

# David Ihnat

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## **SUMMARY**

David has over 40 years of experience in the Information Technology field in a wide range of roles; more than twenty years experience in Project Management, Design and Architecture, and integration of solutions into the business and organizational environment. He brings to the table a wide-ranging background and depth in numerous environments, including extensive Unix, Linux, Windows and Novell experience, as well as a similarly wide range of database capabilities. David exhibits a deliberately fostered diverse background, developed over many years, with great breadth and depth in many arenas, including but not limited to such skill sets as security audits and design; hardware and software evaluations, installation and configuration; Internet/intranet, client/server, database and software engineering. David has excellent written and verbal communication skills, and functions equally comfortably in group-based and independent work environments.

## **APPLICATIONS**

Networking: Wide Area Network (WAN) and Local Area Network (LAN) architecture specification and implementation/integration including security and wireless integration; network protocol design and integration.

Security: Forensic disk imaging and analysis for civil cases. Network/systems intrusion prevention, analysis, and remediation. Physical site security design and implementation.

Telephony: electronic switching systems (ESS) development and emulation, automated call distribution (ACD), Voice over IP (VOIP) and traditional telephone system specification and implementation, especially Asterisk-based systems, as well as numerous commercial VoIP systems.

Scientific: simulation and modeling, animation, music synthesis

Process Control: real-time production and cable systems software development, production product testing

Systems Software: operating systems design/development and integration, communications, data compression systems and utilities, data encryption

Business requirements and specifications

Database Management System Design

Teaching

## **TECHNICAL SKILLS**

In a career spanning three decades, it is impossible to list all experience and skills in a single document. Please contact David for information on any specific area of expertise or skill set that isn't enumerated in this document.

Various business processes at all levels from planning through implementation, including Disaster Recovery Planning (DRP) and Business Continuity Planning (BCP), including data collection, planning, resource identification, and implementation. Code escrow preparation, submission, and auditing, including selection of and negotiation with escrow providers. Software and IT system material and design for Federal copyright preparation and submittal. Cooperative work with patent attorneys to prepare and submit patent applications.

Development and design experience in many languages, including but not limited to: Java, HTML, XML, Visual C++, C++, C, Perl, lex, yacc, Visual Basic, X-11, all Linux/Unix shells and GUIs, various assemblers, interpreters, Forth, BASIC, Pascal, FORTRAN

Wireless architecture design, development, and security management utilizing 802.11a/b and planning for 802.11g, and earlier protocols, including Proxim (Orinoco), Lucent, and other vendor solutions.

TCP/IP development, configuration, and architecture design, CISCO Router programming; Firewall configuration and analysis (Linux IPCHAINS and IPTABLES, CISCO, WatchGuard, SonicWall, Sidewinder, Linksys, others), ISO OSI, proprietary network and protocol configuration, software development, and network design, MQ Series, NetWare 5/4/3.11/3.12, UUCP software development and use, Kermit

Installation, administration, configuration and software development for numerous operating systems/environments, including: ESX/ESXi, VirtualBox, Linux (esp. RedHat, Ubuntu and SuSE), Novell Netware 5.x and 6, Unix System V, Solaris, SCO, AIX, HP/UX, and SunOS, Windows XP/Vista/7/8.1/10, Windows Server 2003, 2008/2008 R2 (all variants), Windows Server 2012/2012 R2/2016, and numerous obsolete/obsolescent systems.

A wide range of experience in many complex packages across diverse operating systems, including: Veeam Backup, Backup Exec, CA BrightStor ArcServe, Amanda, tar/cpio/etc.; Sendmail, smail, SquirrelMail, LDAP, YP/YP+; various SSL, SSH, GPG, PGP implementations; Apache and IIS; SAMBA, NFS, various commercial and custom SAN and NAS solutions.

Development, integration and extension of numerous commercial and proprietary embedded RTOS systems, including VRTX,  $\mu$ COS-II, and SG Thompson.

Numerous project and version management packages, including but not limited to RCS, Subversion, Microsoft Project, Project Workbench, Project KickStart, Rational Rose, Various version control and trouble report/change request tracking tools, including Rational ClearCase, ClearQuest, and Attache, Intersolv PVCS Version Manager, Intersolv Dimensions, Intersolv PVCS Tracker, Microsoft Visual SourceSafe, SCCS, RCS, and SABLIME

MySQL, MariaDB, PostgreSQL, MS Access, Oracle, Paradox, Sybase, Microsoft SQL Server. Designed and wrote numerous proprietary general and special-purpose database packages.

