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I deliver innovation.

Summary:

I deliver innovation.

I ship profitable products that delight customers, lead and/or contribute to mission-critical project teams, and am a strategic resource to management and business units.

I've been effective at scales from start-ups to the Fortune 50. I've directly led teams of upwards of 30+ people, with responsibility for larger organizations, where I've run innovative thought leadership units (including Advanced Technology for Autodesk, Advanced Product Development for Adobe and others).

I can flexibly leverage the best of both traditional and agile methodologies (I'm a Certified Scrum Master). I also consult, mentor individuals, and am stimulated by the challenge of amplifying the impact of the most competent and creative talents.

Individually, I actively program and have written many thousands of lines of shipping code. I also prototype and manage new product development, author white papers, present and facilitate organizational learning and conduct and publish original research.

I've developed complete high-performance integrated hardware and software systems (chips, boards, racks and studio installations), even a console video game. I helped design and implement the original Apple Macintosh research prototype. I've coded in Java, C++, Python, Ruby-on-Rails, Lisp, assembly, microcode, XML, OWL etc etc.

I apply modern Object-Oriented, Model-Based and Domain-Driven Design Patterns and techniques. I invent and create new algorithms and technologies. I track new developments in industry, academia, the open-source and other communities and collaborate with business leaders to evolve successful technology strategy.

I deliver innovation.

History:

2002—Present: Chief Technologist, Consultant, Principal, Fixpoint Inc, Larkspur, CA & Adozu Inc, Cambridge, MA

Principal in **Fixpoint Inc.**, a consultancy delivering advanced software engineering and management services to both mature enterprises and start-ups. Developed native Java (J2EE) constraint engine for object-oriented business process management in finance, mortgage and insurance, as well as deployments based on commercial business rules, OWL/Protégé, configuration and 3D graphics packages. Client engagements include Resonant Software, Tavant / Ameriquest, Ilog / Network Appliance, Wells Fargo Capital Markets and stealthy start-ups.

Principal in **Adozu Inc.**, developer of active-RFID based asset-awareness and real-time location systems (RTLS) and web services.

2008—2010: Principal Scientist / Manager Advanced Product Development, Adobe Systems Inc, San Francisco & San Jose, CA & Seattle WA & remote

Direct a stellar team of Scientists and Engineers in the Advanced Product Development group for Dynamic Media (video, audio, web, animation) with focus on the product-after-next, and beyond. Director-level responsibility for innovation pipeline for products. In parallel, Principal Scientist grade indicates top 5% technical track, Architect-level etc. Work areas include next-generation video, audio and animation technologies ranging from broadcast and motion picture through desktop and consumer. R&D in: enterprise-scale and cloud-based media production, democratized broadcasting, image content analysis, search, monetization, media metadata, semantic web, stereoscopic 3D, codecs, software CPU/GPU architectures and advanced programming technologies. Team filed several dozen patents, includes Oscar and Emmy winners for technical achievement, Internet pioneers, software gurus and other high-impact talents. Internal consulting resource, mentoring, organizing distinguished speakers programs, corporate technical summit activities, etc.

2009—Present: Trustee, Fundraising Chair, The OEIS Foundation Inc, New Jersey

Trustee for non-profit 501(c)(3) foundation to support the Online Encyclopedia of Integer Sequences, wiki and related activities. Currently chair Fundraising Committee. See <http://oeisf.org>

2007—Senior Scientist Engineer, Powerset Inc, San Francisco

Develop algorithms and tools for massively parallel distributed indexing pipeline for disruptive new natural language search engine. Involved Java, JSON, Ruby-on-Rails RESTful resources for Amazon EC2/S3 cloud system, Hadoop, map-reduce, test-driven-development.

1996–2002: Senior Contributor, Software Engineering, Siebel Systems San Mateo, CA

Advanced technology "guru" with responsibilities ranging from architecture to hands-on code development (primarily C++). Originally reported to CTO with pure technology charter (no management duties) to incorporate AI capabilities into Siebel's highly successful business software systems. Accomplished a range of assignments as company grew from 100-employee pre-IPO start up to 8000-employee global public company. These include:

Configuration Engines—Architected evolution through multiple base technologies: Concentra (now Oracle) propagation network, proprietary ANSI Common Lisp-based transitional design and two generations built from Ilog's constraint software components (initially purely quantitative, then created first commercially deployed object-oriented user-programmable interactive configuration engine). Revenues for line sized at \$100-200M

Model Definition System—Designed and implemented advanced combinator-based rule expression language evaluator and model "factory" (optimizing compiler), utilized by software modules (and power users) to communicate model requirements to configuration engines.

Modeling Infrastructure—Database versioning algorithms, model management tools, automated test harness.

