product line. Wrote design specifications (data flow diagrams, function specifications, time estimates), test suites, system certification plans, and prepared and managed development and QA schedules.
- Shipped four different commercial software products, three vendor interfaces, five complete upgrades, and numerous releases.

KOEI CORPORATION, Tokyo, Japan, Burlingame, CA   **1989 – 1990**
Senior Software Engineer
Ported gaming software from Japanese PC-9801 to IBM PC and Amiga using straight C and 68020. Released two games ahead of schedule and received special internal 'bug-free' certification.
- Designed, wrote, and documented custom order and inventory tracking software for internal use. Using the internally developed system, KOEI saved over $215K.
- Gained profound knowledge of all things Japanese through five months of training at the head office in Tokyo; including intensive new employee training that encompassed KOEI's philosophy and history, Japanese business protocol, customs, and facets of Japanese culture that foreigners find difficult to understand

NOVASOFT, Sacramento, CA   **1989 – 1990**
Solutions Consultant
Managed full-cycle development of automation projects for small businesses involving accounts receivable, accounts payable, sales-order tracking, purchase order tracking, and networking. Participated in every aspect of each project, from initial analyses of real-world processes to design, coding, documentation, presentations, training, maintenance, and end-user support.

FINANCIAL SERVICES PROJECTS

Exchanges/Liquidity Venues
NASDAQ Europe, NASDAQ, NYSE, CME, BM&F, BMV, MexDer, CNBV, LSE, NYSE, KRX, SSE, Oslo Bors, TSE, TSX, NSE, ASX, TOCOM, AMEX, CBOT, IEX, ADX, BVC, SSE (Chile), Micex, MOEX, PHLX, SZSE, JASDEC

Order Routing/Matching/Market-Making
Goldman Sachs, Morgan Stanley, Credit Suisse, ING, Crédit Agricole, Bank of America, Citibank, VTB Capital, Bridgewater, Citadel, 2-Sigma, SAC Capital, Jump Trading, Virtu Financial, Deutsche Bank Securities, Susquehanna Capital

Market Risk/Surveillance
Lehman, RBS, Merrill, UBS, Wachovia (Wells)

Enterprise Architecture
US Bank, UBS, Barclays, Merrill, Lloyds, Wachovia (Wells), Lehman (Barclays), RBS, BMO, SWIFT, Renaissance Capital, Mizuho Securities, Deutsche Bank, Sberbank, Xinhua

Banking
Citibank, Banco do Brazil, ANZ, TD Bank, Commerzbank, Bank of China, BBVA, CCB, Mizuho, Banco Walmart, Bank of New York, BBVA, RBC Capital Markets, ICBC, M&T Bank, Washington Mutual (JPMC)

Asset Management/Insurance
Fidelity, AIG, AG Edwards (Wells Fargo Advisors), Putnam Investments, Ameriprise Financial, Lloyds of London, Vanguard

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SPECIAL SKILLS (EXPERTISE VARIES)

Coding Languages

C++, C, x86 Assembler, Rust, Python, C#, JavaScript, SQL, RSQL, 6502 Assembler, 680x0 Assembler, Ruby, Java, Go, Modula-2, COBOL, FORTRAN, Forth, Visual BASIC, R, MATLAB, Ada, Perl, PHP, Pascal, Prolog, Julia, Scala, Swift

Technologies/Methodologies

Distributed Enterprise Architecture/Messaging, Agile Development, RESTful APIs, Machine Learning, DevOps, Microservices, Scrum, AWS, Bash/Shell Scripting, Git, Jira, Kubernetes, Helm, Docker, MySQL, Oracle, Jenkins, JSON, ELK stack, Node.JS, Hadoop, CRUD, Struts, JSF, DOJO, UML, JSTL, Web Services, LucidCharts, macOS, Linux, Windows

Communication

Conversational fluency in Japanese (past business presentation level) coupled with 30 years experience in culture and business customs; foundation in French, Spanish; basic Russian, rudimentary German, and very basic Mandarin

Crypto Sphere

Blockchain, Bitcoin, Ethereum, Smart Contracts, Solidity, DLT, ICO, DeFi, NFT, ERC-20, Web3, Consensus Algorithms, PoW, PoS, dApp, Merkle Trees, zk-SNARKs, Hyperledger, Remix IDE, Truffle, Geth, Parity, IPFS, BFT, STO, DAO, Web3.js, Cross-Chain Interoperability, IEO, ERC-721, HD Wallet (Hierarchical Deterministic Wallet), Liquidity Mining, AMM, Consensus Algorithms, Flash Loans, MPC, Taproot, Bulletproofs, Schnook Signatures, Yield Farming, PBFT, BIP, SPV, Mimblewimble, RSK, PoA, DAG (Directed Acyclic Graph), Zcash, Ring Signatures