

List of Past Projects

I have been designing computer/microprocessor related software and hardware solutions for over 30 years. Below, you'll find a partial list of past projects. Additional information can be provided on a personalized basis provided the information requested is not proprietary.

I have also included, a list of customers for whom these projects were developed. Due to the nature of a contractors relationship with a customer, I can only provide a description of the project; I may not be able to associate the customer's name with the project/product.

Several of these project/designs/algorithms have been patented. My name is associated with at least one patent, while several more have been filed on behalf of technology I have personally engineered. Many customers elected not to include the names of the contractors, when filing for patents.

As you review these projects, please keep in mind, that many of these projects were developed with limited tools and technology. In the early days of computers, there was no such thing as a "C" compiler or RAD development system. The programmer needed to understand the Processor, its architecture and the surrounding hardware. Memory was limited, so coding needed to be precise. This concept is instilled in every project I design.

Application Experience

Microsoft Visual Studio	(all version) VB, C/C++ C# and ASP. .Net Frameworks (1.0-3.5)
IAR Tools (C/C++)	Arm 7/9, 8051 Processors
Keil Tools (C/C++)	8051 Processors
PCAD 2006, Altium Designer	PCB Cad Design Software
MS Access	Database development
MS SQL	Database development
InstallShield (Acesso)	Windows Installation Application Software
Tasking C	80C196K Processor

Processor Experience

Intel	xscale series, 286, 386, 486, 80C196
Zilog	Z-80, eZ80
Rabbit Semiconductor	2000 and 3000 Modules
Cypress Semiconductor	EzUSB (8051 Core)
Texas Instrument	TMS470 Series
ST Microelectronics	ARM7/9 Series

2008-2009: Developed a backend server module for Indulge Media Group's website. This module, written in Visual Studio and connects to a MySQL database, processes and tracks Membership purchases and transactions. This module communicates with a credit card terminal that is used by the retailer, to swipe and process Membership transactions. The Terminal can access the server via a dialup Modem and/or Internet connection. This module houses the business rules for transactions all processing.

2008-2009: Developed a database and programmed a low level support interface for a new medical device. Based on MS SQL Express running on a custom Windows XP Embedded computer, this software tracks users, patients, measurements and plots measured results.

2008-2009: Developed a stand-alone application which tracks Users, Patients, and Measurements. The application analyzes the results via on-screen or printed reports. Each screen or report is graphically pleasing and includes graphs, charts, and gauges. This product also includes a custom reporting engine that allows the users to create a report on any collected series of data. This application contains an interface module which communicates directly with the measuring device via a Serial or USB (using a custom windows driver) connected IrDA device. The application also supports 5 languages.

2008: Redesigned a serial communications and display controller interface board for Vitrek Corporation. The challenge to this project was to determine the deficiencies with the original design as it had both hardware and software timing issues. Once I redesigned the hardware, I wrote the application and downloader software.

2008: Developed a second generation industrial Irrigation controller, based on the ST912 ARM 9 microcontroller. This controller has a Serial, USB and Ethernet communication interfaces. The hardware design currently supports 32 solenoid and 8, 110/220, volt relay devices. This designed in not limited to 40 controllable devices, it can be expanded to n number of devices as the system was designed using cascading shift registers. This device uses a 128x64 bit monochrome display and 7 software controlled soft keys. Software features are expansive. I developed both Hardware and Software.

2007: Developed an application for Police Management Associates that analyzes Police call responses for a given area, example: City of Los Angeles or City of Seattle. The application imports data from the Cities mainframe. This data contains dispatched calls and response times. The application breaks down the responses times down by patrolled area and determines the number of patrol cars needed by time and shift to best protect a given area. This application then generates a recommended schedule.

2007: Developed a series of application for Electronic Applications that allows for desktop programming of their Motor Home monitoring devices. Including a Windows USB Driver and support DLL's.

2006-2007: Developed a second generation industrial controller/meter for YSI (see year 2001 for details). Based on the original design feature set, this device has been enhanced to support an internal 512K Flash drive, 485 networking (at speeds of 230K) and real-time interaction between all devices networked. This series of controllers are designed in two parts, the controller and user interface board (the user interface board is optional). The system can be managed and controlled via user interface board, Modem, Serial Port or Ethernet communication interfaces.