Website development and maintenance, including but not limited to straight HTML and PHP; Drupal, Joomla, WordPress; ZenCart, ownCloud, etc.

Extensive experience in all aspects of establishing and managing Internet presence, including selection and management of Domain Registrar and ISP services.

## **PROFESSIONAL EXPERIENCE**

**DMINET Consulting, Inc.**

**01/04 to Present**

Incorporation request submitted to the State of Illinois in January, 2004 and granted in February of the same year. Since that time, David has worked as a general consultant to clients in areas ranging from network infrastructure design and security, forensic data capture and interpretation, Internet and site security, disaster recovery planning (DRP) to general technical and business consultation.

**Analysts International Corporation**

**01/99 to 01/04**

General Technical and Business Support and Development

Upon the closing of the Chicago offices of Advanced Health Technologies, Analysts International approached David and requested that he consider returning as an employee to provide high-level business and consulting services both within the company and to Analysts' client base. This arrangement was accepted, and he returned to AI in January of 1999 until January of 2004, at which time Analysts could no longer provide enough work to cover full-time expenses. The business separation was amicable, and Analysts remained an active client for a number of years.

During his last stint with the company, Analysts International used David as a high-level on-call technical and business resource in a wide range of projects and support functions, both for clients and in-house, at all levels of technical and business requirements, including but not limited to:

- Business Continuity Planning (BCP), Security Assessment and Planning, and Disaster Recovery Planning (DRP) for client IT and business environments, including all data collection and reduction via client interviews and client documentation identification, preparation and analysis.
- Preparation of numerous proposals, implementation plans, and project management plans, both for Analysts International and, under contract, for Analysts' clients.
- Hardware and Software evaluations, installation and configuration.
- Redesign and administration of the internal Analysts network in Chicago.
- Technical sales and client contact support.
- Project management, including proposal response teams, infrastructure analysis and upgrade teams, and software development projects.
- Visual C++ development, including design to delivery of an integrated audio/video capture application for mobile police squads that is currently in production, and a GPS mapping utility for tracking police and emergency vehicles.
- Client troubleshooting and problem resolution.
- Copyright preparation and submission for client hardware/software systems.

Throughout this period, technical currency had been maintained, while participating in planning, sales, development, and project management operations. On an ongoing basis, David carried out specific contracts for clients while fulfilling other roles.

**Client: PACE Bus**

**2003**

Contracted to prepare a Business Continuity Plan (BCP) for IT operations at Pace Bus, including Disaster Recovery Planning (DRP) and security analysis for the IT department. This involved detailed data collection from PACE personnel, including both existing documentation concerning practices, procedures and infrastructure, and generation of missing detailed information and analysis. Subsequent analysis identified areas of risk and opportunities for risk mitigation in case of service disruption up to but not including site replication.

**Client: Presbytery of Chicago**

**2002-2003**

Participated in a technology assessment of the current state and needs of the Presbytery of Chicago's central offices and overall IT operations, culminating in authorship of a detailed

assessment and recommendations for both IT business practices modifications and technical updates to infrastructure and end-user environments. Subsequently carried out a central server upgrade to Novell 6 with GroupWise 6, Backup Exec 9, and Microsoft Office 2000 Professional deployment, and numerous modifications of systems and processes to support Presbytery business requirements.

**Client: KCI**

**05/01-06/01**

The client had a concept for a computer-based video and audio recording system for mobile police and security units, utilizing real-world triggers to start recording, in-car controls, and wireless radio audio capture integrated with direct video-to-disk and wireless LAN delivery to a central server. There were no detailed design specifications, however. Co-operatively developed Functional Requirements and Design Specifications with the client for both hardware and software components of the system, then proceeded to integrate commercial components and carry out software development, Q/A, and deployment in a very short period of time. The entire system is currently being marketed as Video/Audio Capture System, or V/ACS, and has required little maintenance since the original release.

**Client: ADP**

**11/00 – 01/01**

A legacy Paradox 4.5 database had been partially converted to Microsoft Access 97 before the developer working on it left the client. Brought in to clean up the existing system, and design and develop additional features including security, network multi-user configuration, extended application functionality, and import/export capabilities. Directed another Analysts International consultant in the completion of these tasks in a timely manner under extremely tight deadline and budgetary restrictions.