Also wrote company's first automated test suite in Visual Basic that took online product definition database and generated full external coverage sequence for all entities presented by entire Siebel product (database records and queries, business logic modules, UI widgets, etc). Became basis for ongoing test-automation development as product suite grew.

1995–1996: Principal, Blue Dot Inc, Novato, CA

Clients included Sonic Solutions Inc (reported to CEO, responsible for hardware and software development) Protozoa Inc, Asymmetrix Inc and Franz Inc.

Formed Blue Dot Inc with partner to exploit early market window (pre-Java, ActiveX etc) for powerful, easy-to-use, visual programming, client/server and WWW tools. Implemented fully functional initial version of net-enabled object-oriented Visual Basic "clone" for developing web applications. Based on ANSI standard Common Lisp, positioned to interact with advanced web technologies such as CL-HTTP. Helped draft and market business plan etc. (Abandoned when partner took CTO position with Siebel Systems start-up).

1994–1995: Vice-President, R&D, Electrogig BV. San Francisco, Amsterdam & Hong Kong

Reported to CEO. Responsible for all product development and technology worldwide—from ~\$1M list price "virtual set" graphics supercomputer & video broadcast systems, through 3D graphics & animation products on multiple workstation platforms (SGI, Sun, HP etc) & vertical markets (graphics, CAD, prepress etc) to new electronic delivery & production-flow management products & patents. Define technology vision and implementation.

1993–1994: Director, R&D, Software Publishing Corp. Santa Clara, CA & Madison WI

Reported to VP R&D. Supervised ~35 positions including software engineering, QA & documentation. Overall responsibility for remote site (Madison) coordinate with HQ (Santa Clara), ~70 total employees. Deliverables: Desktop Conferencing & Network Presentation Product for Windows, Graphic Visualization Engine for Windows, Word Processor (off-shore development) for DOS and Image Cataloging Product for Windows.

1992–1993: Principal, Xvelope San Rafael, CA

Operated consultancy, specializing in management services, development, multimedia titles and emerging technologies. Major efforts included interim VP R&D for McAfee Associates, reporting to President/COO, responsible for all engineering of US ~\$20M public software company. Reorganized R&D into functions and product groups; established QA, documentation and technical operations; initiated product management and development processes. Deliverables: Electronic Software Catalog & Distribution for DOS & Windows and Anti-Virus Suite for DOS, Windows, OS/2 & Novell Netware. Also designed Educational/Creativity Game (target ages 5-11) for SEGA Genesis for Head Games ("Wacky Worlds", released Fall '94). Patent consulting.

1990–1992: Director, Advanced Technology, Autodesk Inc Sausalito, CA

Reported to President/CEO. Supervised ~30 positions, including software designers, developers & documentors, product and business managers, marketing and telesales, academic interns, professional and strategic services staff. Annual budget US \$3M. Actuals managed within 1%. Deliverables included:

Multimedia / Hypertext—multi-platform (DOS, Windows, Mac, Unix) authoring package. Based on standard Scheme, adding object system, componentware, security & GUI support. Deployed extension language for graphics/multimedia, molecular modeling, CAD. Researched information filtering agents (cf CACM 12/92).

Virtual Reality—reoriented research team to product development. Produced C++ class library (& 600pp documentation) for applications developers, scalable from PCs up. Applied for technology patents. Drafted product plan, covering features, marketing, pricing, channels, support 3rd-party program etc. Transferred to Multimedia Division for launch.

Retail Educational Software Product Line—Shipped: Rudy Rucker's Cellular Automata Lab and James Gleick's CHAOS: The Software. In Development: artificial life. Responsible for marketing (advertising, telesales, etc) and P&L—exceeded revenue targets by >50%.

R&D Services—provided product "builds" for multiple business units to QA, in-house contract programming services, etc.

Information Resources—provided technical library, print and media collections and extensive online database and related services to company. Presented ongoing Technical Forums and other programs.

Future Technology—developed future technology scenarios (Global Business Network methodology). Implemented demonstration prototypes of future technology products. Conducted research projects, new business analysis, etc.

1982–1990: Symbolics Inc., Cambridge, MA (two positions)

'87–'90: Senior Staff Member / Manager, Systems Development Symbolics Graphics Division (SGD), Los Angeles, CA

Reported to VP/Division General Manager. Directed about a dozen hardware and software professionals. Coordinated with applications developers, with functions within Division and with other corporate departments, especially Marketing and Manufacturing. Responsible for delivering all hardware and software up to color windowing system, including:

Intelligent Framebuffer—Developed first commercial HDTV-product on standard VME bus. Developed 3 large-scale semi-custom gate-arrays (ASICs), deployed in 11 packages per board (non-recoverable engineering investment about US \$500K). Publicly showed operational prototypes 6 weeks after power-up at a major trade show (SIGGRAPH).