This device measures DO, pH, ORP, Temperature and Conductivity. Using set points, as a basis for control, this device turns on an off up to 8 internal relays which controls external devices, such as pumps motors etc. This device contains data and event logging. Controllers have the ability shared data and relays across the network. Meaning a Relay on controller #1 can be controlled by controller #2.

The user interface has a windows look and feel along with soft keys. To reduce cost, the display board's microprocessor drives the LCD (320x240 monochrome) display and user interface application software. This product also contains algorithms for self calibration.

2006: Developed a windows application that manages Industrial Washing Machine controllers. This application allows the user to communicate, via USB, to collect logged data. This application analyzes the data to determine chemical usage and costs. I also allow the user to remotely change and copy configuration options. (Knight Equipment)

2006: Developed a web based Customer Relations Management system for tracking customers support calls, issue tracking and response management. This solution allows the customer to track their own issues, search for similar issues and send and receive data files. An email notification system was added to automatically send emails to the customer as their case files are updated.

2006: Developed an Industrial Irrigation Controller based on the Rabbit Semiconductor 2000 series module. This product contains a web and terminal based user interfaces to allow the user to control and configure this device remotely.

2006: Developed a series of USB drivers for windows. These drivers take full advantage of the customized hardware features that the vendor has developed. Included with the Windows drivers are a series of higher level interface DLL's allowing a open support for high level applications such as LabView, Visual Studio VB, C# and C.

2005: Developed an application that communicates with an experimental medical device that tracks cell fluids and plots the results in real-time. This device is being developed as a patient monitor for used during dialysis to determine when dialysis is complete. This application supports exporting of the resulting data capture during the procedure to Microsoft Excel files. (Xitron)

2005: Developed several application for the Point-of- Sale marketplace for one the largest web based retail POS solutions companies, MGM Solutions/POS Guys. These applications allows for multiple scanners to obtain information and report back to a single application. This application support a host of interfaces that allows the scanners be tethered, attached when needed to be synced, or wireless via Bluetooth or Ethernet.

2005: Developed a series of solutions based on CipherLab's 8100 series of hand scanners. These scanners have the ability to communicate to a base station allowing the user to roam around the store or warehouse. The custom software allows the user to taking Inventory, write Sales Orders, check Purchase Order status, create Warehouse Transfers and check product availability. All these features are available, in real-time, while the scanner is within range of the repeaters. If the scanner becomes out

of range, the product has a feature that places the scanner into batch mode. Once the user comes back into range, the scanner will automatically sync up with the host system and all batched transactions are processed. This system was expanded to support Terminal Services and remote location access via the internet. (Furniture Wizard)

2004: Developed a series of PDA based application that allows users to take Inventory, write Sales Orders, check Purchase Order status, created Warehouse transfers and check product availability. Depending on the PDA selected, this application ran in tethered mode, meaning the user needed to sync with the desktop before the host system would be updated, or Wi-Fi (in real-time).

2004: Developed a Delivery Scheduling application that is tightly integrated with Microsoft Maps software. This application provides the user with a Drag-n-drop interface that allow the user to schedule events. These events are then feed to Microsoft Maps which builds a map and step-by-step travel directions. This application also created manifests, and update the results of the deliveries back to its host application. (Furniture Wizard)

2004: Developed a PDA based (Dell Axim A5) industrial controller using the USB port as the main interface to the probe devices (listed in the Pulsafeeder project) via a device that acted as a USB master/ communications router. This product is revolutionary for two reasons. 1) USB Slave device acting as a USB Master. 2) The application software is an Iconic based program allowing the user to create complex solutions via a flow control logic. There are a series of Icon that perform specific functions. Grouping these Icons together, the user could create programs with loops, counters, reading of values (from external devices), comparison functions and relay control. While the user interface was iconic, the application was actually a flow chart to command language compiler, with error checking and verification.

