Curriculum Vitae

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Summary of Experience

During my forty five plus years in the computer industry, I have acquired a broad range of experience ranging from large scale systems to deeply embedded systems. My involvement has been in management, systems architecture and design, and implementation. This extensive practical experience has been complemented by mathematics and computer science courses at various universities. In the micro area, I have worked on operating systems, networks, communications, software tools and applications. I am familiar with hardware design and debugging, but I have not done detailed hardware design. In the mainframe area, my work has been in operating systems, applications, and computer operations.

Technical Expertise

x86, MIPS, Motorola 680x0, 8080, MCS-48/51/96, Z80, 6502, IBM370
Apple Macintosh, Windows
Assembly language, PLM, PASCAL, C++, C, COBOL, PL1
Realtime interrupt driven systems, multitasking, multiprocessor
Memory Management, Hardware Emulation, Disk Technology
Synchronous and asynchronous communications
IP

Professional Experience

Sony Electronics, US Research Labs **April 1987 – June 1998**

• June 1998 to June 2009: Sony Electronics, I transitioned to being an employee after a 3 year period as a contractor. As an employee, I became more involved in the strategic directions for the technology developed within the US research labs. As part of this work, I participated in the development of many patents. My efforts were directed to providing an architectural basis for processing AV data using IEEE1394 (Firewire or iLink). This included chip architectures and software architectures and the melding of these disciplines. A considerable set of patents were developed by in the course of this work. In addition to architecture, I wrote HAL layer for Sony's iLink chips for various platform, primarily based on MIPS cores.

I also participated in various standards development organizations, including CEA, 1394 Trade Association, UPnP and IEEE.

As the viability of home networks became a vehicle for commercial content delivery, Sony was instrumental in forming the DLNA. This alliance of consumer electronics, computer and content provider companies became the major focus of the Network and Systems Architecture group. I transitioned into primarily standards work as the NSA group moved from development of chips and software into standards oriented to home networks. In this capacity, I participated in various committees within the DLNA (ecosystems, technical, and mant task forces) as an architect and author. I also participated in the UPnP technical committee and the UPnP QoS working committee.

During my employment with Sony, I received awards from the company and the DLNA.

Self Employed Consultant **April 1987 – June 1998**

• June 1995 to June 1998: Sony Electronics, LSI Labs— 1394 research and development. Project lead for 1995 Comdex 1394 Demo (Windows). Assist chip designers with 1394 architectures. Development and implementation of 1394 software architectures. Embedded software development for 1394 systems.
• April 1994 to August 1995: Apple Computer—Newton development. Various tasks related to Newton connectivity including radio technology.
• January 1993 to October 1995: Apple Computer (ATG) — P1394(FireWire) development. Developed Isochronous experiment which was used for Comdex 93 demo. Additional research in 1394 distributed architectures.
• June 1992 to November 1992: Global Village Communications—ARA development. GVC contracted to Apple for ARA co-development. Worked on multi-port server coprocessor software.
• November 1991 to May 1992: Apple Computer—SCSI disk array prototype for ATG, based on NCR 720 SCSI Scripts processor. Used to demo raw video from disk at the 1992 WWDC.
• Sep 91 - Jan 92 : Tandon Corporation. - developed Macintosh SCSI Driver, and Macintosh Disk Prep Utility for second generation Data Pac.
• Sep 90 - Sep 91: Ames Associates. - consulting on SCSI and digital audio. Implemented SCSI Initiator for DSP.
• May 90 - Sep 91: Mouse Systems Corp. - consulting on ADB. Implemented CDEV for 3 button ADB mouse.
• Sept 89 - October 1992: On Target Associates - consulting on various Macintosh/NuBus and PC projects.
• June 89 - Feb 90: Traveling Software, Inc. - developed SCSI Disk Link application for the Macintosh Portable. Developed app to allow portable's SCSI drive to be used as target for desktop Macintosh.
• Feb 89 - Aug 89: Jets Cybernetics - consulting for Jets Mac II SCSI DMA NuBus board and software.
• Jul 87 - July 90: I managed a project for Tandon Corporation which produced a disk product for the Macintosh computer. This product was a SCSI attached, removeable hard disk. My responsibilities were to define, implement and manage this project using resources from within Tandon and using consultants. During this project, I designed the controller architecture, wrote the target device SCSI Command Interpreter, the Macintosh SCSI Driver, and the Macintosh Disk Prep Utility. This project expanded to include the definition of the Data Pac's future technology and use of the SCAdPAC on the PS/2 Microchannel.
• Sep 88 - Jan 89: Maxtor Corporation - Consulting to on SCSI controller design issues.
• Mar 88: For MacUser magazine, I participated in a review of large SCSI disks for the Macintosh. I wrote a trap monitor INIT to measure performance of SCSI Drives.
• Apr 87 - Jan 88: As a consultant, I continued to work on the Apple coprocessor projects for Phoenix Technologies. During this time, the first version of Mac286 was released to the manufacturer (AST Research). This was a continuation of my project and technical role at Phoenix (see below).

