Parastream TECHNOLOGIES

Parastream Technologies, Inc.
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ROBERT E. WEATHERFORD

Parastream Technologies, Inc.

Principal Engineer

With more than 30 years of experience in developing products from hardware to application software, Mr. Weatherford has been involved in numerous commercially successful projects. Most projects have been full life-cycle product development. His diverse background in hardware, embedded systems, driver, and software application development enables him to take a "big picture" view of projects.

He is self-motivated, creative and dedicated to excellence, and strives for highest levels of product performance. He makes use of strong and effective debugging skills, developed over many years of experience. As Principal Engineer, he is responsible for Parastream's product development, production processes, and web sites. His primary strengths are in the areas of:

- Windows Application Development (C++, MFC, C#, VB.NET, ATL, COM, WIN 64/32/16) – 14 years
- Web Development (HTML, JavaScript, ASP, ASP.NET, XML, SOAP, C#, VB.NET, PHP) – 2 years
- Hardware Development (Digital Logic, Analog, Microcontrollers, PCB Layout) – 4 years
- Object Oriented Design
- UML Modeling
- Embedded Systems Development (C/C++/Asm, Linux, pSOS and others, Digital Video and Telecom sectors) – 8 years
- Database Development (ADO.NET, MSSQL, MySQL, MS Access) – 2 years
- Networking and Communications (TCP/IP, HTTP, FTP, SNMP, LAP, Serial Async/Sync)
- User Interface Design
- International and Accessibility Requirements

PROFESSIONAL EXPERIENCE

APPLICATION DEVELOPMENT

Dyna-Bal – Industrial Engineering & Machine Corp. (2005-Present, Contract)
Developed software application updates for the Dyna-Bal product, which is used to perform dynamic balancing of machined parts. The system works by capturing vibration data from pickups using an A/D converter card and performing numeric transformations including FFT. The updates included a new InstallShield setup and changes to logic, changes to the user interface, a new device driver which talks to the ISA A/D card, and an interface to a new USB A/D hardware device. Future work will most likely include a rewrite in MFC in Visual Studio 2008 with completely new user interface, XML data file formats, printing and preview support.

- Visual Studio
- Windows Application
- Real-time threading
- MFC
- Device Drivers

Element Manager – EG Technology, Inc. (2005-2007, Contract)
Element Manager is a GUI for managing EGT's MPEG encoders and their settings in a network environment. I worked with the technical and sales staffs to define the product. An XML-based framework was designed to represent devices and settings so that the entire user presentation is data driven. My concept was proven valid when EGT later added new settings for encoder upgrades on their own, just by editing the XML files. .NET interop classes were written to wrap the Castle Rock database C language APIs in C# in order to develop the application in the more productive environment of Visual C#. HTTP/1.1 protocol interoperability issues with the encoder's NanoWeb server were solved using Ethereal. The application is built on the Castle Rock SNMPc network management platform. In a subsequent contract,

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added support for new encoders to the product as well as adding SNMP objects to the MIB files and embedded Linux encoder software. Responsible for the full life-cycle product development; 44k lines of Visual C# .NET code, 5.1k lines of XML, 22 icons, and 11 bitmaps.

- Visual C# .NET 2005
- Windows Forms
- Threading
- .NET Interop
- XML
- HTTP
- SNMP
- MIB

Receipt Creator – LDC Direct, Ltd. Co. (2004, Contract)
Receipt Creator is a graphical designer for a system that prints prepaid cards and receipts. It is similar to a forms editor that lets the user choose from a palette of objects to place on a form, and to then manipulate the properties and relationships of the objects. The application supports two modes, card (fixed size) and tape (fixed width, variable height). I worked with the client's Director of IT Development to specify the product. Visual Basic .NET was requested by the client because they wanted to be able to maintain the application internally. I was able to achieve 100% pixel accuracy between the application display and the printout (which was a proprietary thermal printer). Responsible for the full life-cycle product development; 14k lines of Visual Basic .NET code, 14 character set bitmaps, 9 object icons, and 35 toolbar bitmaps.