2003-2004: Developed, with a team of other engineers, a series of inter-changeable industrial controllers and probes (pH, ORP, Conductivity, Temperature, DO, 4/2ma and Relays) that would allow a customer to build their own complex configuration. Based on USB technology, each probe is an independent device/object that can be plug into the controller. The controller will recognize the device and add it to the list of available devices. Each device can then interact with the other devices to obtain values or control. I developed the software that controls each probe device, including the formulas for calculating resulting values. I developed the remote desktop application that communicates with the controller to allow for remote setup and monitoring of the system. I developed the application that ran on the hand held programming and controller calibration device. (United States Patent Application 20060000849)(Pulsafeeder)

2003-2005: Developed web base application that tracked employees for different municipalities, their benefits and families members. This system tracked payroll deductions, sent and received payroll deductions directly to the different municipalities, generated eligibility lists for healthcare providers and payments. This system was used by the City of San Diego, Los Angeles Police Offers Association and Local One.

2003: Developed a website for GF Signet which allowed the user to search for GF Signet products based on volume or flow rates. This calculator would then tell the user which products are best suited their needs.

2002: Developed the next generation EDID Editor for Silicon Image. This product was built on the tool developed for ViewSonic and incorporated VESA 1.1 and 1.2 standards. In addition to the updates to the Editor itself, computer monitors could now be programmed via an external module. Allowing the user to create and program the EDID data directly to the monitor.

2002: Developed reporting tools for Aquadyne Computer Corporation product AquaManger. This customized product was designed for and used by Sea World.

2002: Developed a backend database system for Seiko Instruments (Visual Research created the pictures and text) website. Build on Microsoft ASP foundation, this system allowed the web developer to customize pages by using our web based interface. Products could be added to the system by simply adding text and uploading a picture. When the user clicked or searched the website, web pages would be created on the fly from the database. This allowed for real-time product updating. The System also included a shopping Cart and Credit Card payment processing system. Included in the system design, is a complete backend system to allow Seiko Operators to take orders and to track sales and returns.

2002-2004: Developed a complete Flower Farm Management System for Kendall Farms of Fallbrook CA. This multiuser application is based on MS SQL and its integration includes connection into the telephone system. The key modules and features are: AR, Inventory, Purchase Orders, Sales, Way Bills, Inventory Life Cycles, Sales Promotions, Sales telemarketing, To-do Lists, Call tracking and Auto Dialing. Since the system is tied into the phone system, when the phone rings, the system looks up the phone number, tells the users whose on the line, looks up their last 5 orders and tells the user the customer's open line of credit and their product buying history. The To-do list application is used by the sales person to schedule calls to customers. It tracks open credit and purchasing history. The sales person simply clicks on the customer's name and the phone system would automatically dial the number. From this screen, the sales person, could create an order, or manage the customer's account.

2002: Developed a film processing system that integrated into the Kodak Film developing system. This combination of software and hardware allowed the operator to control the exposure time and track the amount of chemicals used.

2001-2005: Developed numerous applications for a local medical claims processing company (The Plan Handlers). Most notable products were customized billing applications for each customer, automated eligibility list generation and transmission system, automated ID Card printing and mailing system, integration with their phone system for caller ID and phone call routing. All applications were written for the Windows platform, while the database of their main system was UNIX based. Many tools and technologies needed to be developed in order to provide real time data between the two systems.

2001: Developed the production line test and diagnostic software used by ViewSonic. This application placed the monitor into all the various display modes and allowed the technicians and production line workers to adjust the different setting on the computer monitor.

2001: Developed the first commercially available EDID Editor. EDID data is the data stored in a computer monitor that tells the computer what the capabilities of the monitor are. This was developed for ViewSonic Monitor Corporation and matched the VESA 1.0 specification. With this application the user could simply click buttons and build an EDID datagram, which would be programmed into the monitor during manufacturing.

2001: Developed the application and control software for an industrial controller that measured pH, ORP, DO, Conductivity and Temperature. This device can be networked and remote managed. This product was based around the Intel 80C196 processor and was limited to 128K of ROM and 24K of RAM. User interface was text driven menus. Hardware was developed by another company. We were responsible for all aspects of the software (YSI - Yellow Springs International).