**Client: Morningstar, Inc.**

**07/00 – 10/00**

Originally brought into Morningstar by the Development Manager of the Data Group to analyze and propose changes to the software development methodology and quality assurance processes within that group. This unit is responsible for generation, maintenance, and dissemination of all data used by Morningstar in its various products and services.

After initial analysis and report, a Task Force was convened to carry out a similar analysis, the scope having been expanded to all aspects of the Data Group, not just software development. Empanelled as a core team member of this task force. The end result of this effort was a sweeping re-engineering plan for the entire Data Group, also incorporating a complete revamping of the underlying database technology and data processing models. From the end of the task force until the termination of the contract, served on the Core Management Team and fulfilled the role of the Process and Methodology manager for the Data Group while they searched for a permanent employee to fill the role. During this time, designed a methodology for the group that incorporated software development, version management, and quality assurance processes.

**Client: Reuters Oakbrook**

**07/99 – 07/00**

Responsible to define a revamped version control system, including selection of (an) appropriate commercial package(s) and to design the process and procedures to implement use of the new system. This necessarily involves development of the project plan to carry out these tasks, including migration from existing version management schemes. In the course of this effort, have investigated existing software development methodologies in use and recommended modifications or enhancements as appropriate.

The replacement system is based on ClearCase and ClearQuest in a truly heterogeneous development environment, consisting of native development on Windows NT 4.0 and 2000, as well as several versions of Unix (Solaris, HP/UX, AiX) and VAX/VMS.

In addition, the need existed to generate a multi-platform build scheduling and reporting system. Designed and implemented a Unix-hosted system that accepted requests from and generated

status output to any one of the supported platforms on-site and managed pools of build machines. Prototype implementation was in Korn shell, with final versions written in Perl.

**Client: CCC Information Systems**

**1/99 – 7/99**

Served as the project manager for CCC Information Systems' Version Management Initiative, a project with the goal of defining and implementing a corporate-wide software development methodology and version management/SCM scheme for their development staff of approximately 300 personnel. As part of this process, carried out a company-wide discovery effort, culminating in the creation of the design of the corporate Software Configuration Management (SCM) and creation of the project plan for implementation of the same. Because of the lead-time to implement such a project, proposed, and received approval for, the design and implementation of an interim Version Management and restricted software development process for the corporation. This was rolled out to selected test groups, at which point the process was in a suitable state for transition to company employees for final deployment of both plans.

**Client: Zenith**

**01/99 – 04/00**

Concurrently with other contracts, dedicated a part of the time as on contract to Zenith Cable Systems both in a technical capacity and as an advisor on staffing and process issues. Among other tasks, helped Zenith integrate a new proprietary embedded controller development environment into their existing development methodology, and helped troubleshoot their development LAN architecture. Aided them in staffing efforts for internal positions by participating in their contract and hiring candidate interview process.

**Independent contract**

**09/98-11/98**

Carried out a short independent contract at the Law Offices of Terrence F. Kennedy. Revamped and documented their office network and applications platform, and provide workflow practices and procedures documentation. Instantiated their Internet presence, including establishing their communications and ISP relationship and security, registering their desired domain name, creating their web page and configuring the intra-office and Internet E-mail services for all employees.

**Advanced Health Technologies**

**04/97 – 09/98**

As Vice President of Application Development, reported directly to the President, and was directly responsible for a development team of 12 staff members engaged in a number of varied concurrent projects.

- Qualifying, interviewing and hiring technical personnel.
- Conducting performance reviews of employees and determining compensation.
- Budgetary planning for the department.
- Preparing and reviewing proposals.
- Implementation of process and organizational improvements.
- Some specific examples of these responsibilities are:
- Creation of a Project Management organization within AHT Chicago—prior to this, PM tasks were cooperatively assigned across major development VPs and Directors.
- Creation of a formal Product Management organization
- Formalization and refinement of requirements specifications
- Design and implementation of a virtual product build environment and processes that permitted repeatable, verifiable product builds with version control of not only product source but the full development environment
- Analysis and subsequent development of a BCP, including alternate site DRP procedures and infrastructure.

Served as one of the three-member Chief Technology Officer (CTO) group. This team acted as both the primary source for advanced technology directions, and as the point-of-contact for technology-related proposals and requests.

