

Robert G. Scheffler

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Technology Leader / Architect / Product Development Market Development / Partnership Integration

Career Objective

Fuel company growth through Partnerships, Creativity, and Integration

Collaboratively expand a company's technical vision with new architectures and product development by balancing Creativity, Partnerships, and Market Needs

Professional Overview

An experienced entrepreneur and creative solutions provider, Mr. Scheffler offers over twenty years of Product Design, Market Development, and Partner Integration experience specializing in the Movement, Distribution, and Streaming of high-volume Digital Data. His work has been successfully deployed by MCA Records, American Airlines, Time Warner Cable, Adelphia, and several other major Cable MSO's.

Starting his career in Audio Duplication, Mr. Scheffler envisioned and created an innovative solution for high-volume cassette duplication that relied entirely on Solid-State Memory. This new system was deployed worldwide and gained 60% market share within 3 years. MCA Records and several other large record labels produced their entire product line utilizing this patented technology invented by Mr. Scheffler.

Moving into Frequency Marketing, Mr. Scheffler conceived and spearheaded development of a system for capturing and awarding Airline Miles to Golfers. The system involved a data center, over 800 VeriFone terminals at Golf Courses across the country, and posting Airline Miles to American Airlines, TWA, Southwest, and United.

Most recently, Robert co-founded a company called Broadbus Technologies with the vision of using his patented Solid-State Memory technology to improve the reliability and efficiency of Video On Demand content delivery and propagation. This vision has now raised more than \$80MM in Venture Capital funds. Mr. Scheffler's unique combination of deep technical knowledge and keen market awareness was critical to entering the already saturated Video Streaming Market. As a result, funding was obtained without a prototype, and within 18 months the company had over \$24MM in sales. The key ingredient to the early success of Broadbus was the long-range planning and vision that Mr. Scheffler conceived and articulated 3 years before the company received its first funding.

Throughout his career, Mr. Scheffler has demonstrated his ability to design, develop, innovate, and partner with multiple vendors to create solutions for actual real-world problems in many areas of technology. Robert has mastered the careful balance of Partnerships, Innovation, and Integration while achieving success in multi-vendor markets.

Key Skills and Accomplishments

- Dedicated technical manager, successfully creating and nurturing multiple software and hardware engineering and development teams in different working and cultural environments.
- Experienced design engineer with more than 20 years of proven product development and design experience, large and small, hardware and software systems. Enjoy mentoring mid-level engineers.
- Specialized in conceiving and managing multi-discipline design optimizations where hardware, firmware, software, graphics, mechanical, packaging and documentation must all work and track cohesively.
- Entrepreneur with a zeal for innovation, founding several successful ‘start-ups’, raising up to \$80MM from tier-one venture capital firms after the ‘bubble’ burst.
- Experienced in the patent process. Named inventor on 8 issued US patents, 14 issued foreign patents, with multiple applications currently pending. Experienced expert witness for patent litigation cases.
- Personally developed 6 separate bus and backplane architectures for the interconnection of multiple printed-circuit boards in large systems. Sizes ranging from 96 pins to 488 pins.
- Fluent in many programming languages including C, C++, System-C, Embedded-C, EML, SQL, Visual Basic, Quick Basic, VHDL, as well as several different assembly languages.
- Unique ability to bridge hardware and software disciplines which has become a very important aspect of any project as they all include Hardware and Software now.

Professional Experience

PRICOM DESIGN***President, Founder, and Chief Engineer*****Peyton, Colorado*****2004 to Present***

Founded product design and development company to supply outsourcing for Electronics Design, Market Analysis, and Architecture Consulting services. Currently have 2 large clients, one in the Toy Design business, and the other in the Consumer Retail Holiday products business.

BROADBUS TECHNOLOGIES, INC.***Co-Founder, CTO and Chief Architect*****Boxborough, Massachusetts*****1999 to 2004***

Mr. Scheffler co-founded the company, and personally invented the Broadbus architecture, including patent-pending solid-state memory for sharing and streaming media content to improve capacity and reliability limitations. This approach is regarded by the press and industry analysts as “truly unique” and “notably different” from any other vendor’s solutions. He personally designed and built the prototype including a

4MM gate FPGA using VHDL, designed the PCB using Viewlogic and PADS, wrote the software in C++, and wrote the embedded PIC microcontroller code in C.