2001: Developed a Practitioners Office Management system for Medical Central On-Line. This application track Patients, Appointments and Patients History.

2001: Developed a customer support and product update access website for Furniture Wizard. This Web/MSSQL based system tracked customer support contracts and software customization and updates. Controlled user access levels to software and beta programs.

2001: Developed an Insurance/Annuity application for Johnson and Richards Insurance agency called SureNotes. This track and managed all the information regarding the policies including a module that integrated with QuickBooks.

2000 - Current: Developed and maintain one of the top selling retail furniture management applications for Furniture Wizard, New Vision Information Systems. This supports AR/AP, Inventory, Sales, P.O. etc. Also developed for this application is a host of support applications and peripheral including numerous scanning devices (tethered, Bluetooth and Ethernet).

2000: Developed a Church member tracking system for Shadow Mountain Community Church. This application tracks members and Deacons. Printed member lists, mailing lists and allowed for customized reporting.

1999: Developed a program called "MessagePad" for MEA Insurance Agency. This application was network centric and allows anyone answering a phone to take a message. An electronic version of the Pink Message pad. This application tracked when the message was recorded and kept track of the message until closed out by the user. The user had the ability to track a history of notes, times calls returned. The reports generated by this system allowed management to monitor the callback response of their staff.

1999: Developed a Movie Rental and Inventory Management system, with bar-coding. This system tracked the sale and rental of Movies and Games. It had the ability to track inventory, popular rentals and generated late notices.

1999: Developed a Sales tracking and follow application for ViewSonic. This tracked sales leads, sending of information packets (including creation and customized printing) and follow up. Shortly after the release of this application, OPTI-UPS adopted this application with some modifications for this division of ViewSonic.

1999: Developed a Rental forms management system for MobileSoft. This application allowed the managers of rental properties to customize and print legal documents from Rental agreements to eviction notices.

1999: Designed an interactive CD for the Southwest Louisiana Records project. This project was based around tens of thousands of records that were somehow connected together, either through common family names, places etc. This project was created as a research tool allowing the user to search the database based on any criteria that would allow the user to find the information connecting two or more events or people together.

1998: Developed Sales and Manufacturing application for Cabinet World. This company custom manufactured kitchen cabinets. The application tracked orders and controlled the manufacturing processes and scheduling. Once an order was taken, each item was broken down into the separate components (sides, top, bottom and doors). A barcode sheet, which contained type of wood and dimensions, was printed and sent along to the proper station. The system would track the progress of the Cabinets during the manufacturing process and report the percentage of completion.

1997: Developed user interface and game switching application for Micro Star's add-on levels to the Lucas Arts Game Star Wars.

1997: Developed a CD ROM and Cassette labeling and tracking application for the Turning Point Ministries. This application track thousands of taped tracks and allow the operator to queue up a products list of recordings and print media labels

1997: Developed the backend database structure for Medical Central On-line. This website was originally designed to track Practitioners, Hospitals, Nursing homes and Patients. Basically it was a website used by Doctors and Hospitals to find available beds in a Nursing Home or Secondary Care Center. With the changes in the Insurance industry Patients who needed assistance after surgery and who didn't have a sufficient support system at home, need to be transfer out of the hospital to a Secondary facility or Nursing home, depending upon the needs of the patient. This system was designed to track the special needs of a patient and match the patient to the correct facility

1997: Developed an additional module for the Caller Response Center - Promotions. The Promotion module added the ability to track all types of marketing vehicles and determines which of these vehicles are the most productive and profitable. (View Sonic Corporation)

1996: Developed an 1-800 number in-bound Caller Response Center for ViewSonic. This Response Center track all incoming 800 number calls and determines the appropriate responses. Integrated with the customer's phone system, each number was track and tied to the automatic response of customized information. The program responded to the caller via Fax, generating a Direct Mail packet, or as a lead for the sales department. This program was written using Visual Basic; Database Engines were MS Access and MS SQL. (View Sonic Corporation)

