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Overview

- **Current focus:** Lightweight project management and development methodologies, business process consulting, technical requirements analysis, innovative user interfaces.
- **Research interests:** Human-computer interaction, direct manipulation graphics, software architecture, information visualization, information retrieval, knowledge management.

Experience

President, Software Federation Inc. , 7/96 - present

Software Federation provides consulting and outsourcing services for custom application development. We are specialists in innovative user interfaces using direct manipulation graphics, software architecture, and the development of knowledge based systems. My responsibilities include business development, proposal preparation, technical consulting and project management.

- **Sandia National Laboratories:** Account management, requirements analysis, architecture and design review, user interface design, documentation, system testing, change and defect management, user experience analysis, stakeholder training. Software Federation built ChileCAD, an ECAD schematic capture tool using Software Farm's Mica direct manipulation graphics framework. ChileCAD provides a direct manipulation graphical user interface that allows Sandia scientists to input electronic designs by drawing schematics or loading SPICE netlists, then access Sandia's own custom simulation tools that run on some of the world's fastest machines. Rich Java client with XML.
- **Archstone Communities:** Requirements analysis, scope definition, collaborative user interface design, change management, deployment planning, project management and management consulting for Web site that allows members of the public to lease apartments online. Created client specific, scalable software development methodology based on project-appropriate usage of directed template documents that individually address elements of the software development lifecycle. Microsoft development tools with SQL Server.
- **Interactive Gaming & Wagering:** Strategic planning, management consulting, analysis and business engineering focused on front-to-back integration of operations and product development. Served as interim head of technical operations. IGW is a rapidly growing software vendor that, in addition to their custom gaming software platform, also provides ancillary telecommunications and Internet services, web and application hosting, and IT services to its clients. Highly heterogeneous hardware and software environment.
- **Xerox:** Object oriented analysis to support knowledge management. Prepared an enterprise document model that presents an overview of the corporate document corpus

to provide a foundation for a business specific document services architecture prepared for a Xerox client. UML.

- **National Center for Atmospheric Research:** Object technology mentoring for organizational modeling and the development of an architecture and toolset to support community information sharing.
- **Innovative Research:** Business consulting, requirements analysis, architectural and UI design, testing and delivery of second generation capacity planning tool for analysis of distributed and parallel computer systems and software. Direct manipulation interface. Funded by SBIR. Development in Java.
- **Xerox:** Business process engineering and object oriented modeling to support corporate document services strategy and architecture (with Priority Process Associates).
- **Xilinx:** Requirements analysis, design and Java prototyping of visual interface to custom release and software configuration management toolset.
- **Prescient Group:** Project management and requirements analysis for next generation WWW search site.

Consultant, for contract house, 1/91 - 6/96

My responsibilities included software analysis and design, programming, and project management. Work was primarily performed from my home office supplemented by appropriate visits to the customer site. Teams sometimes included other contract house personnel or client staff. Frame, Sun SPARC (SunOS/Solaris), X/Xt/Motif, OpenLook, C/C++, Select OMT, UIM/X, VisualADE, TeleUSE, DevGuide, Galaxy, Ingres, Sybase.

- **Clear Communications:** Project management and design consulting, requirements analysis and user interface design for telecommunications network fault management system.
- **Lifeline:** Project management consulting, project planning and mentoring for personal emergency response system operations center software.
- **COBE Renal Care:** Business process consulting and mentoring. Built object model of current business processes focusing on problem areas. Taught OMT. Investigated document management, systems support for regulatory requirements and integrating manufacturing MRP (materials resource planning) and engineering configuration management.
- **HiLife:** Requirements analysis and system architecture for technology section of business plan for a new managed health care application that facilitates physician-patient communication.
- **ICG Wireless:** Requirements analysis for new wireless communication product.
- **SunSoft:** Collaborative object-oriented requirements analysis and user interface design for high availability system configuration and volume management tools. Storyboarding, paper prototypes, repeated reviews, and user tests were used to refine the design, which includes significant direct manipulation.
- **Ericsson Raynet:** Requirements analysis, architectural design, implementation and project management for an operations support system GUI for fiber optic network facilities to be deployed in the local loop. The OSS handles network inventory, provisioning, service orders and maintenance, alarms for network operations, plus administration. Custom model-view-controller based framework, layered architecture, test drivers, level 3 internationalization (deployed in Europe). 125 large screens, 3 direct manipulation editors. Interfaced to client's database and network element communications subsystem. Technology transfer to client staff. Led team of 5.
- **Coral Systems:** Prototyped network operations center interface for cellular fraud detection system that displays real time information about subscribers and patterns of deviant calls.