**Systems Development Corporation**

**04/95 - 04/97**

Vice-President of Software Development at Systems Development Corporation (SDC), Reported directly to the owner of the company. Additionally filled the position of Director of Customer Service and Product Manager for an eight-month period.

Inherited a large, complex product and development environment that was undocumented and essentially unsupportable. The product consisted of an amalgam of C/C++ with numerous third-party support libraries and utilities, such as Zinc (X-11 GUI), OI, devguide, Sybase, ctools, etc. This product, sdcSENTRY (a risk management system for trading exchanges), was being actively marketed in the U.S., Europe (primarily London), and Mexico. Responsibilities included planning and guiding the development of new features, data feeds, and utilities to support contractual requirements, while revamping virtually all aspects of the development, production, and customer service environment. Managed the development and test staff, and eventually the customer service staff, as they carried out the designated tasks.

Represented SDC as a senior officer of the company in such diverse tasks as consultation prior and subsequent to purchase; service negotiation with clients, domestic and overseas; training; and other tasks, both via telephone and on-site. Analyzed and enforced contracts with then-current clients, and designed large revisions to the contract template and client support/service policies.

Developed a Business Continuity/Disaster Recovery plan for both the Chicago and London offices, including off-site escrow of source and production code, as well as infrastructure analysis and specifications suitable for reconstruction in case of catastrophic site loss.

While fulfilling management roles in a number of diverse areas, participated in the software development necessary to meet client obligations. Additionally, redesigned and developed replacement software for some particularly troublesome aspects of the legacy systems.

**Analysts International Corporation**

**10/78 - 04/95**

**Client: Zenith Cable Systems**

**06/94 - 04/95**

Provide enhancements and support to a system, which was a product developed during the earlier assignment. Concomitant with these tasks was the responsibility for ongoing support for the compiler, assembler, and support libraries. This involved both error correction and designed enhancements, as the mission of the target system evolved. Actively involved in architecture specification, design, and implementation of the clients' then-current deliverable product. Served as a senior technical and advisory resource for issues such as general troubleshooting; consultant relations; and support for such items as Internet connectivity, Solaris and related networking issues and general Unix (Solaris) support.

**Client: Kraft General Food**

**09/93 - 06/94**

The client was moving from a centralized data services scheme, using VAX machines running VMS, to a client/server architecture utilizing both VAX/VMS and HP computers running HP/UX, with clients accessing the system from IBM-PC and Macintosh workstations. As the network resource for the conversion, evaluated and specified software and hardware to effect the conversion, including but not limited to network software packages; application packages; and network active components. Performed analysis and troubleshooting on the current network, systems, and workstations, as well as providing design input on LAN and WAN design decisions. Used as a general support resource for varied tasks, particularly concerning networking issues, but also general support advice and design. Some specific issues worked on included: Specification of the configuration and implementation of the new HP/UX servers

- Evaluation, configuration, and implementation of a HP NetServer 3/60 running NT/AS and Microsoft SQL to provide corporate-wide database access.
- Specification, design, staffing and scheduling requirements for a project to develop a new internal product to provide a CD-ROM based multi-media application capable of both textual and graphical display of client product information. This was to operate on an IBM PC platform under Windows 3.1, utilizing Microsoft Access integrated with third-party graphical display software.

**Client: Analysts International Corporation (Internal)**

**06/93 - 09/93**

Served as an internal resource for Analysts International to patch a major security flaw in Novell Netware 3.11. Additionally, during this time provided short term technical support to a variety of Analysts International clients. Supported and assisted in various project proposal preparations and presentations.

**Client: Zenith Cable Systems**

**6/92 – 06/93**

Skills used: IBM PC, MS-DOS, OS/2, MS-Windows, Watcom C, Assembler, various others

The client had designed and implemented a custom real-time interpretive engine to control a television cable decoder; the control program and data was designed to be dynamically downloaded as a set of binary records broadcast over the cable. Responsible for designing and implementing a compiler and assembler to support the WYSIWIG Windows API dialog editor (DE) being developed by another AiC employee at the same time. The editor produces a binary proprietary-format file, which would be processed by the compiler into ASCII assembler source, permitting modification and extension as desired. (The assembler language, syntax, etc. was designed and specified by the client.) The assembler then processes this source into a binary proprietary-format file suitable for processing for broadcast downloading into an indefinite number of cable controllers.