1995: Designed a Doctors/Hospital database system for the internet. This system coordinates the use of over 200 tables, all with complex relationships. This product as developed using S-Designer and Infomodeler. (Medical Central On-Line)

1995: Developed production line diagnostics for testing and adjusting computer monitors as part of the final phase of manufacturing. This program allows the technical support department of View Sonic to remotely troubleshoot monitor problems. The program was written in Visual Basic and C/C++. (View Sonic Corporation)

1994: Developed a Remote Access System for Hospital and Nursing Homes. This product involved a central computer with 8 modems, MS Access database and a communications package that tied the system together. The goal of this project was to have a communication package installed at the customer's location that looked and felt like a windows desktop application. The user would connect to the server and download a series of codes that would build an application user interface on the fly. This would give the user the ability to view, edit, search and update information remotely. The manager of the server could modify the application code and the next time the user would log in, the new application was instantly in use.

1993: Developed a MDF (Marketing Development Funds) tracking system (Time Warner Interactive) This program track sales, percentage of MDF allocate to each retailer and determined if the money was being used to increase sales.

1992: Developed a security product for use in the Federal Government. This product was a combination of a hardware and software that encrypted the data on the hard drive. When the computer was first powered on, the user was prompted for a password. Once the password was validating, the computer would boot. All the data from the hard drive was passed though this device and was decoded on the fly allowing only the authorized user to have access to the device. Removing this device rendered the system useless as the hard drive Encryption key was unique to each hardware device.

1991: Developed System Diagnostics for the Commodore Amiga 500 and 2000 series computers. These diagnostics allow the dealer network to determine if the Floppy, Hard drive on Memory modules where operating correctly.

Projects developed from 1981-1990 we delivered in the MS-DOS platform. All were developed using Intel Assembly Language. Terminal menu style of user interfaces were replaces with block graphics and drivers; I developed, to allow for direct screen positioning. This allow the screens to have cursor positions and fields displayed without the need to repaint the enter screen after each data entry. This

was a big milestone for application development. (Lines and boxes around key information, the basic 8 colors, were now available).

1990: Developed a Sales Tracking and Sales Force Automation system. This program would allow each salesperson to track their customers/contacts lists. Create mailing list, reminders for callbacks. Tracked referrals, expenses, sales and commissions. It also tracked the number of days since last customer contact and open and past purchases by customers. Noted when they were last contacted, how much the customer has purchased. It would also allow the users to track potential sales of computers by product line and model, and generated sales forecasts.

1989: Helped develop a Satellite Weather Tracking System. The hardware and software combination allowed Northern Illinois University to download, store and report on large amounts of data from a NASA Weather Satellite. This project was funded by a National Science Foundation Grant which I helped to University to obtain.

1988: Developed a Terminal Emulation program which allowed students to access the Campus mainframe computer from their homes via modem. (Northern Illinois University)

1987: Developed and marketed an MS-DOS Tutorial product called Tutor. This product was later purchased by DS Industries and re-packaged as DS-Tutor and sold over 100,000 copies.

1986: Developed a MS-DOS device driver for Enter Electronics Sweet-P Plotter and Star Micro Systems printers.

1985: Developed a Manufacturing Forecast Systems for Zenith Data Systems. This application allowed the Salesperson to track their customers and products these customer were planned on purchasing by given month. The Salesperson would then run an extraction application that would allow the information to be exported on to a floppy disk which was then sent to the home office. At the home office, each disk was then imported into the main system allowing management to build a 12 month rolling forecast of projected sales by product by customer. This provided management with the key information needed to purchase raw materials and build products on a timely basis.

1984: Developed one of the first hard disk array products for the IBM PC computer series. This device supported up to 64 (5 Meg hard drives) off of a single SCSI controller card. The software allowed the user to combine physical hard drives into a single logical partition. For this project, I developed the firmware, ROM BIOS, MS-BIOS, MS-DOS driver and the logic circuits to allow this technology to function as a seamless device.

1983: Developed one of the first transportable hard disk sub systems for the IBM PC. This was an external hard drive sub system that utilized the S-100 or IBM PC bus. I wrote the ROM BIOS and MS-DOS BIOS and MS-DOS Driver software.

