

# SUMMARY OF EXPERIENCE

Joseph L. Ellsworth

5442 South 900 East #158

Salt Lake City, Utah 84117

(801) 596-9833

FAX (801) 596-1826

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## Profile

Building on a strong background in Software Engineering, Object Oriented Methodologies and Business Management gained during 9 years of managing BusiWare, Mr. Joseph Ellsworth has been responsible for the sales, management, analysis, design, implementation, installation, maintenance, and user training for a wide range of software systems for many industries such as: Insurance, Municipal Billing, Health Care, Language Translation, Point of Sale, Collections, Billing, Architectural Engineering, Two-Way Wireless Communications and Telecommunications. He has in-depth knowledge of and experience with Object Oriented Analysis, Object Oriented Design, Implementation & Deployment, Relational Database Design & Deployment, Network Design & Installation, User Interface Design and Client Server Architecture.

## Experience:

- |               |  |
|---------------|--|
| 1993- 1994    | Object Oriented Trainer / Mentor and Project Lead as Independent consultant on contract to National Computer Systems |
| 1993- Present | Vice-President research & development<br>RPGTran, Inc. a subsidiary of BusiWare                                      |
| 1992- 1993    | Contract Consultant - Object Oriented Designer<br>Systems House  |
| 1984- Present | Consultant, CEO, Senior Systems Architect, Sales Manager<br>BusiWare   |
| 1982- 1984    | Vice President over Data Processing / Accounting / Personnel<br>HY-TEK Communications                                |
| 1982- 1982    | Customer Support Programming Analyst<br>DAKS, Inc.   |
| 1981- 1982    | Technical Support, Programmer, Problem Solver<br>The Computer Store  |

## Education

- |               |   |
|---------------|---|
| 1982- Present | Extensive private study in Object Oriented Methodologies, Relational Database Normalization, Relational Technologies, Artificial Intelligence. Also many mini courses in a variety of technologies. |
| 1982          | Certified Utah Real Estate Agent Training & Licensing   |

1980- 1982 Course work for double bachelors degree in Data Processing & Business Management  
Weber State College.

## Relevant Experience

### **RPGTran, Inc.** *V.P. Research & Development*

1993 - Present

Mr. Ellsworth has been responsible for the Conception, Analysis, Design, and Implementation of a RPG to C++ computer language translation tool.

The tool was implemented in Smalltalk. The output requires a large and sophisticated class library to mimic functionality normally provided by the IBM AS/400 operating system. This library is implemented in C++.

Mr. Ellsworth has also been responsible for writing the 1st draft of all marking and technical brochures required by RPGTran, Inc.

Much of the marketing and most of the technical pre-sale support and contract negotiations have been handled by Mr. Ellsworth.

This project made heavy use of API tool kits such as the Microsoft Windows API but at the same time had portability built in such that the translated programs and the class library could be supported on multiple operating systems. It also was designed to dynamically support different back end database managers.

### **Systemhouse, Inc.** *Contract Consultant - Object Oriented Analyst & Designer*

1992 - 1993

Mr. Ellsworth worked with Northern Telecom. On this project Mr. Ellsworth worked as a team member and provided object oriented and parsing expertise for analysis and design of a DMS-100 telephone switch monitoring application. This application was written in C++, Smalltalk and Gemstone and ran under Unix on Sun Sparc Workstations. It heavily depended on Unix inter process communications.

During the final phase of this project Mr. Ellsworth's project management skills were drawn upon to develop a plan which was used to give the team focus and direction during the choosing of an expert system to be used in the next phase of the project.

During this project Mr. Ellsworth developed a knowledge of DMS-100 architecture and table structures. He also acquired a working knowledge of SS7 topology.

**BusiWare****Consultant, CEO, Senior Systems Architect, Sales Manager.**

1984-Present

Mr. Ellsworth worked as a private consultant during this time. He made extensive use of relational 4th Generation systems, learned and made heavy use of Object Oriented methodologies, Operates as sales person, executed business management responsibilities, learned client server technologies and implemented several applications & tool kits using this technology.

He developed many systems using multiple environments, however; only major project are mentioned here and while they were often done concurrently they are listed roughly in reverse chronological order. In addition to the projects listed below he provide system administration services on multiple operating systems, Designed & installed many computers systems and networks and provided generalized training & support services.

Past clients remarked that his most valuable trait is the ability to communicate on their level, allowing them to understand what he was going to do without overwhelming them with technical jargon or unnecessary detail. The result of this is that clients felt he truly understood their needs and how to solve their problems.

