

PAUL CHARLTON



EDUCATION

Rensselaer Polytechnic Institute *BS: Electrical, Computer, and Systems Engineering*

Sept. 1984 – May 1988

SUMMARY



Trusted C-Level advisor; Distinguished Engineer with C-Level Impact

- Distinguished Engineer and platform strategist operating as a high-leverage individual contributor with consistent C-level business impact. Entrusted by Fortune 500 executives to own and deliver mission-critical infrastructure, platform modernization, and developer experience transformation at scale.
- Architect behind foundational technologies that power over \$1T in ARR — including Apple QuickTime, Intuit QuickBooks, and core JVM graphics. Presented on the WWDC main stage and held pivotal roles at Apple, Sun, and Intuit. Now focused on driving end-to-end architecture — from IoT drivers to cloud-native SaaS — with a passion for clean systems and ruthless simplicity.
- Recognized force multiplier: delivered 100x gains in reliability, latency, and developer productivity through deep systems expertise, automation, and hands-on mentorship. Led org-wide transformations in companies of 2,000+ engineers, directly managing teams up to 200.
- Award-winning inventor with multiple patents and a sharp business instinct for IP protection — reclaiming over \$150M in license revenue. Trusted partner in strategy, innovation, and delivery. Former Chief Cloud Officer, CTO, and VP Engineering; now advising VC-backed startups while remaining fully IC by choice.



EXPERIENCE

University of Virginia - School of Medicine  [\[Full Story\]](#)  *Researcher*

Youngest paid researcher at UVA School of Medicine at 14, recruited after scoring “>170 IQ off the chart” in UVA’s gifted research program. In a vision research lab under the Department of Physiology, I pioneered the lab-scale integration of analog biomedical equipment with digital computers, automating data collection and experimental workflows in a fully dark lab. I designed and built custom circuits, developed 6502 assembly drivers for GPIB-controlled systems, and implemented an early speaker-independent voice recognition system - advancing published medical research and mentoring graduate-level scientists before entering college.

Chase Manhattan Bank  [\[Full Story\]](#)  *Director of Advanced Technology Lab*

I modernized Chase’s retail and back-office banking systems, replacing paper-based workflows with PC and networked solutions that drastically reduced risk, cut processing time from days to hours, and supported scalable acquisitions. I architected and developed the first ever Windows GUI-based online banking platform, engineered high-security systems for wire transfers and vault reconciliation, and implemented middleware to unify legacy systems through screen-scraping and field validation. My efforts enhanced operational security, uncovered fraud, and saved millions through alternative computing strategies and vendor negotiations.

D.E. Shaw & Co.  [\[Full Story\]](#)  *Technology Specialist*

At D. E. Shaw, I joined as employee #24 and led engineering for Jeff Bezos’s Third Market trading desk, architecting a GUI-based order entry system and scaling infrastructure to support market making in 2,000+ securities. I diagnosed critical system deadlocks in the Stratus OS, optimized predictive trading algorithms using multidimensional statistical calculus, and pioneered in-house logging of historical market data to replace costly external sources. I contributed to early brainstorming sessions that seeded the idea for what became Amazon. My push for employee equity — tying ownership to impact rather than seniority — challenged the status quo and ultimately helped catalyze an exodus that included Jeff’s departure to launch it.

Apple Computer Inc.  [\[Full Story\]](#)  *Principal Engineer*

I led the cross-platform port of QuickTime and macOS from proprietary Apple hardware to Windows (x86) by building a fully preemptive, thread-safe implementation of the Macintosh Toolbox from scratch and integrating QuickDraw 2D. I architected and launched the QuickTime Media Layer (QTML), which enabled Mac applications to run on Windows and SGI IRIX. QTML later formed the foundation of Apple’s Carbon API and macOS X transition. My work was pivotal to Apple’s \$150M legal victory over Microsoft/Intel, and I presented the cross-platform QuickTime rollout at WWDC in the main hall to over 1,000 developers.