- **Ericsson Raynet:** Prototyped direct manipulation editor used to describe fiber optic network components and their interrelationships for a sales configuration and product ordering system.
- **Innovative Research:** Built a general tool for computer system and network analysis and capacity planning. A direct manipulation interface is used to specify system configurations and display results. Prototyped extension for analysis of parallel systems. Included requirements clarification, design revisions, screen implementation, validation of analysis specification, hierarchical editors, simulated annealing optimizer, object to relational data mapping. Led team of 2.
- **Loral Data Systems:** Co-implemented a library of OSF/Motif dialog box utilities that provide an inverted interface that allows control driven legacy applications to access event driven X/Motif. Included requirements clarification, internal documentation, user manual, man pages, internationalization, technology transfer to client staff.

CFO and VP Operations, Software Farm Inc. , 10/90 - present

Software Farm builds high level direct manipulation graphics tools and application development environments. Responsibilities include business development, administration and technical consulting. See www.swfm.com. Software Farm also owns Audio Federation, a high end home audio dealer, distributor and publisher.

Senior Software Engineer, WaveFrame Corporation, 4/90 - 10/90

WaveFrame built digital audio workstations targeted at musicians and the video post-production market. Enhanced file system and SCSI interface to support removable media and magneto-optical disks. Intel/DOS/Windows 3, C.

Project Leader, Cadnetix Corporation, 1/85 - 3/90

Cadnetix built electronic design automation (EDA) workstations and tools with direct manipulation interfaces. Sun (Motorola and SPARC) (SunOS), BSD Unix 4.2, 4.3, DOS, C/C++, SPARC, AMD 2900, Motorola 680x0 and Intel 80860 assembler, X/Xt/OpenLook, SunView.

- **Printed circuit board routing:** Coordinated systems software support and interface development for a next generation router based on a custom MIMD accelerator card. Designed and implemented application specific interactive graphic debugger and multiprocessor task execution controller.
- **Graphics:** Co-designed and directed a re-implementation of graphics database and rendering functions to achieve an order of magnitude speed increase in application operations. Managed maintenance of windowing, rendering and database software. Managed and participated in port of this graphics system from custom BSD Unix workstations and PCs to Sun/X/SunView with optional AMD 2900 series bit slice accelerator card. Advised application developers. Evaluated new hardware/software platforms.
- **Computer aided engineering:** Built schematic capture package based on semantically aware hierarchical direct manipulation editor. Enhanced and maintained compiler that generated physical CAD and simulation data from schematic designs. Designed and implemented annotation data access library and instructed others in its use.

Programmer, Rand McNally - Infomap, 9/84 - 1/85

Infomap built tools for thematic mapping, published maps and generated custom thematic maps for clients. Designed and implemented a raster scan conversion algorithm used to manage

islands in non-convex polygon aggregation. Built an interface to map generation tools for marketing and sales staff. FORTRAN.

Operations Research Analyst, Science Applications International Corporation, 5/82 - 8/84

SAIC develops products and performs services for a variety of clients in government and industry. Researched and coded agglomerative clustering routines. Enhanced custom RDBMS and interactive statistics package. Wrote functional specification for human interface and data management for a transportation modeling system. FORTRAN.

Education

B.A., Mathematics, University of Colorado, Boulder, CO; December 1981.

Short courses:

- *A Comparison of Object Oriented Analysis and Design Methods*, OOPSLA `94.
- *Design Patterns*, OOPSLA `94.
- *Metaphor Design in User Interfaces*, SIGCHI `95.
- *Models, Prototypes and Evaluations: Making the Structured Approach Practical*, SIGCHI `95.
- *Java Developer's Camp*, SunSoft, 1996.
- *Presenting Data and Information*, Edward Tufte, 1996.
- *Information Visualization*, SIGGRAPH `96.
- *Visualizing Scientific Data and Information* , SIGGRAPH `96.
- *Practical 3D User Interface Design*, SIGGRAPH `96.

Conferences: SIGGRAPH `90, `91, `96, '98, SIGCHI `92, `95, OOPSLA `94, Visual Languages `96, HCI International `97, JavaOne '99.

Professional societies: ACM, Member of the IEEE and IEEE-CS.

Languages, tools and methodologies

- **Analysis & Design:** UML and its predecessors, focused on a *lightweight, iterative process customized to our client's needs and culture*.
- **Tools**: Microsoft Office (Word, Excel, Powerpoint, etc.), Frontpage, Visio, MS Project. JDK/Java Workshop, Sun SPARCWorks, UIM/X, TeleUse, visualADE, FrameMaker, Select OMT, various Unix tools.
- **Languages**: English, Java, C++, C.
- **Platforms**: Java, World Wide Web, Sun SPARC (SunOS/Solaris) and other Unix workstations, using Java, X/Xt, OSF/Motif, CDE. Linux. Microsoft Windows.