- **RPG to C++ Language Translation** - See RPGTran, Inc. - This product was conceived and designed by Mr. Ellsworth to allow customers with RPG code executing on a IBM System 36, 38 and AS/400 mini computers to convert that code so it can be compiled and executed on any computer with a C++ 3.0 compatible compiler.

The translator itself is implemented in Smalltalk. It represents about a 3,000 hour investment. He learned an extensive amount about parsing and code generation in this phase of the project.

The translated program depends on an extensive C++ class library which was used to emulate the file & screen services which are normally provided by the S38 or AS/400 operating systems. This is a very large and complex library and represents a 1500 hour investment. This library is exciting because it has a polymorphic back end which is able to communicate with multiple SQL servers simultaneously. It is also exciting because it allows the RPG programmer to incrementally make use of new features such as bit map graphics which were not originally part of their base RPG code.

- **Insurance Claims Administration System** - Mr. Ellsworth designed & implemented this package for a large insurance company which processes insurance claims for self insured clients. This system was implemented in Clarion with extensions in C++ for areas where the Clarion engine was not suited for the necessary processing.

This is a very large and complex database application loaded with special exceptions for different states and clients with special requirements. It contains over 100 screens and 200 reports most of which are user configurable to a certain extent.

This system runs on 80286 PC's or better under Novell or Lantastic. It has processed over a million payments and 150 thousand claims with interactive response times of 2 seconds or less on a fully loaded network.

When he took over this project the insurance companies claims administration system was down. Their Revelation base single user system had crashed and source code was unavailable. Mr. Ellsworth was able to use the Advanced Revelation Schema to off load the files and schema information to ASCII files. He then wrote a series of parsing filters to convert the information from the hierarchical Revelation format to a Relational format and then into SQL statements which could be processed by Novell's XQL. Mr. Ellsworth also converted the data to standard SDF format which was imported into Paradox to generate emergency reports for the client prior to implementing a new user interface.

- **Robotics / Interface & Programming** - During this project Mr. Ellsworth designed and implemented a TTL to Analog interface system. He designed and built the circuits necessary to interface standard 12 volt DC motors to a Parallel port of a IBM-PC. Using custom designed circuits he was able to accurately control these motors down to 1/40 of a revolution.

To ensure the motors were turning correctly Mr. Ellsworth designed and built a optical encoder feed back mechanism which was tied through the PC's bi-directional parallel port. The optical sensor portion was driven at a polarity reversing 12 volts to minimize risk from EM induced noise. A 1488 chip was use at the last minute to convert the Optical coupler signals back to TTL levels.

The entire project was designed and built such that all external circuits were optically isolated from the PC.

The circuits were all controlled by a normal bi-directional PC Parallel port. The controlling software was written in C++ which used a combination of polling, timer interrupts and service interrupts to control the external circuits.

- **Graphical / Linguistic Compression & Decompression Book Displayer** - Mr. Ellsworth designed this product to allow the distribution of text and graphics books on PC floppy instead of hard copy. This product was a descendant of the basic speed reading tutorial program. It was implemented in C++. It has the ability to read any text file and display it in a form optimized for teaching and practicing speed reading. It has the special extension of being able to process files with embedded line/vector graphic images.

Included in the package is a utility which will process Pixel images and convert them to line vectors to be stored in the text file. This allows the storage of simple pictures with very little disk space. Some resolution is lost but a surprisingly large book can be stored effectively on floppies.

All user interface widgets for this package were inherited from the Speed Reading Program and enhanced for operation in graphics mode.

- **Speed Reading Tutorial Program** - This product allows any text file to be used as the source material for a timed reading. It incorporates the basic features of speed reading training such as eye movement, specified line width, specified # of lines, etc. The regular use of this program can assist the user in doubling or tripling their reading speed while improving their comprehension. This product is written in C++ and is heavily object oriented. It runs on IBM-PC Compatibles. This package represents a lot of work at the widget level class library which implemented multiple pane windows, scroll bars, pop up lists, scrolling lists, etc.
- **Btrieve to C++ Interface Wrapper** - This package provides a safe high level interface from C++ to the Novell Btrieve engine. It is implemented in the form of a C++ class library. It incorporates features such as automatic file opening, automatic initialization of Btrieve interface, automatic movement from record buffers to field buffers. It also includes a higher level class library for managing multiple record sets, etc.
- **Object Oriented Novell SQL to C++ Interface** - This package was first written in Object Pascal and later reimplemented in C++.