Sun Microsystems - JavaSoft  [\[Full Story\]](#)  *Principal Consulting Engineer*

As Principal Consulting Engineer, I rearchitected and optimized the Java2D subsystem for JDK 2, boosting glyph rendering performance by 40x to deliver over 200,000 glyphs/sec on 300Mhz Pentium II. I also applied low-level Intel i386 pipelining techniques to the Java Bytecode interpreter, achieving a 5x performance gain. This foundational code remains virtually unchanged in every Android device today and across graphical Java-based systems globally.

Startup *[Full Story]* Co-Founder

Co-founded C2B Technologies and retained a 20% ownership stake through its acquisition. Played a pivotal role in negotiating the sale of C2B to Inktomi, uncovering material omissions during due diligence and asserting shareholder rights to secure full equity entitlements. Successfully enforced delivery of final shares and approved the acquisition, which closed at \$150M. Personally received over \$25M in Inktomi stock. The company's core innovation enabled cross-vendor price comparison in online shopping—an early forerunner to modern e-commerce aggregators.

Hewlett-Packard [\[Full Story\]](#) *Hardware and Software Engineer*

At Hewlett-Packard, I developed advanced SCSI-II drivers and boot ROMs for magneto-optic and tape storage devices across HP-UX, MPE, and Apollo Domain OS, including debugging low-level OS synchronization flaws and pioneering in-house ASIC/VLSI chip design with a successful first tape-out. I led a data recovery initiative for NASA's historic space mission telemetry, creating custom software and decoding pipelines for degraded tape reels, and contributed to integrating HP storage with Apollo workstations post-acquisition. Certified as a Six Sigma coach, I worked cross-functionally to enforce defect prevention at the requirements stage and applied HP's culture of merit-driven, engineer-led innovation.

Intuit [Full Story] Software Architect

Recruited by Intuit during a critical transition period to drive cultural and architectural reform amidst a high-stakes rewrite of QuickBooks. Embedded as a staff engineer, I rapidly identified and resolved a decade-old, customer-visible "ghosting" bug in under two weeks—defying expectations in a code-frozen environment. My solution, involving robust IPC design and a race-condition-proof file handling strategy, shipped in the gold master of QuickBooks. I also diagnosed systemic flaws in build tooling (Electric Cloud), influenced product UX for accountants, and became a trusted force for mentoring and strategic problem-solving across teams.

Sun Microsystems *[Full Story]* *Principal Consulting Engineer*


In under 10 weeks, I led a 10-person team to rescue and deliver JavaFX 1.0 on time—rewriting the multimedia pipeline, eliminating 30% of the legacy code, and adding 40,000 lines of high-performance, test-driven code to enable smooth, synchronized video playback across platforms. I re-architected the system for native performance, preemptive multithreading, and customer delight, coordinating closely with product management and external partners. Our release marked Sun’s first on-time software launch in over a decade and heralded a 51% increase in market cap within 15 days.

Publications, Patents and Products


Key Products: Apple QuickTime (iTunes, iOS), Apple Carbon API, JavaFX, Java2D (Android), MDOS, QuickBooks

Selected Publications: Morton, R. W., Chung, J. K., Miller, J. L., Charlton, J. P., & Fager, R. S. (1986).


Extended sensitivity for the calcium selective electrode. Analytical Biochemistry, 157(2), 345–352.

Google Scholar  DOI: 10.1016/0003-2697(86)90636-6

Selected Patents:

US 5,875,354  – *System for Synchronization by Modifying the Rate of Conversion by Difference of Rate Between First Clock and Audio Clock* • Inventors: Paul Charlton, Keith Gurganus; Assignee: Apple Inc.; Early solution to audio/video sync via dynamic sample rate conversion. Now core to AV streaming, DAWs, AI video rendering, and IoT synchronization.

US 5,825,359 – *Improved Arbitration of a Display Screen in a Computer System* • Queue-based screen access control in multi-process environments.; Anticipated today's GPU compositing (Quartz, DWM, Wayland) and virtual desktop rendering.

US 5,949,434  – *Scaling 2D Graphic Images Without Banding Artifacts* • Enhances Bresenham’s algorithm with pseudo-random shifts to reduce visual artifacts.; Forefather of adaptive upscaling in DLSS, medical imaging, and AI-based super-resolution.

Technologies & Keywords

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