Independent Developer/Entrepreneur

• April 90 – June 1998: Concentric System Design, Inc.: a founder of company to develop and license portable SCSI target device firmware. I was chairman. This business was folded in 1998.

- Projects: These are projects which I have personally undertaken. I am an Apple Developer (Partner).
  - Memory systems for Macintosh Portables (complete)
  - ADB Appliance device (inactive).
  - Teleradiology using Macintosh platform (inactive).
  - Mac IIci/si cache card (complete)
  - RamDisk (complete)
  - Memory for Macintosh using 4Mb SIMM modules (complete)

Professional Employment

Sony Electronics, Inc. June 1998 - present
San Jose, CA
I became a full time employee of Sony US Research Laboratories after approximately 3 years as a contractor. My motivation for this was my desire to participate in architectural development and decisions that were not available to me as a contractor. I continued work in progress as well as beginning development of new projects. My work has yielded many patents for Sony in the area of digital interconnect architectures as well as significant contributions to product development. I have also been active in the development of standards such as SBP and 1394.1 (1394 bus bridges). I have also been lead architect in the development of processing models for 1394 isochronous data streams. This work included the development of a 1394 native HDD as well as processor architecture proposals. Much of my work is still protected under non-disclosure. I am a co-recipient of a Sony Invention Award in recognition of the value of a patent for which I was an inventor. I have also published 2 papers in the Sony internal research forum.

Phoenix Technologies Ltd March 1986 - March 1987
Norwood, MA and San Jose, CA
I joined Phoenix Technologies at time when the company was interested in expanding it's operations on the West coast. Phoenix has many customers in the West and found it difficult to serve them from the Norwood operation. I joined as Director of Engineering for the West. At the time I joined, Phoenix was negotiating a DOS coprocessor deal with Apple Computer. This became the first major project on the west coast and involved coprocessors for Apple's new product line (MAC II, MAC SE). Phoenix had done a number of coprocessor developments for high end workstation products (ie, Sun Microsystems) in the Unix environment. The Apple projects, however, represented the first undertaking in which a complete product would be delivered. Further, because of the substantial differences between the Apple environment and UNIX, we established the development goal of creating a portable set of coprocessor software which could be readily adapted to distinctly different environments. My role in these projects was system architecture (hardware and software), project management, customer interface, and some implementation. These products have been very well accepted by the Apple world because of their complete integration into the Apple operating environment. During these projects I also helped develop additional business in coprocessors and other areas. I left Phoenix because of opportunities to do diverse product development in my own business.

NNA Corporation March 1984 - February 1986
Scotts Valley, CA.
NNA Corp was founded by the core engineering personnel from Victor Technologies, including Chuck Peddle. The original objective of the company was to offer a wide range of consulting services, from engineering to graphic arts. Further, products would be developed internally and companies spun off to produce these products. Initially, we did several consulting jobs for Victor (which was in chapter 11) and for some European companies.