It supplied a safe interface to the Netware XQL engine by providing automatic handling of memory buffers. XQL is a multiple record dynamic SQL server so the library had the built in ability to handle multiple record sets. Since the extract buffer format was not known until run time the XQL ability to return field names and formats of the fields in the active fetch buffer was used to dynamically link the fields in the record buffer to the internal fields via field name. There is a built in ability to automatically parse the fields out of the record buffer, do any necessary conversion and store the value in the fields buffer.

Note: Fields can also have a dynamic link to multiple screen fields for display and editing with the user interface which is also part of this class library.

- **Bookstore Point of Sale System** - This system was implemented in MUMPS. The basic design follow standard inventory control practice with serial # items. It incorporates interfaces to Bar Code Wands via Kimtron Terminals and Bar Code Printing via a ROM card option in NEC P series printers. It could support 5 active users from a single 80286 PC.

This application is particularly interesting because MUMPS lacked the necessary utilities for generating large complex systems. Because of this Mr. Ellsworth implemented a data dictionary system with an integrated screen & report printer. This system facilitates the creation of database formats in a manner similar to DBASE III. It supplied all the necessary routines to drive most screens and reports directly from the data dictionary. It included a menu generator. An important feature of this package was the ability of the data dictionary to automatically parse the MUMPS standard “^” delimited record and store the component parts in individual fields. It also had the ability to determine which fields had changed and generate the new record which it stored in the global symbol database. It also included the ability to automatically manage several multiple segment keys per record with functions supplied to process the records in key sequence.

- Glass Replacement Point of Sale, Invoicing, Billing & Collection system
- Multi-Level Sales and Commission Accounting for Food Storage company
- Long Distance Phone Service Marketing - Billing and Multi-Level commissions tracking. Included automatic bank debits and credits.
- Credit Card Terminal Password stealer to allow reprogramming of credit verification terminals after static glitches had scrambled the set up information.
- Collections Bureau System for Revolving Charge Billing & Collections.
- Technical Document Management System
- Municipal Utility Billing System
- Photography Studio Client / Portfolio Management System
- Hospital Quality Assurance / Incident Tracking System
- Hospital Staff Scheduling System
- Team member in maintenance and enhancement of flight data acquisition system. Supplied knowledge of relations database, Gould TSM operating system internals and structured programming
- High Level Health Calculation and Presentation System
- Radio Maintenance Facility Accounts Receivable and Collections system.

**HY-TEK Comm. Vice President over Accounting & Personnel**

1982-1984

Mr. Ellsworth managed the accounting department and was responsible for the management of 6 employees. He handled all book keeping functions and implemented an invoicing and accounts receivable / collection system in Turbo Pascal on a IBM PC. This software functioned from 1982 through 1992 when it was replaced at Mr. Ellsworth's suggestion with Quicken Books.

When Mr. Ellsworth arrived at this position the companies books were in total disarray. The accounts receivable was 90 days out of date with some clients who had not been billed in over a year. Mr. Ellsworth's first responsibility was to sort and organize and bring to date the existing accounts receivable records.

While working at HY-TEK he published the first known article on DMA access to video memory on the IBM-PC done solely from a high level language. He also published articles on implementing intelligent pop up menus on the IBM-PC from a high level language. The technology used in this article was developed on for the AR-System.

**DAKS, Inc.****Programming Analyst in Customer Support**

1982-1982

Mr. Ellsworth supported a 6 state area representing about 75 customers. These customers were large and medium sized collection bureaus and had from 3 to 25 users. These systems were implemented in OS65U Basic. Each customer had special modifications. He was responsible for keeping these systems operational when problems were encountered.

Mr. Ellsworth was also responsible for making custom modifications to these systems at the customers request. This also included the specification, sales & installation of additional hardware.

Mr. Ellsworth also managed company wide RMA activities and supervised one programmer who was responsible for three additional states.

**Computer Store Programmer, Problem Solver, Commission Sales**  
1981-1982

Mr. Ellsworth's communication & negotiation skills were called upon to help the store avoid law suits that had been threatened by their customers. He was given a wide range of flexibility to resolve the customer grievances and was paid a commission on additional hardware sold to these customers.

He designed and implemented major enhancements to a multi-user municipal billing system.

He was called in as a sales consultant for sales when the requirements of the user were out side the scope of the sales persons knowledge. He would assist in specifying the systems, software & labor necessary to meet the customers requirements. Some of these sales were turned over to him to finish the closing process.

The dominant machines & languages used during this time frame were UCSD Pascal, Apple Basic, Apple II, Apple III, Ohio Scientific OS65U, RX System under MPM and CBASIC.