- Visual Studio .NET
- Windows Forms
- XML
- Visual Basic .NET
- Web Services

WallGen – Parastream Technologies, Inc. (2003, 2008)
Developed a Windows application to generate Windows backgrounds that can be used to identify machines and their configurations at a glance. Responsible for the full life-cycle product development; 15k lines of C++ code and 11 help topics.

- Visual C++
- Windows Application
- MFC
- GDI

Project Publisher .NET – Parastream Technologies, Inc. (2002-2004)
Project Publisher .NET is a Visual Studio .NET add-in for web application and site developers. The add-in can upload only the changed files to a remote web server using FrontPage Server Extensions. The Visual Studio .NET "Copy Project" command can only copy the entire project at once. I was required to reverse-engineer most of the FrontPage Server Extensions RPC calls and write the client side code in C# to achieve this. Ethereal was an essential tool for reverse-engineering and debugging protocol issues. Responsible for the full life-cycle product development, including installer, documentation, and on-line help, and 10k lines of Visual C# .NET code.

- Visual Studio .NET IDE Add-In (EnvDTE)
- Web Services
- FrontPage Internals
- FrontPage Server Extensions protocols
- Visual C# .NET
- Windows Forms
- Visual Studio Integrated Help

PagePorter – Parastream Technologies, Inc. (2002-2004)
Developed an add-in and web forms control suite for web application developers using Visual Studio .NET. PagePorter provides integration with FrontPage or conversion of FrontPage webs into Visual Studio .NET web projects. Reverse-engineered many of the FrontPage configuration and metadata file formats. Responsible for the full life-cycle product development, including installer, documentation, on-line help, and class library documentation; 35k lines of Visual C# .NET code and 59 help topics.

- Visual Studio .NET IDE Add-In (EnvDTE)
- ASP.NET
- Web Forms
- Web Services
- FrontPage Internals
- Visual C# .NET
- Windows Forms
- Web Custom Controls
- Visual Studio Integrated Help

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ACommServer – Automatic Data Processing, Inc. (2000, Contract)
Developed a Windows Server application that received incoming requests from a database, queued and relayed the requests to an existing dialup service and returned the results back to the database. The product was used internally as a bridge between the new payroll web applications and the legacy dialup processing servers. Used TAPI to access the server's modems. 56k lines of C++ code and a 30 page design document.

- Visual C++
- Windows Application
- TAPI (Telephony)
- MFC
- MS SQL Server
- ZMODEM File Transfer Protocol

Track Link – ANTEC Corporation (1999-2001, Contract)
Track Link is a Windows application that configures and monitors equipment in a cable TV plant over a network. I was responsible for cleaning up and standardizing the user interface and localization into Brazilian Portuguese. Created several custom controls to represent the real-world devices that the application was configuring and monitoring.

- Visual C++
- Windows Application
- MFC
- Localization

HRizonBuilder – Automatic Data Processing, Inc. (1997-1999, Contract)
HRizonBuilder is an integrated development environment (IDE) for developing Human Resources applications in ADP HRizon. I was responsible for overall product plug-in architecture, which allows for efficient and modular development as well as simple deployment of new features. I also developed the Panel Editor, which is a graphical editor for creating panels from a palette of controls such as labels and text boxes. Other functions were developed by other team members. Contributed 117k lines of C++ code, 50 toolbar bitmaps, 32 cursors, a 24 page code document, and a 90 page design document.

- Visual C++
- Windows Application
- Rogue Wave
- MFC
- MS SQL Server
- Plug-in Architecture

DHCI – Scientific-Atlanta, Inc. (1995-1997, Contract)
Developed a Windows application that displays and configures equipment in a broadband processing chassis over serial port or a network. Responsible for the full life-cycle product development, including the plug-in architecture that allowed new cards to be added by writing a plug-in module. Created several custom controls to represent the chassis and cards that the application was configuring. 50k lines of C++ code.

- Visual C++
- Windows Application
- GDI
- MFC
- Serial Communications
- Plug-in Architecture

AComm.Dll – Automatic Data Processing, Inc. (1995, 1997, Contract)
Developed a communications library for ADP's new Windows 3.0 applications. Implemented a modem dialer, a modified ZMODEM file transfer protocol, and a scriptable terminal emulator. 25k lines of C++ code.

