

[Richard W. Mincher](#)
Rift Zone Technologies, LLC
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Principals only, please.

Rift Zone Technologies seeks consulting work in the area of embedded systems, firmware and low-level software architecture, design, and development.

Employment

Rift Zone Technologies, LLC. Sunnyvale, CA. 6/01-Present
Founder / Managing Member / Systems Architect

- Ongoing engineering consulting for various complex embedded system, communication, networking and wireless projects including specification, architecture, implementation, bring-up, and debug. Systems range from microprocessor based such as 8051 and PIC to MIPS, ARM, StrongArm and XScale.

Advanced Pyrotechnic Systems, LLC. Morgan Hill, CA. 10/01-Present
Founder / Managing Member / Systems Architect

- Developed Palm OS and Windows applications for the electrical firing and synchronization of commercial fireworks.
- Developed Microchip PIC-based network controller for the distribution of timing cues to remote firing modules including communication to host controller, FSK time synchronization, H-Bridge power management and communications protocols and front panel input and display control.
- Developed Microchip PIC-based firing module to respond to network cues to controlling high-current FETs for the firing of quibs (electric matches) and provide responses as to current continuity status.
- Developed Microchip PIC-based factory/production tester software to aid in the manufacturing and debugging of products.
- Developed wireless "bridge" firmware to allow fireworks network to be remotely extended over 1/2 mile without wires via proprietary network and hardware

interface.

Richard Mincher Consulting, San Jose, CA. 6/90-Present

Owner

- Developed Palm OS applications for Industrial Control, communications, and utilities for various Palm-based devices. This included use of the serial port, floating point libraries. Code was developed in C with Metrowerks Codewarrior and Constructor. Debugging was done with Codewarrior's source-level debugger and Palm's POSE emulator.
- Developed PIC code for industrial control application including communications protocols to host controller and implementation of proprietary industrial protocols to communicate with various devices. Code was written using the CCS C compiler.
- Developed Windows CE drivers for MMC (Multi-Media Cards), product Ethernet, PC Card, LCD Display, Serial, and CPCI.
- Developed low-level Windows CE code including power management for MIPS and ARM720 platforms.
- Wrote multiple plug-ins for WebSTAR (Macintosh-based) web server including plug-ins which draw graphs (via Quickdraw) in offscreen GWorlds and convert data to GIF images on the fly.
- Investigated smart cards and development of reader under Windows CE.
- Reverse-engineered and developed Windows CE driver for WebTV IR keyboard under CEPC/MIPS and HPAK.
- Developed Windows CE drivers and HAL (hardware adaption layer) firmware for Philips Poseidon 2.0 MIPS-based processor.
- Provided software support for Microsoft "ODO" Windows CE development platform for emulation of new peripheral development.
- Provided software support for QuickTurn emulation of MIPS PR3930 processor including diagnostics and low-level drivers.
- Wrote Macintosh-based configuration application for ISDN router (UDP, SNMP).
- Implemented drivers for POTS interface of 68360-based ISDN router including call progress tone generation.
- Wrote Async and SDLC drivers for Apple Serial NB card.
- Wrote 68360 Ethernet, HDLC, and Async drivers for p/SOS development environment.
- Developed 68HC11 and Turbo-Pascal code for automobile fuel-injection system.
- Wrote Macintosh electronic mail application for ARDIS network.

Mainbrace Corporation / BSquare Silicon Valley Division. Sunnyvale, CA. 2/99-5/01

Senior Software Architect

- Developed flash/ROM-based bootstrap loader code to load compressed Windows CE kernel images from Disk-on-chip to SDRAM.
- Developed low-level bootloader, OAL code, and Windows CE drivers for Touch, keyboard, SPI, serial, and PC Card/Compact Flash on Intel SA1110 processor / MediaQ Tenerife (MQ1132). [Smartbuild PDT](#)
- Developed OAL and Windows CE drivers for MIPS (Toshiba 3922). [Smartbuild DCT](#)
- Developed Microchip PIC-based peripheral controller for Windows CE devices including resistive touch screen processing, battery measurement, keyboard scanning, IO extensions, and power-efficient alarm indicator. Interfaced via SPI to ARM720, MIPS3922, and StrongARM processors.
- Developed Windows CE drivers and OAL for ARM720-based [Microsoft WebTelephone device](#).
- Developed LinkUp L7205 MMC-based boot loader to allow compressed system/code images to be loaded from multimedia card to SDRAM at powerup.