ACT, in England, was one such undertaking. Myself and one of the programmers assisted ACT in bringing MSDOS 2.x up on the Victor network. The first major product development was for Victor Technologies. The product was making the Victor machine into a PC compatible computer while retaining the Victor 9000's unique features. This undertaking included writing a ROM BIOS, hardware emulators, a PCDOS port, and numerous utilities. We also did a hardware set (an option board and a new disk controller). My responsibility was system architecture, overseeing implementation and a part of the implementation. The add in product was finally integrated into a new computer. During this project we also began another product development centered around a proprietary disk technology. This product is the basis of the Tandon PAC-286 computer. The removable disk technology and the mapping scheme were designed by NNA. My responsibilities were primarily system architecture. I left NNA because I felt that the proprietary PC emulation software should have been used as an asset based product development and sold to companies which needed PC compatability on non-PC computers. During my employment, I was also a member of the Board of NNA.

Victor Technologies, Inc. February 1981 - February 1984
Scotts Valley, CA.
Victor produced a small business computer, based on the 8086 family, which competed in the mid price range. The company was founded as Sirius Systems Technology in December of 1980. I joined in February of 1981 as the Director of Software Development. At that time, the microprocessor had been chosen and a first pass hardware design was being completed. During the next several months I investigated available operating systems, with an eye to availability of applications for the small business computer market. CP/M-86 was chosen as the first operating system to implement. Myself and another person brought up the BIOS, I wrote the boot program: we had a system running on prototype hardware within 3 weeks. Following this, we revised the hardware design and rewrote the prototype software to be the basis of the production operating system. Also during this time, I was involved in discussions with Microsoft, about their product line, and with Victor Business Products about an OEM agreement. For several months thereafter, I was the primary interface to Microsoft. During this time, Microsoft made MSDOS available to us and we were told IBM was going to use MSDOS on the PC. On my recommendation, we decide to implement MSDOS. I converted the BIOS to handle the MSDOS interface and had it running for COMDEX.
Virtually all of the software development was done in PL/M 86 on the intel MDS. As we hired more software people, it became obvious that the MDS was a severe bottleneck in software development. I initiated a project to implement the intel UDI on the Sirius computer. This allowed system software development to be done on the product.
Prior to embarking on the MSDOS development effort, I recommended to my management that I concentrate my attention on product development and that we hire a software manager. Prior to this time, I had five people reporting to me. Focusing on technical areas, I completed the MSDOS project and spent time investigating future software products such as networks and communications. My next project was the fixed disk product. Prior to the 1982 Hanover Fair, I spent three weeks writing and integrating these drivers into our CP/M-86 BIOS. Next, I brought up a prototype fixed disk MSDOS and, based on this experience, recommended that we stop supporting CP/M and make MSDOS the standard operating system. In order to continue supporting the CP/M users, I wrote a CP/M emulator which ran on MSDOS.
About this time, Sirius acquired Victor and changed the name of the company to Victor Technologies. This had no direct effect on the software development effort.
My last project was the design and implemention of a Local Area Network for the Victor 9000. This is an extensive project, involving four technical people, consisting of system software, file server software, spooling and a utility set. The server is based on MSDOS 2.0, allowing reasonable management of the user's view of the file system. I brought up MSDOS 2.0 as part of this project.

The last responsibility I had was managing the Network and Telecommunications group, with responsibility for the network product and the entire set of communications products. The new developments in this group were integration of the comms products and the network, and adding internetting. In this capacity I had six poeple reporting to me and I was also involved in the operating systems group's undertakings.