- Visual C++
- Windows DLL
- ANSI and IBM 3101 Terminal Emulation
- MFC
- Hayes AT Command Set
- ZMODEM File Transfer Protocol

Vista – Knowledge Access International, Inc. (1993-1994, Contract)
Vista is a Windows application that is used to configure and monitor an embedded machine vision system. The system could recognize objects optically, based on a configuration created by the Vista application. Responsible for the full life-cycle product development, including the serial error-control protocol. 25k lines of C++ code.

- Visual C++
- Windows Application
- Communications Protocol Design
- MFC
- GDI

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Publisher's Paintbrush, PhotoFinish, and UltraFAX – ZSoft Corporation (1992)
Managed a group of 2 other developers to develop scanner drivers for ZSoft's paint and fax product lines. Converted development from pure 8086 assembler to C using a new interface. We supported over 50 different scanners from more than 20 vendors.

- MS-DOS TSR Drivers
- 8086 assembly language
- C

EMBEDDED SYSTEMS DEVELOPMENT

Set-top Boxes – Motorola, Inc. (2007-Present, Contract)
Worked in the "Thin Client" and OCAP DVR groups. Worked on debugging local networking of DVR content using MOCA. Developed the OCAP platform's device and thermal management functionality as well as integration into SNMP. Wrote a command line API test application to aid in unit testing as well as an example of how to use the Thermal Manager classes. Created detailed design documentation with UML sequence, state and class diagrams.

- Embedded Linux (BusyBox)
- SNMP / MIB
- Rational Rose / UML
- Red Hat Linux
- SlickEdit
- Embedded C/C++
- ATA / SMART
- Rational ClearCase / SCM
- CodeWarrior

HEMi – EG Technology, Inc. (2007, Contract)
HEMi is a "micro-headend" built around a standard rackmount PC and custom QAM tuner and MPEG encoder cards. I was responsible for implementing the SNMP support, using the NetSNMP package, as well as authoring the MIB.

- Embedded Linux (BusyBox)
- SNMP / MIB
- NetSNMP
- Embedded C

QPSK Modulator – Scientific-Atlanta, Inc. (1997, Contract)
Member of the development team of a QPSK modulator box for a broadband system. Responsible for the front panel interface code.

- Embedded C++
- PowerPC (68302)
- pSOS RTOS

Hayes V-series Smartmodem – Hayes Microcomputer Products, Inc. (1986-1991)
The Hayes V-series modems were the first to incorporate advanced features such as error-control and compression. Developed the Dynamic Packet Sizing algorithm, a method to reduce transmission latency of start-stop data due to packetization. Worked with the developer of the Adaptive Data Compression algorithm to refine and implement it. Co-developed AutoStream (a U.S. Patent was awarded), a method to encode multiple data channels over a single asynchronous connection. Also implemented a full X.25 PAD, MNP Class 5 compression, and V.42bis compression.

- Packet Assembly/Disassembly
- Communications Protocol Design
- Embedded C++
- X.3, X.28, X.29 standards
- Data Compression
- Z80 Assembler

EZ-Print – MEPCOM International, Inc. (1982-1983)
Developed all firmware for a 40 column standalone impact printer for point of sale applications. Responsible for all firmware engineering, including a real-time software UART that operated one bit at a time at 9600 bps while simultaneously servicing the printer mechanism.

- Z80 Assembler
- Font Creation
- Asynchronous Serial Communications

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HARDWARE DEVELOPMENT

RP-SM304A – Parastream Technologies, Inc. (2002)
Developed a small circuit board that is a direct physical and electrical replacement for an out of production part. Reverse-engineered and characterized the original part and designed an equivalent in SOIC 4000-series CMOS that would fit in a 40-pin DIP footprint. Responsible for the full life-cycle product development, including a full datasheet.

- < 20 MHz Digital Hardware
- 4000-series CMOS
- OrCAD Schematic Capture
- OrCAD PCB Layout

dbr Noise Reduction System (1985)
Developed a single-ended analog noise reduction system similar to dnr, which is a variable lowpass filter controlled by the high frequency intensity of the source material.