Graphics Array Processor—Developed and introduced proprietary board-level graphics accelerator.

Object-Oriented Tools and Applications—multiproduct development suite, microcode and system software.

'82–'87: Manager, Regional Technical Operations, Symbolics Inc., Palo Alto, CA

Dual report to Vice-President, R&D and Vice-President, Operations & Finance (CFO). Recruited to open the company's first field office. General functional responsibility to top management including:

represented functional organizations in the field office

coordinated with Headquarters in Mass. and Manufacturing, Finance and Operations in L.A.

managed day-to-day operations, financial and related support services and staff

managed facility (10K ft² physical plant, large computer room, office LAN and company WAN etc)

helped build regional management team, including R&D, Sales, Service and Training functions.

supported early installed base (several dozen US \$100K+ systems at high-level R&D customers)

acted as liaison hosting a strategic partner's local R&D team (Analog Devices Inc) at our facility

plus technical R&D-oriented deliverables including:

developed very high-performance (ECL) floating-point arithmetic unit

developed early portable Common Lisp implementation (pre-ANSI standard)

R&D in programming and mathematics (supported R.W. Gosper's world record computation of π)

implemented simulation of competitor's (Xerox) window system

implemented expert systems

developed applications with key customers

evaluated potential acquisitions

1978–1982: Member Technical Staff / Systems Programmer (various employers): (summary)

Xerox Corp. Palo Alto Research Center (PARC), *Palo Alto, CA*

Apple Computer, *Cupertino, CA*

Artificial Intelligence Laboratory, MIT, *Cambridge, MA*

Artificial Intelligence Laboratory, Stanford University, *Stanford, CA*

Provided systems programming and microcode support to researchers in AI, Cognitive & Computer Science, Advanced Architectures (robotics, "connectionist" research, supercomputers) etc. Designed and developed systems software for the original Macintosh research project & Lisa systems. Mathematical applications (eg numerical library for S-1 supercomputer for Lawrence Livermore National Lab). Real-time signal/image processing, "desktop publishing" (spline & raster algorithms).

1969–1978: Contracting / consulting in research, industrial, educational, medical and commercial applications.

Early personal computing advocate: positions in computer education, writing, production and as technical editor. Helped found, edit and/or contributed to: Dr. Dobbs' Journal, CoEvolution Quarterly, Computer Music Journal, People's Computer Company Magazine and others. Popularized work of Mandelbrot (fractals), Moravec (robotics), Nelson (hypertext), Thom (catastrophe theory) etc. Founded and ran public-access non-profit educational computer centers.

Academics & Research:

Non-degreed self-starter, working continuously in leading-edge computing for 25+ years. Capable of meeting high academic and professional standards.(eg published in mathematical and engineering journals; served as referee, including for NSF, etc). Since 1976: guest researcher and affiliate at the Center for Computer Research in Music and Acoustics (CCRMA), Stanford University (including an appointment as Visiting Scholar). Since 2002 serving as an Associate Editor for *The On-Line Encyclopedia of Integer Sequences*.

Professional Affiliations:

Certified Scrum Master

Trustee: Online Encyclopedia of Integer Sequences Foundation (oeisf.org)

Founding Member:

ACM, Ventura chapter (Programs Chair)

IEEE Computer Society, San Francisco chapter (Program Committee)

Member:

American Mathematical Society (Life Member)

Mathematical Association of America

North Bay Multimedia Association, SofTECH, SDForum, etc

Steering Committee:

The Hackers Conference

Skills & Experience Areas Keyword Summary:

2D/3D graphics & animation, artificial intelligence, audio & music, authoring systems, business enterprise software, CAD, cloud computing, configuration, constraints, cryptography, database technology, desktop publishing, distributed computing, document management, education, electronic distribution, expert systems, games, hardware design, information services, languages, mathematics, media, mobile computing, multimedia, networking, numerics, object-oriented design, modeling & programming, optimization, personal information management, presentation graphics, process management, QA, robotics, signal processing, software development methodology, software security, symbolic programming, systems programming, user interface, video, visualization, workflow...

Avocations: Concrete mathematics (algorithms, foundations of computation, symbolic systems), natural sciences (chemistry, biology, paleontology), arts (literature, music, visual media), games.

Some Recent Publications:

Descending Dungeons and Iterated Base-Changing,
(in "The Mathematics of Preference, Choice and Order")
<http://arxiv.org/abs/math/0611293>

Carryless Arithmetic Mod 10
(to appear in "College Mathematics Journal")
<http://arxiv.org/abs/1008.4633>

Dismal Arithmetic
(submitted)
<http://arxiv.org/abs/1107.1130>

References available.