

42 Balcom Road, Pelham, NH 03076**email: s@sbowden.org****SUMMARY:**

Looking to apply my Software Engineering skills and experience in a productive environment. I have worked extensively with C++ on a variety of platforms including XP, XPe, NT, other MS OS, Linux, VMEbus, and microprocessors. Have recently developed, tested, generated full deliverable documentation, and supported final software audits for several Navy software components for life-safety or mission-critical systems. My forte's are in debugging and design - and most recently in delivering fully auditable systems for the Navy. I am very comfortable at the hardware level and have, at times, acted as an Electrical Engineer.

Specific packages that I have worked with recently include Visual Studio (numerous versions), LabVIEW, MPLAB, Crestron, SourceSafe, Tortoise/svn, Windows NT DDK, MS Word, and Excel.

EXPERIENCE:**Henschel, an L-3 Company, Ayer, MA**
Senior Software Engineer**March 2005 – March 2015**

Worked in the Software Development Group developing and delivering software components for devices used in outfitting Navy ships and submarines. These devices include helm and lee helm consoles, navigation systems, local telephone systems, announcing systems, alarms systems, and battery monitoring and reporting systems. My contributions included developing software components for embedded processors and microprocessors, developing unit test procedures and tools, developing full build procedures (source code extraction, verification, and metrics, build development environment, build components, build target disk image, ghosting, software manufacturing drawing), developing system test procedures, first article testing, audit documentation, direct audit (PCA) support, and developing manufacturing test procedures and tools. I was also tasked to provide tools and procedures to support environmental testing (heat, humidity, etc), shock testing, and EMI testing. Some of my specific software development contributions include:

- For a Navy submarine battery monitoring and reporting system: Software for two microprocessor (both PIC parts) for collecting information from each cell in the battery cell arrays, a Windows 2K device driver to provide an interface to that collection system, a queued reporting system that controlled processor loading while saving, retrieving and reporting battery cell data.
- For a navigation console: provided GUI support in an MFC environment for graphically reporting assorted navigation information (Rudder Order, Rudder Answer, Deck/runway wind/crosswind components, etc).
- For a RADAR power and array controller: Test tools under LabVIEW (for the Siemens controllers) and 'C' and assemble (for the VMEbus-based processors).
- For a VoIP research project: Numerous several demonstration VoIP "stacks" and end-user devices, mostly with 'C' or C++ under Linux or proprietary versions of UNIX.
- For a British Naval announcing system: device controller and tools for an uninterruptible power supply (a UNIX variant).
- For several US and foreign Navy ships, developed full software for announcing systems including manufacturing and field installation procedures, user documentation, and software design flow documentation. In the case of the Australian system, this system (and software) was required to meet SOLAS requirements.
- For CVN78 (the Ford class aircraft carrier) wrote the backup steering component to the steering system (a microprocessor) which included RS232, RS422, and I²C interfaces, configured the XP Embedded and implemented the IA requirements for the main steering software components and developed all software upgrades required for integration to the ship systems (Windows XPe). Supported the overall integrations of the steering system with all other ship systems with changes to SNMP, Profibus, and other interfaces. This program operated under 12207 rules.

I am 4 and 0 for successfully completing PCAs (Physical Configuration Audits) for Electric Boat - by far the best record at Henschel.

Avid Technology, Tewksbury, MA**Feb. 2001 – Feb. 2004****Principal Software Engineer**

Worked as a Principal Software Engineer in the hardware diagnostics group first in the maintenance of the diagnostics for their Meridian product and in the development of the Adrenaline and Nitris product line. These are high-end products used in the television and movie industries for non-linear video editing. My major challenge during the two-year development crunch for Nitris diagnostics was keeping myself off the critical product development and manufacturing paths while being outnumbered roughly 20-to-1 by the hardware engineers - which I was 98% successful in doing. My designs and code are not only modular and object-oriented but, in the terms of database designers, well-normalized. The type of hardware elements I have coded for include flash memories, other programmable devices, the I²C bus, and JTAG.