With the prototype complete, Mr. Scheffler migrated to an Architecture, Technology, and Business Development role. He was accountable for the product roadmap and direction, as well as the liaison between Engineering, Product Management, Sales, and Executive Management. Robert authored abstracts, white papers, and technical papers for industry publications and national convention presentations in order to propagate the Broadbus vision. Part of that vision is the concept of separating streaming from storage to facilitate a shared library and reduce deployment costs, which he pioneered.

Architecture analysis and modeling was the key to ensuring future compatibility and flexibility with new cable infrastructure initiative such as NGNA, ISA, TWC-Mystro, and content propagation work beginning at Comcast. In the architecture and analysis role, Robert was key contributor to several proposals where Broadbus was partnering with other key vendors such as EMC, N2-Broadband, Nortel, Cisco, Foundry Networks, and Lucent. As key visionary and technical evangelist, key relationships were developed with current and potential business partners including: Allwell, ATTO, BigBand, Cambridge Computer, Cisco, EMC, Extreme Networks, Foundry Networks, Harmonic, McData, Medea, Microsoft, Nexsan, Nishan, Nortel, QLogic, Seagate, and Western Digital.

As Technical Founder, Mr. Scheffler selected and hired the engineering management team including the VP Engineering, VP Operations, Director of Hardware, and Director of Software. He then formed the Architecture Team to decimate the architecture into the appropriate engineering groups, including periodic review and adjustments as necessary. Robert also implemented design reviews of hardware PCB layouts for power, decoupling, and reliability. Having 15+ years of high-density DRAM system design gave a unique insight to the problems that can arise from these problem areas. On the business side, Mr. Scheffler created a patent committee, interviewed and selected the company's patent counsel, then implemented a formalized process for invention submission, ranking, and review. He conceived and created a rewards and recognition program to motivate engineers to contribute to the company's intellectual portfolio.

NANOSOFT, L.L.C.
CTO and Principal Architect

Wheeling, Illinois
1995-1999

Mr. Scheffler was responsible for all technical directions and initiatives of this software development and web hosting company. Responsibilities included creating and reviewed all product ideas, refining all requirements as well as designs and specifications. He developed a web and file-server strategy including WAN and LAN connectivity for multiple offices on multiple continents and developed procedures for maintaining large numbers of sites, servers and domains.

Mr. Scheffler was the principal architect of a proprietary software system for frequency marketing used in connection with a rewards program. This system directly posted airline frequent flyer miles to American Airlines, TWA, Northwest and US Air. This system won the praises of Sabre and American Airlines for the proprietary business-

logic developed for offering multi-level and multi-event promotional rewards. Mr. Scheffler developed a multi-threaded software system for handling 256 simultaneous modem connections from over 800 credit-card terminals at golf courses. Microsoft BackOffice products were used to allow web and multi-user access to a massive SQL database in real-time and he was principle software engineer using Visual C++ (MFC) and Visual Basic. Part of the project was an emulation system for Verifone terminals to enable visual software development and automatic updates. This system was deployed on over 800 terminals across the globe. Once the system was complete, Verifone wanted to license the technology for their credit-card terminals. This Visual Emulation system was written in C on the Verifones, and C++/VB on the Server Side.

DUPLITRONICS, INC.**Founder and V.P. Engineering****Wheeling, Illinois****1988-1999**

At Duplitrronics, Mr. Scheffler designed a system for streaming audio from RAM at very high-speed utilizing completely proprietary bus architectures. This system includes more than 29,000 individual components on 20 different circuit boards. He personally performed schematic capture, VHDL FPGA design, PCB layout, bring-up, and debug for the majority of the system. For this application, his original 128-bit backplane was revised into a 256-bit backplane utilizing the same 488-pin connector. The new backplane was capable of accessing 256 Peta-Bytes using a 48-bit address bus with sustainable throughput of 850 Mbytes/sec using a 256-bit data bus. Mr. Scheffler designed the software/firmware architecture, and managed the development of 400,000 lines of software code running on 19 CPU's to operate machine including a proprietary embedded RTOS which included preemptive multitasking and integrated tread-safe inter-task communications functions. He developed a proprietary OS to run on a PC as a system controller. This OS contained windowing graphics functions as well as preemptive multitasking and integrated tread-safe inter-task communications functions.