- Analog Audio Hardware
- NE572 Analog Compander

MPU-85 – Fischer-Freitas Corporation (1981, Contract)
Developed an IEEE-696 card that was 100% bus timing compatible with the current IMASI MPU-A CPU card while running at 150% of the MPU-A clock rate. Contemporary 8085 card designs did not faithfully reproduce all of the 8080 bus signals or had insufficient bus drive current, and had compatibility problems with some other IEEE-696 cards and systems.

- < 20 MHz Digital Hardware
- 74LS-series TTL
- Intel 8085
- IEEE-696 (S-100) Bus

FM-1 – Innovative Computer Products (1977)
Developed an IEEE-696 card that contained 3KB EPROM and 1KB RAM, and bootstrap circuitry to allow a system to run without a front panel. Also contained a hardware non-maskable interrupt circuit (which was a capability lacking in the 8080), and was intended to be used as a hardware single-step or as an in-circuit emulator.

- < 20 MHz Digital Hardware
- 74LS-series TTL
- Intel 1702A and 2102
- IEEE-696 (S-100) Bus

WEB DEVELOPMENT

DeCarlo Family Chiropractic Web Site – Richard DeCarlo, DC, PC. (2007)
I took the original web site and reworked the framework in Microsoft Expression Web and Visual Studio, using the .NET menu system. I brought consistency to the layout of the pages, changed the color scheme, and created a new banner graphic. A little bit of code was used in the master page to implement automatic setting of the page banner from the title.

- Visual Studio .NET 2005
- Expression Web
- Visual Basic .NET
- Photoshop

Parastream Technologies Web Sites – Parastream Technologies, Inc. (2002-Present)
I developed three web sites for Parastream Technologies which provide corporate presence with on-line catalog and shopping, on-line documentation, and internal corporate operations with automated order processing. The approximately 30 database tables are operated on using ADO.NET, C#, and stored procedures, while the business logic objects are written in Visual Basic .NET. The PayPal IPN protocol is supported in the backend to automatically process both download and physical orders. The phpBB MySQL database was bridged with the SQL Server user database to provide seamless forums and technical support. The sites were designed with the idea in mind of offering an extensible modular web presence as a future product. Web sites are managed using Microsoft Visual Studio .NET, Microsoft FrontPage, and Parastream PagePorter.

- Visual Studio .NET 2005
- FrontPage 2003
- Visual C# .NET 2.0
- Visual Basic .NET
- ASP.NET 2.0
- ASP
- ADO.NET 2.0
- PHP
- MS SQL Server 2005
- MySQL

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WORK HISTORY

2002 – Present Owner, Parastream Technologies, Inc. Major Clients: *Motorola, EGT, ARRIS, LDC Direct*
1993 – 2002 Owner, Weatherford Enterprises D/B/A. Major Clients: *Scientific Atlanta, ADP, ANTEC*
1991 – 1993 Project Manager, ZSoft Corporation
1988 – 1991 Senior Design Engineer, Hayes Microcomputer Products, Inc.
1986 – 1988 Design Engineer, Hayes Microcomputer Products, Inc.
1982 – 1983 Design Engineer, MEPCOM International, Inc.
1980 – 1982 Engineering Technician, MOSTEK Corporation
1979 – 1980 Engineering Technician, IMSAI Manufacturing Corporation
1978 – 1979 Production Test Technician, IMSAI Manufacturing Corporation

EDUCATION

Memphis State University, Computer Science program, 1986

PRODUCTS, PATENTS, AND PUBLICATIONS

- Set-top Boxes (Motorola)
- Element Manager (EGT)
- Receipt Creator (LDC Direct)
- Parastream Project Publisher .NET (Parastream Technologies)
- Parastream PagePorter (Parastream Technologies)
- Parastream Technologies Web Sites (Parastream Technologies)
- Parastream WallGen (Parastream Technologies)
- RP-SM304A (Parastream Technologies)
- ACommServer (ADP)
- HRizonBuilder (ADP)
- DHCI (Scientific Atlanta)
- Vista (Knowledge Access International)
- AComm.Dll (ADP)
- Hayes V-series Smartmodem (Hayes)
- EZ-Print (MEPCOM International)
- MPU-85 (IMSAI/Fischer-Freitas)
- U.S. Patent 5,012,489: Method for sending a plurality of data channels over a single communications line. (AutoStream)