**Canzona Technologies**
**Voice/fax (707)-463-2456, www.canzonatech.com**
**California P.E. Certificate No. E 15449, expires June 30, 2007**
**Member IEEE; Registered Microchip Consultant, Master Certification**

## Over 20 Years Experience

We've probably delivered a working solution for a project similar to yours. Although each design is unique, fundamental principles and common issues reoccur in different forms, and it doesn't take us long to learn the latest variation. You should also read “What makes a good engineer?” online, or download from http://canzonatech.com/engineers.shtml.

## Faster, Cheaper Solutions that Work as Intended

We listen carefully and learn to understand the problem and possible solutions from a user's perspective. Like the careful carpenter who "measures twice, cuts once", we think things through before committing to a specific solution, actively seeking those lurking unintended consequences which cause the reckless carpenter to lament "I've cut it three times and it's still too short". In keeping with our tradition of "simple sophistication" we design with simple functional blocks that can be combined without restriction for sophisticated performance, and fewer "parts" means fewer potential problems, shorter design cycles and lower cost. Even our preliminary designs work quite well, but if there is a problem, we often have a diagnosis by the end of the phone call, and usually provide a solution within 24 hours.

## We Meet Deadlines

Rather than proceeding step-by-step along a fixed path, we look for potential trouble spots and critical features first. By leaving some less essential details for later, we can demonstrate important features and functions early in the design cycle.

## We look beyond traditional limitations

We push economical technology well beyond its traditional uses without sacrificing speed, reliability or convenience. This can mean additional or enhanced features with little or no additional manufacturing cost, or the basic features at a lower cost.

## Past designs (more at http://www.canzonatech.com)

- **Internet and Advanced audio/video applications** - I designed the hardware, software and operating systems for a set-top box (similar to WebTV) based on Intel's X86, and a miniature PDA with graphics and an MP3 player, using a Cypress ARM microprocessor. Other video projects include LCD and CRT displays for electronic test equipment, home video editors, character generators, and video overlays with genlocking.

- **Programmable Logic –** I’ve designed chips for interfacing, diagnostics, and for NTSC color video that interfaced DRAM to a microcontroller, handled video refresh, genlocking and overlays.

- **Precision Measurement and Laser Alignment Systems** - Laser alignment and other test equipment using PIC microcontrollers and Windows programs for ON-TRAK Photonics (on-trak.com) measures to .0001”.

- **FDA Approved Medical Devices** - Designs of medical equipment such as a hand-held cooler for laser skin treatments required product audits, validation, self-diagnostics, backup systems, and hardware/software failsafe designs (paradigmtrex.com).

- **Windows Programming** – I wrote and distribute a free music editor on my website: musettemusic.com.

- **Reverse Engineering** – Legal reverse engineering tasks included scrambled video, communications protocols, software and embedded systems.

- **Communications** – RF, infrared, Modems, RS232, RS485, SPI, current loop, parallel links, office communication systems linked through power lines with extensive error detection and correction (healthcaremall.com/novaplex/index.htm, comliteinfo.com).

- **Multiple processors** – I’ve designed products using up to 5 microcontrollers, and also designed systems consisting of multiple units connected with serial communication links.

• **Motor Control** – Brushed motors, Stepper motors, Picomotors, brushless/sensorless motors. The most sophisticated motor feedback system I worked on was an exercise treadmill that could maintain any desired fixed speed, or could vary the speed to keep the runner's heart rate constant.

• **Real-time programming** – Exercise treadmill displayed speed, distance, elapsed time, heart rate and adjusted motor speed based on runner's selection. A laser system tracks a target to within .001". Telecommunications, shear and bender for rebar, video editor, basketball scoreboard, audio decompression and playback.

• **Text and graphic displays** – NTSC, RGB, color and monochrome VGA, LCD text and graphics displays, simultaneous VGA and LCD, video terminals, genlocking, character generators.

• **Operating systems** – About the time most PCs used the 16-bit 80286, I wrote an object-oriented operating system for a 32-bit computer I designed and built using National Semiconductor's 32032 processor. I've written custom operating systems for a set-top box, a PDA and developed what was probably the first practical task-switching operating system for a desktop computer. It ran on the pre-PC, Osborne Executive.

## Published articles and presentations

- "The Politics of Mailing List Management" in Dec. 1982 Desktop Computing
- "An AT Keyboard Interface" in March-April 1990 Micro Cornucopia
- "Some Assembly (Code) Required" in Dec. 1997 Embedded Systems Programming
- "Implementing TCP and PPP" in August 1998 Embedded Systems Programming
- "FORTH" in October 2002 Embedded Systems Programming
- "Tricks with PICs" presentation at the 2004 Del Mar Electronics Show
- "Tricks with PICs" article in April 2005 Embedded Systems Programming
- Numerous articles for various newsletters

## Clients

- Avalon Electronics, Sun Valley, CA
- Breg, Vista, CA
- Creative Marketing, La Mesa CA
- Cymer, San Diego CA
- Electronic Instrumentation Designers, San Diego CA
- EPD Electronics, Santa Ana CA
- Genesis, San Diego CA
- Greenlee Textron, Rockford IL
- L8 Agriproducts, San Diego CA
- Micro Radian, San Marcos CA
- National Semiconductor, Santa Clara CA
- Novaplex, Atlanta GA, www.healthcaremall.com/novaplex/index.htm,
- Olim, Palo Alto CA
- On-Trak Photonics, Lake Forrest CA, www.on-trak.com
- Paradigm-Trex, San Diego CA, www.paradigmtrex.com
- Sigmacon Industries, San Diego CA
- Steel Computer Company, San Diego CA

Canzona Technologies designs are currently used by Boeing, McDonnel Douglas, Airbus, and the U.S. Navy.

**References** are available on request as I don't want to post contact info in this Internet document.

**Other interests** include camping, hiking, bicycling, kayaking and snorkeling. I volunteer with the Boy Scouts, as a naturalist for San Diego City and County Parks, and with the San Diego Tracking Team. Indoors (and away from the computer), I help with the San Diego Early Music Society and Julian Music and Performing Arts Circle.