A key to the success of the PC Controller product was a proprietary file-system for storage of large files on SCSI hard drives. This file system was able to obtain much greater performance from high-end SCSI drives than anything else at the time. He also developed testing strategies for power and heat effects of large DRAM banks in a confined space. Maintained the technical edge of the team by hiring and trained 30 engineering and production personnel. Personally supervised the installation of larger systems where multiple machines or large contracts were involved.

Mr. Scheffler filed more than 15 U.S and international patents as Named Inventor, including research of prior-art and created new patents for our patent portfolio (5233477, 5365381, 5418654, 5502601, 5900830, and 6263154). Two jury trials were involved in defending our patented technology against competitor infringement.

MAGIC MUSIC CASSETTE COMPANY, INC.**Co-Founder and V.P. Product Development****Wheeling, Illinois****1984-1988**

This was a predecessor company to Duplitrronics where Mr. Scheffler developed a system for compiling custom albums from a library of 100,000 songs at a rate of 150

units per hour. He designed a proprietary backplane that was capable of accessing 256 Peta-Bytes using a 48-bit address bus with sustainable throughput of 425 Mbytes/sec using a 128-bit data bus. Managed the software/firmware design totaling 50,000 lines of software code running on 10 CPU's to operate the machine. Researched and investigated partner options, then imported and integrated a French Recordable Laser Disk Drive from Alcatel-Thompson (WORM drive) for the master storage library, which was the 14th unit brought into the US.

Mr. Scheffler created and filed patent applications covering the high-density DRAM based custom recording system including the proprietary bus and arbiter (5021893, 5041921).

Directorships

BROADBUS TECHNOLOGIES, INC.*Director and Co-Founder***Boxborough, Massachusetts***Founding (1999) to 2004***DUPLITRONICS, INC.***Director and Founder***Wheeling, Illinois***1988-1999***MAGIC MUSIC CASSETTE COMPANY, INC.***Director and Co-Founder***Wheeling, Illinois***1984-1988*

Education / Classes

TEKTRONIX*CE Classes for application of specialized test equipment***Schaumburg, Illinois***1982-2001*

- Four different classes in Logic Analyzers, Emulators, and the integration of pattern generators and software debuggers in High-End Logic Analyzers.
- Two classes in the application of Spectrum Analyzers and High-End Oscilloscopes for Time-Domain Reflectometry and its use in high-speed circuit design/debug.
- Two classes in the use of High-End Digital Sampling Oscilloscopes for controlled-impedance circuit design and debug.
- One class in how to use Digital Phosphor Oscilloscopes for video analysis and transport analysis of QAM and 8VSB carrier signals.

XILINX*High-Speed Design Seminars***Schaumburg, Illinois***1994-1996*

- Strategies for extracting the most performance from FPGA based designs.
- How logic synthesis can be used to collapse time-to-market pressures and facilitate design reuse in FPGA/ASIC design.

WINDRIVER SYSTEMS**Schaumburg, Illinois***Embedded Operating Systems Training*

1991-1998

- Class session in Tornado API set and multi-tasking kernel functions.
- Debugging strategies for RTOS kernel-aware debuggers and emulators, including logic analyzers.

VIEWLOGIC SYSTEMS**Marlboro, Massachusetts***Design Software Training*

1994-2001

- Weeklong class in how to implement a successful design tool chain for Electronic Design Automation (EDA).
- Weeklong class in how to use logic synthesis in a tightly coupled EDA tool-chain.
- Three-day class in VHDL design and simulation.

DUPAGE CENTER FOR TECHNOLOGY**Addison, Illinois***Independent Study in Electronics Technology*

1980-1981

- Electronics theory primarily focused on digital logic.
- Created the CPU and computer curriculums as an independent study course for extra-credit with the instructor.
- Wrote the class work materials, including tests, for the complex digital logic curriculum. The materials I wrote for this course included building a CPU from discrete logic.

Professional Organizations / Memberships

- National Cable Television Association (NCTA)
- Institute of Electrical and Electronics Engineers (IEEE)
- Society of Cable Telecommunications Engineers (SCTE)
- Society of Motion Picture and Television Engineers (SMPTE)
- Cable & Telecommunications Association for Marketing (CTAM)
- National Model Railroad Association (NMRA)

Personal Interests / Hobbies

- Married 15 Years (with children).
- Music Recording, recorded live multi-track performances and mixed 5 production CD's for friends and churches.
- Model Railroading, entire family loves building and running HO gauge trains.
- Theatrical Lighting, designed and ran lights for many shows over 25 years.