- Developed a core library, in the form of a DLL, to provide common access to the Avid hardware for all diagnostic applications.
- Developed a test engine UI which supports a scripts which language elements specific to the Avid hardware.
- Developed numerous hardware tests for testing both the design and manufacture of the Avid hardware. For modularity, these tests were implemented so that once linked into the test DLL, they would appear on the user interface without further integration.
- Applications for maintaining PCI VPD structures, reprogramming FPGAs and such, MPEG key management, and assorted data conversion tools.
- Designed and participated in the development of several automatic hardware register interface tools. This includes include files (*.h) that are automatically scanned to create a register library that is then used in support of the script language and a register tree debugging tool.

PerkinElmer, Inc. Detection Systems Division, Woburn, MA**May 1999 – Feb. 2001**

(That division was sold to L-3 Communications in 2002.)

Principal Software Engineer

Participated in the development of airport luggage x-ray systems. My contributions there included:

- Completing the design and implementation of a specialized object-oriented multitasking event management system.
- Tracking down and repairing a multitude of FDDI network messaging problems. This included restructuring and recoding much of the low level application code to use the Winsock 2.0 "WSA" functions in place of the mis-implemented Berkley set.
- Surveyed a handful of multitasking applications for resource sharing conflicts - specifically, potential deadly-embrace conditions. I established a general resource-claiming protocol and specific resource rules for each application. This work eliminated many mysterious application "hangs" and established quick methods for finding deadly-embrace vulnerabilities.
- Maintained the Management Information System network bridge - a real-time GUI-based system for monitoring the x-ray systems and operators performance.
- Replaced the FDDI-based network with a 100Base Ethernet system. This included work with SNMP, the Cisco 2900XL MIB, the Cabletron ELS-100 MIB, and AG Group's Etherpeek.

IMAGRAPH Corporation, Chelmsford, MA**March 1994 – March 1999**

(their assets were purchased by Foresight Imaging in May 1999.)

Principal Software Engineer

While there, my primary contribution was the development of the drivers and SDK's for their HI*DEF and I-Series lines of video frame grabber boards. The primary development environments for their most recent SDK releases had been Windows 95/98/NT using MFC. I have been the lead developer of these SDK's. Among my major contributions have been:

- The design and development of "Auto-SYNC" which uses the frame grabber board to survey all the video signals at each connections to the board and to measure each signal that it finds. The software automatically recognizes sync patterns and configures the board to capture the video. This product is recognized as a tour-de-force in automated signal processing and was never duplicated

by any of Foresight Imaging's competitors.

- The design and implementation of a field support strategy for use in connection with Auto-SYNC. The HI*DEF boards are most commonly used to capture from medical imaging devices such as MRI's. Our customers would install their systems at these sites hoping to capture perfect images before days end - or in time to make their next flight. Reports generated by Auto-SYNC could be faxed or e-mailed to IMAGRAPH where problems such as bad cabling could be rapidly diagnosed and a remedy determined. The combination of Auto-SYNC and this support strategy allowed most customers to make high-quality captures within two hours of the time they opened the box. In contrast, competing products commonly took weeks to set up properly and required specially trained personnel on site.
- The design and development of library and SDK's which convert a common video description (so-called "CHP files") to a HI*DEF board configuration. This completely isolates the application programmer from arcane board characteristics. It also allows any HI*DEF or I-Series board model to work with a CHP file generated from any other HI*DEF model introduced during my employment there.
- The redesign and development of manufacturing QC software tools, procedures, and pass/fail criteria.
- Assisting in the design and specification of the frame grabber hardware and testing of the prototypes.
- During that time I also contributed to their ICE-YC project (for JPEG compression of motion video) and the IMASCAN project (combination video capture and display cards).

Systems development experience before 1994 includes work in these application areas:

- Image processing.
- Signal processing.
- Process control.
- CAD/CAM systems.
- A word processing system for a technical periodical.
- Design of two cartographic data bases.
- Database normalization of the Air Force procurement process.

EDUCATION:

B.S. Computer Science, GPS 3.84

Franklin Pierce College, 1994