ITT Courier Terminal Systems December 1975 - January 1981
Phoenix, Arizona
My last project was the design and implementation of an IBM 3276 compatible communications controller. I brought this product through the design stage and had begun implementation when I left Courier. There were 5 people working for me on this project. As the Senior Staff Engineer, I also assisted the other design and implementation efforts at Courier. Prior to this project, I worked on system design, implementation and hardware/software trade-off evaluations. This included evaluation of a Japanese computer for a proposed distributed processing entry system.
Prior to this, I was Manager of Operating Systems and Tools Development. In this capacity, I was responsible for the design and implementation of an operating system for a multiprocessor, multitasking operating system for a Z80 based communications controller. At the same time, the internally developed software tools were under my direction. We implemented a software development system an a modified terminal, which included an operating system, utilities, and a relocating macro assembler. In this capacity there were six people reporting to me.
My first product at Courier was a POS system for McDonald's Restaurants. This system was a redundant, shared memory system which handled twelve attached keystations, a printer and communications. The applications software included order taking, store reporting, inventory control and reporting, drive thru support, and an employee time keeping system. This project involved system design (hardware and software), systems analysis and implementation. In addition to the basic product, an set of peripheral devices was also developed (printer and drive thru display.) The product was beta tested ten months after I joined Courier. My responsibilty was project engineer, with both technical and managerial responsibility for the development team and the product.

Motorola March 1974 - December 1975
Phoenix, Arizona
At Motorola, my responsibilities as Manager of Operating Systems support included SYSGENs (MVS and SVS), TSO, user support, JES2 and problem determination. The installation also had a COMTEN message switch which carried worldwide traffic. In addition to gens, we made modifications to TSO and JES2 and used performance measuring tools.

Research Center March 1969 - March 1975
Rockland State Hospital
Orangeburg, New York
My assignments at RSH were varied. I was involved with the Multi-State Information System (MSIS) from the early phases of the project. This system was the primary function of the computer center at the research center and was funded by the Federal Government. The system was operated thru a teleprocessing network involving six northeastern states and provided patient tracking and a statistical data base for state mental hospitals. The data base used DL/I operating in a abatch environment. My positions at RSH were systems analyst programmer, and operations manager. The dual CPU's ran OS/360 and HASP.

T. J. Lipton December 1966 - March 1969
Englewood Clifs, New Jersey
My title was Coordinator of Computer Software, which involved systems programming on DOS/360. The computer center converted from a 1440 disk system to a 360, using COBOL. Prior to this my work was as a programmer analyst in applications.

Automation Sciences June 1966 - December 1966
New York, New York
This company was a consulting operation with substantial contracts at AT&T Long Lines. I worked in several areas on design and program tasks.

US Army June 1964 - June 1966
Fort Monroe, Virginia
Initially, my assignment was a computer operator on a 1401 system. After nine months, I was assigned to programming and worked in several applications areas. I received a letter of commendation for my work.

Home Insurance Company September 1963 - June 1964
New York, New York
Console operator on 7080, 1410, and 1401 systems.

McDonnell and Company January 1962 - June 1963
New York, New York
Operator on 1401 and tabulating equipment

Education

Brooklyn Technical High School (1956 - 1959) College Preparatory
City College of New York (1959 - 1961) Mathematics major
Arizona State University (1975 - 1978) Mathematics major(part time)

Publications

The Multi-State Information System: Frontend Processing and Data Security. ACM 1974 National Conference.
Safeguarding Psychiatric Privacy. Edited by Laska and Bank.

Patents - Awarded

7,463,647 Method of and apparatus for providing reserved bandwidth to ethernet devices over switched ethernet including a home network wall plate having a combined IEEE 1394 and ethernet modified hub
7,318,090 Method for utilizing concurrent context switching to support isochronous processes
7,287,113 Method of and apparatus for controlling bidirectional streams of isochronous data flowing between an application and a bus structure
7,254,702 Method of distributed recording whereby the need to transition to a second recording device from a first recording device is broadcast by the first recording device
7,154,910 Method for any speed dubbing using isochronous packets on isochronous channels or on asynchronous streams over an IEEE 1394-2000 serial bus network
7,103,700 Method of and apparatus for controlling bidirectional streams of isochronous data flowing between an application and a bus structure
7,069,558 System and method for interactively utilizing a user interface to manage device resources