1982: I was part of the development team that integrated ARC-Net network into MS-DOS. This was in the beginning of PC networking. Back then, there were several camps trying to bring out a network

solution. I was responsible for developing low level code that was integrate into the MS-DOS BIOS and MS-DOS driver. Our software allowed the Network devices to appear as a pseudo disk drive.

1981: Developed a Hierarchical data base product called Mbase. Mbase was a single user database library that used data structure files that outlined the field name and sizes, text only no floating point fields. During this time, floating point processing was handled by a separate math co-processor that was rarely incorporate into computers. Math was complicate and handled internally via special code libraries. Mbase provided a programmer a base of code that allowed the programmer to read, write, and update data records within a single database. Because it was pointer driven database manager, database sizes were limited to physical hardware limitations and not memory limitations.

Projects developed from 1977-1980 were written using H-DOS (Heathkit's Disk based operating system, which was very similar to CPM, Control Program for Microcomputers.) All applications were written in Intel Assembly Language. Assembly language is the lowest level of coding that can be performed; you are programming directly to the processors registers, giving you complete control of the hardware and software of the computer. During this period of time, all application were written in using a terminal interface style of menus. A list of choices would appear and the user would select a number from 1-x. Nothing like today's GUI interfaces.

1980: Developed a Component level diagnostic program for the Heath Kit H8 and Zenith Data System Z90 series computers. One of ABS Data Systems first commercially available products.

1979: Developed an Inventory Management and Sales Tracking System (for American Tuner Service) This program allowed A.T.S to track incoming Tuners for repair, create Invoices and to manage sales and inventory levels of television service modules and individual parts.

1978: Expanding on the Television Service application, I created an application that was tuned to a Doctor's Office. This solution included a AP/AP (Accounts Receivable and Accounts Payable) which was used to track Patient and Insurance Company billing and payments. The second application handled Patient Scheduling. The significance of this project was that it took three machines to operate the overall system. Each system was assigned to handle a specific task. The three systems were connect together via parallel ports, which was used as sort of a network. Each computer had at least one Parallel Printer attached with the exception of the Patient and Insurance Company Billing system, which had 9 printers, attached using a single parallel port and re-directing hardware device. These devices allowed specific print jobs to be routed to the specific printer which contained pre-printed insurance forms. This was unprecedented for the time.

1977: Developed a complete Television Service Industry Tracking System. Basically this was series of independent applications tuned for solve specific issues within a television service business. First application handled AR/AP (Accounts Receivable and Accounts Payable). This was limited to the tracking of purchases of inventory from Vendors (on an invoice by invoice level), returns and payments. The second application was a customer database which track customer names, address and phone numbers. The third application was a scheduling application that would group appointments by zip code. This allowed the trucks to be dispatched to a zip code basis reducing travel time around the city.

List of Customers:

Air Weight	Micro Star
Aquadyne Computer Corporation	Movies 2 Sell
Autodesk	OPTI-UPS
ChromaColor	PMA (Police Management Associates)
Cobra Systems, Inc	Pulsafeeder, Inc (IDEX Corporation)
Commodore Business Machines	Pyramid Design Group, Inc.
Cabinet World	San Diego Data Processing
Digital Cheetah	Seiko Instruments
Electronic Application, Inc.	Shadow Mountain Community Church
Enter Electronics	Silicon Image, Inc.
Furniture Wizard, New Vision Information Systems	Standard Data Corporation
GF Signet	Star Micro Systems
Hayes Consulting	Southwest Louisiana Records
Impedimed	The Plan Handlers
Indulge Media Group, LLC	Time Warner Interactive Group
Johnson and Richards Insurance Agency	ViewSonic Corporation
Kendall Farms	Visual Research
Knight Equipment (IDEX Corporation)	Vitretek Corporation
MEA Insurance Agency	Xitron Technologies
Medical Central On-Line	Yellow Springs International (YSI)
MGM Solutions, Inc./ POS-X, Inc	Zenith Data Systems