Responsible for definition, design, and implementation of the interface requirements between all components of the system (editor, compiler, assembler, download formatter); and design and implementation of the compiler and assembler. In the course of these tasks, defined and implemented a common file format (CFF) library to permit object-level block and record manipulation and storage of the binary data. Built on the capabilities of this CFF library, designed and implemented a symbol table library and a dialog editor support library (DESL) to permit common handling of the dialog editor binary files by the editor and compiler.

Designed and implemented a library to support external record set data import and manipulation. All development was performed on Intel 486 platforms under OS/2 using the Watcom 32-bit compiler to generate code portable across OS/2, Windows, and DOS (within OS restrictions.)

**Client: AT&T Bell Laboratories**

**6/91 - 6/92**

Skills used: AT&T StarServer FT, AT&T WGS6386, Unix, C

The client was developing a complex application requiring the features of a full implementation of the OSI ISO 7-layer protocol stack. Responsible for the porting of a third-party product implementing this protocol stack onto an AT&T StarServer FT and an AT&T WGS6386/E, from the transport layer up to the presentation layer. This included making local modifications as necessary to implement custom features and bug fixes, problem solving in the rest of the Unix kernel, and general support functions for other areas of the project as needed.

**Client: Sundstrand Electronic Systems**

**10/91 - 1/92**

Skills used: Unix

The client needed to design an intelligent real-time test stand which subsumed in software the test control and display features realized in the current generation of test equipment with physical test indicators and actuators. The Unix operating system was selected as the underlying

operating system to drive this product. Retained to provide on-site training and design guidance to the client as needed to permit them to understand the capabilities, possibilities, and pitfalls of the new environment.

**Client: Memorex-Telex**

**5/90 - 6/91**

Skills used: Unix, TCP/IP

Was integrally involved in the specification, design, and installation of a moderately large LAN utilizing TCP/IP over 10Base-T twisted pair. This included a design of a WAN component (utilizing a full DS1, T1 multiplexers, and Ethernet routers) to tie the main computing facility (1,000 miles away) into the network, design of a LAN on the remote end, and conversion and integration of the client's existing machine base into the Ethernet network. Evaluated and specified network active components, wiring schemes, and network access methods; configured network active elements; and integrated control schemes for the sites involved.

**Client: AT&T Bell Laboratories**

**10/89 - 5/90**

Skills used: Unix, SAM

Participated as a member of a team that was charged with the task of developing a Unix-based emulation of the control functions for versions of the client's line of synchronous controllers, including configuration and software archival, distribution, and management. Designed an emulation under Unix of the client's proprietary real-time operating system (SAM) which permitted execution of the configuration and management software from the actual controller with little change, and integrated this with the archival and distribution software developed by the rest of the team.

**Client: Rockwell Network Transmission Division**

**5/89 - 10/89**

The client had a requirement for design and implementation of a full Software Quality Assurance Program (SQAP) closely following the IEEE guidelines to meet external requirements. Analyzed the client's design and development environment and, using the IEEE documentation and guidelines, implemented a software and procedural SQA program to meet Bellcore requirements.

**Client: Rockwell Switching Systems Division**

**2/86 - 5/89**

Skills used: DEC VAX, DEC PDP-11, Unix, VMS, uucp, Kermit, ACD

The client had an extremely old utility to which the original in-house language source and generation utility had been lost; this necessarily required freezing the features and capabilities of this utility. Reverse engineered the generation utility and decompiled the existing pseudocode and data.

While serving as an in-house developer and support resource for a major Telecommunication organization, provided support for an Automated Call Distribution (ACD) product running on PDP-11 processors with proprietary switching hardware and operating system. Tasks included design and implementation of new switching protocol state machines and resolution of customer problem reports. The latter involved extensive contact with customer representatives.

Designed and developed a series of utilities and tools to support debugging, diagnostic testing, static state-table analysis, extensive tape analysis for proprietary logging data, and inter-systems communications via custom protocols as well as existing protocols and packages such as UUCP and Kermit. Additionally provided in-house consulting and support for Unix and VMS configurations, communications, system debugging, and support utilities.