[Apple Computer, Inc.](#) Cupertino, CA. 5/86-7/97

Staff Engineer

- Developed firmware for Motorola MPC860-based PCMCIA wireless bridge including minimal IP stack and SNMP using ADS860 development system and Metrowerks PowerPC EABI tools.
- Designed and implemented PC Card Ethernet/Wireless "bridge" based on Motorola 68EN360 for 2.39GHz network including MAC layer protocols, embedded AppleTalk stack, drivers, diagnostics, command line interface, statistics gathering, and field-upgradable FLASH firmware.
- Wrote driver and test/development software for 8Mb wireless 2.39GHz LAN PC Card.
- Wrote Verilog implementation of PC Card interface, Serial EEPROM state machine and several MAC protocol blocks for wireless ASIC.
- Wrote driver and ASIC test software for custom IrDA ASIC (through 4Mb).
- Wrote test application and Xilinx /Altera downloader for wireless ASIC.
- Implemented Macintosh Native PCI driver for Cirrus Logic GD54M30 graphics controller.
- Wrote PC Card Ethernet driver for Macintosh PowerBook.
- Began work on ARM-based (VLSI Ruby II) wireless LAN (canceled).

- Migrated serial-attached wireless LAN adapter to PC Card interface including Macintosh driver and implemented field upgradable FLASH system.
- Developed 68302-based firmware for frequency-hopping Wireless LAN (AKA Frogger) including MAC Layer protocols, power management, encryption(RC4), error-correction(Reed-Soloman, BCH), and 1Mb serial synchronous interface.
- Wireless (RF - spread spectrum) prototypes (6502-based; Proxim Radio).
- Implemented Macintosh AS/400 database front-end application.
- Created Macintosh-based network analyzer for TokenRing and Ethernet.
- Co-designed and implemented A/ROSE realtime multitasking kernel.
- Designed and implemented control panel for MacDFT (IBM 3270 Terminal Emulator).
- Prototyped IBM DIA application/protocol stack on Macintosh.
- Designed and implemented MCP/NuBus downloader routines.
- Designed and implemented ADSP/AppleTalk to A/ROSE message gateway.
- Implemented TokenRing and SDLC Macintosh drivers for IBM 3270 and IBM LU6.2.
- Designed and implemented Communications Toolbox tool for Serial NB card.
- Co-designed and brought up Mac II Serial NB card.

Packet Technologies, Inc. Cupertino, CA. 6/85-9/85

Member of Technical Staff (Internship)

- Developed electronic mail software for cable television system to send messages via set-top converter.
- Diagnosed/Fixed problems with existing cable headend software.

U. of Minnesota Computer Center. Lauderdale, MN. 6/83-6/85

Systems Software Programmer

- Maintained and enhanced Control Data OS and interactive network software (IAFEX).
- Enhanced PDP-11 asynchronous front-end processor.
- Provided walk-in consulting services to end users.

Minnesota Educational Computing Consortium. St. Paul, MN. 6/79-6/83

Senior Programmer Paraprofessional

- Supported and enhanced Control Data NOS operating system and networking

software.

- Developed crash analyzer for IAFEX network software.

Education

- [University of Minnesota, Institute of Technology.](#)
- Bachelor of Computer Science, 1986.
- Major: [Computer Science](#), Data Communication.

Languages, Development Systems and Operating Systems

- C, Pascal, Fortran, COBOL, PERL, HTML, CGI, and TUTOR languages.
- Metrowerks, MPW, TurboPascal/C, MRI, GNU, Visual Studio.
- MIPS, StrongARM, ARM720, PIC, 68000, 683XX, 680X0, PowerPC, 68HC11, Z80, Z8, 65C02, 56000, Compass, CAL, VAX, 8085, and PDP-11 assembly languages.
- Palm, Macintosh, Windows CE, Windows NT/2000/XP, A/ROSE, Unix, Kronos/NOS (Control Data), COS (Cray), DOS, [PLATO](#).

Patents

- U.S. Patent #5,444,781 "Method and Apparatus for Decryption using Cache Storage"
- U.S. Patent #5,408,506 "Distributed Time Synchronization System and Method"
- U.S. Patent #5,245,508 "Method and Apparatus for Variable-Overhead Cached Encryption"
- U.S. Patent #5,604,869 "System and Method for Sending and Responding to Information Requests in a Communications Network"
- U.S. Patent #6,031,833 "Method and System for Increasing Throughput in a Wireless Local Area Network"
- U.S. Patent #6,069,887 "Method and System for Synchronization in a Wireless Local Area Network"

Continued Education

- [Wireless RF System Design, Besser Associates.](#)

January 1996, Los Altos, CA.

Other

- Member, Pyrotechnics Guild International.
- Member, Quarter Century Wireless Association.

Last updated 2/06/04