**Preferred Working Environments**

- |             |               |
|-------------|---------------|
| C++         | Smalltalk     |
| Unix        | DOS/ Windows  |
| Progress    | Clarion       |
| Frame Maker | Client Server |

## Technical Experience:

### Project Management:

Requirements Specification	System Configuration
Object Oriented Analysis	Cost Estimating
Sales Presentation Preparation	Object Oriented Design
Structured Design	System Design & Specs
Architectural Analysis	Problem Domain Analysis
Component Interface Specs	Bid Preparation
General Planning	General Scheduling
Critical Path Scheduling	Project Feasibility Studies
Project Design Review	System Design Documentation
User Documentation	Algorithmic Top Down Design
Structured Top Down Design	Object Oriented Implementation
Company Impact Review	User Training
Implementation Planning	Personnel Coordination
Personnel Supervision	Product Quality Review
Etc.	

### Hardware:

Dec Station 5100 (Prog, Etc.)	Sun Sparc (Use & Prog)
IBM PC XT/AT/386/486	Trillion (Use, Ins, Config, Maint, Prog)
Acer (Use, Inst, Config, Maint)	Altos (Use, Inst, Config, Maint, Prog)
Citizen (Use, Int, Config, Maint)	Packard Bell (Sales, Inst, Maint, Use)
NEC	Apple (Sales, Use)
Mouse API Programming	Light Pen API & Hardware Programming
Laser Printers API Programming	Laser Printers Maintenance
5250 Emulator API Interface.	Matrix Printers Hardware & API tool kit
Multi Port Serial Cards	CUBIX (Sales, Use, Prog)
HAYS (Programming, Use)	KRAFT API Programming
Fujitsu Drives (Config, Inst, Use)	Segate Drives (Config, Inst, use)
Wyse Terminals (Built API Support)	Wyse Computers (Installation)
Multi Tech DSU/CSU (inst, Prog)	Multi Tech Multi-Plexers (Prog, Inst)
AT&T Unix Boxes (Inst, Int, Prog)	Televideo Term (Inst, Prog, Maint)
Arcnet Topology Design	Arcnet Installation & Maint
Beckman (Use)	ALR (Config, Inst, Maint, Sales)
Kimtron (Programming, Inst, Use)	QUME (Inst, Prog, Maint)
DTK (Inst, Config, Use, Maint)	AXON Network (Inst, Config, Use, Maint)
US-Robotics (ins, Config, Use)	Practical peripherals (Inst, Interface, Sales)
ARNET (Inst, Config, Sales)	Ethernet Topology Design
Ethernet Cabling Installation	Ethernet Card (Inst, Use, Config)
Motorola Chip Interface Design	T.I. Chip Interface Design
Tandy Chip Interface Design	Etc.

**Software:**

Borland C++ (Most Versions)	OWC++ (Unix)
Zortech C++	Microsoft C++ (7.0, Visual)
Microsoft Windows API Prog	Microsoft ODBC API Programming
PDC Prolog & Tool kit	Turbo Pascal (Most Versions)
UCSC Pascal	Digitalk Smalltalk V/Win
Digitalk Smalltalk 286	Parcplace Smalltalk Unix
Revelation	Advanced Revelation
Basic Many Versions	Fortran
Cobol	MUMPS
Actor with DBMS Exten.	Soft focus CISAM
Modula II (Limited)	X/Windows (Prog & Use)
CFRONT 3.0	
Progress (Several Versions)	Clarion (All Versions)
Informix I4GL	Dbase IV, III, II
TAS	Oracle (Minimal)
Ingress (Minimal)	Codebase
Novel XQL (Tool kit & Apps)	Btreive (Tool kit & Apps)
Paradox (Most Versions)	Paradox C Engine
Clipper	Borland Object Vision
SCO Integra	ACE Report Writer
DQuery	VPExpert
Ocelot SQL	
SCO Unix & Xenix	Microport Unix
DEC Ultrix	Sun Unix, Etc.
MS-DOS (Most Versions)	Novel Netware (Several Versions)
Lantastic NOS	AXON NOS
MUMPS Operating System	IBM AIX (Minimal)
Microsoft Windows (Most Versions)	Oasis (Older Versions)
MPM/CPM	PC-MOS
Concurrent DOS	OS/2
FrameMaker	Rational Rose
Word Perfect (Several Versions)	Wordstar (Old Versions)
Lotus / Twin / Etc.	Quattro Professional
PFS Publisher	Page Maker (Several Versions)
Ventura Publisher (Several Vers)	ABC-Flow
Mac Write	LEWP
Time Line	OMTOOL
VS-Designer	Easy Flow
C-Doc	Etc.