6,993,022 Method of and apparatus for directly mapping communications through a router between nodes on different buses within a network of buses
6,973,653 Method for utilizing resource characterizations to optimize performance in an electronic device
6,952,826 Method for implementing a multi-level system model for deterministically handling selected data
6,934,781 System and method for effectively performing isochronous data transfers
6,904,475 Programmable first-in first-out (FIFO) memory buffer for concurrent data stream handling
6,901,474 Application programming interface for data transfer and bus management over a bus structure
6,898,172 System to reduce writing overhead to a hybrid optical disc
6,895,379 Method of and apparatus for configuring and controlling home entertainment systems through natural language and spoken commands using a natural language server
6,859,846 Method of distributed recording whereby the need to transition to a second recording device from a first recording device is broadcast by the first recording device
6,847,650 System and method for utilizing a memory device to support isochronous processes
6,810,452 Method and system for quarantine during bus topology configuration
6,757,760 Method of and apparatus for dispatching a processing element to a program location based on channel number of received data
6,751,697 Method and system for a multi-phase net refresh on a bus bridge interconnect
6,728,834 System and method for effectively implementing isochronous processor cache
6,728,821 Method and system for adjusting isochronous bandwidths on a bus
6,667,988 System and method for multi-level context switching in an electronic network
6,647,446 Method and system for using a new bus identifier resulting from a bus topology change
6,631,435 Application programming interface for data transfer and bus management over a bus structure
6,631,415 Method and system for providing a communication connection using stream identifiers
6,587,910 Isochronous data pipe for managing and manipulating a high-speed stream of isochronous data flowing between an application and a bus structure
6,584,539 Method and system for message broadcast flow control on a bus bridge interconnect
6,578,109 System and method for effectively implementing isochronous processor cache
6,557,067 System and method to effectively compensate for delays in an electronic interconnect
6,539,450 Method and system for adjusting isochronous bandwidths on a bus
6,535,940 System and method for fast data transfers in an electronic network
6,519,265 System and method for context switching in an electronic network
6,502,158 Method and system for address spaces
6,496,860 Media manager for controlling autonomous media devices within a network environment and managing the flow and format of data between the devices
6,493,753 Media manager for controlling autonomous media devices within a network environment and managing the flow and format of data between the devices
6,463,489 System and method for effectively performing isochronous data transfers
6,457,072 System and method for effectively performing physical direct memory access operations
6,453,376 Method for implementing scheduling mechanisms with selectable resource modes
6,421,745 Asynchronous connections with scattering page tables for transmitting data from a producer device to a consumer device over an IEEE 1394 serial data bus
6,421,069 Method and apparatus for including self-describing information within devices
6,393,578 Method and system for locating digital contents in a recorded digital file without knowing its encoding format
6,389,547 Method and apparatus to synchronize a bus bridge to a master clock
6,374,316 Method and system for circumscribing a topology to form ring structures

6,363,428 Apparatus for and method of separating header information from data in an IEEE 1394-1995 serial bus network
6,292,844 Media storage device with embedded data filter for dynamically processing data during read and write operations
6,266,727 Isochronous data pipe for managing and manipulating a high-speed stream of isochronous data flowing between an application and a bus structure
6,243,783 Application programming interface for managing and automating data transfer operations between applications over a bus structure
6,233,637 Isochronous data pipe for managing and manipulating a high-speed stream of isochronous data flowing between an application and a bus structure
6,233,611 Media manager for controlling autonomous media devices within a network environment and managing the flow and format of data between the devices
6,169,745 System and method for multi-level context switching in an electronic network
6,167,471 Method of and apparatus for dispatching a processing element to a program location based on channel number of received data
5,991,520 Application programming interface for managing and automating data transfer operations between applications over a bus structure
5,101,339 Computer address modification system using writable mapping and page stores
5,075,805 Disk drive controller system
5,016,121 Disk drive controller system
4,979,054 Disk drive for storing data in run length limited format and method of providing such format
4,891,752 Multimode expanded memory space addressing system using independently generated DMA channel selection and DMA page address signals
4,849,875 Computer address modification system with optional DMA paging
4,169,288 Redundant memory for point of sale system