**Client: ElectroDynamics**

**1/86 - 2/86**

Skills used: IBM PC, Pascal, C

The client had a requirement to collect large amounts of data for an U.S. Navy torpedo test and monitoring system. System design parameters necessitated real-time compression of the data by

at least 50%, although the data as collected was almost totally randomized. Using Pascal (and eventually Aztec C) on an IBM PC, developed a data collection and compression algorithm utilizing hardware assists and various software compression techniques which met or exceeded the design parameters.

**Client: WorldBook Childcraft International**

**4/85 - 1/86**

Skills used: IBM PC, MS-DOS, C, Pascal, BASIC, 8086 Assembler, DEBUG, FORTH

As a consultant, was responsible for the port of a series of children's educational software packages from the original target platform of an IBM PC Jr. to the Tandy 1000, a similar but different XT-like machine. As no source was available, analyzed and patched the pseudo-compiled FORTH executable dictionary using DEBUG and a FORTH decompiler wrote for the task. All packages used extensive animation and graphics displays, as well as complex music generation. Other packages requiring porting involved a melange of languages (all PC based): Pascal, BASIC, two variants of C, and 8086 Assembler.

**Client: Tekno Industries**

**1/85 - 4/85**

Skills used: DEC PDP-11, RSX-11M, RSX-11M Plus, MACRO-11, C

Provided support for an operating system conversion of application software and kernel modifications from DEC RSX-11M to RSX-11M Plus. Specifically, converted a software virtual message send/receive driver and applied necessary operating system dependent changes to the application software and command scripts. Work was primarily in MACRO-11, Whitesmith's C, and Indirect command files.

**Client: Hewitt Industries**

**11/84 - 1/85**

Skills used: IBM PC, MS-DOS, C, Plexus, Unix, Panel

Designed and developed a relational, single-key dedicated KIDA package for MS-DOS systems. Development was on a Plexus P/40 in resident C, then ported and recompiled in Lattice C on the PC. Also designed and developed a user interface package on the IBM PC in Lattice C that used the database package and the PANEL screen manipulation library to implement field search, high-level functions, and maintenance utilities for database files. Provided aid in the development and debugging of PANEL screen definition and program interface routines for the application software.

**Client: AT&T Bell Telephone Laboratories**

**12/80 - 11/84**

Skills used: DEC VAX, DEC PDP-11, AT&T 3B20, C, Unix, 8086 Assembler, Bourne Shell

Worked on a development team designing and implementing an early version of the Execution Environment System (EES). This software, developed in C on DEC PDP 11-family and VAX 11/780 processors, simulated Number 5 Electronic Switching Systems (#5ESS) subsystems. Developed an automatic simulation load configuration system in C and Bourne shell for the VAX machines.

Ported Unix/86, a 3.0 Unix implementation developed for the 3B20 Field Test Set (FTS) to the #5ESS FTS, a proprietary 8086-based portable microcomputer. Among other tasks, this required development of a floppy disk driver, special hardware drivers, and kernel modifications to support extended features such as special-device signal handling. Modified existing utilities and provided additional ones to support the floppy-based Unix test environment, working in 8086 Assembler, C,

and Bourne Shell. Extensively modified and rewrote the 8086 assembler ROM-based bootstrap, BIOS, and download firmware.

Aided in the design and expansion of a debugging/test system dubbed the Integrated Test System (ITS.) Specifically, co-designed inter-process communication protocols and file transfer methods between processes in the system, message distribution schemes, and system process state control. Participated in the design review and validation process for other ITS system software components.

Taught an in-house Unix Internals course. This involved preparing course materials, lectures, work assignments, and tests for a 25-hour in-depth study of Unix Internals on the VAX-11/780 and the PDP-11/70 processors, as well as comparison with the AT&T 3B20S implementation. While assigned to EES development and support, was involved in resolution of bugs and user support; capability enhancement; porting of the simulation from the VAX-11/780 to the AT&T 3B20S; kernel modifications on the 3B20 to support the simulation-specific requirements of the system; general trouble-shooting and user problem resolution. In addition was involved in the ongoing planning of EES development.

Participated in the design review/modification and implementation of an in-house proprietary switching laboratory control system, which involved software control and routing of bi-directional data streams over multiple direct-connect and dial-up communication lines to the controlled system.

Performed a variety of miscellaneous assignments and tasks, as well, such as aiding in the configuration and providing programmer-level problem resolution for inter-machine communications via uucp and the internal local area networks.

Provided in-house consulting for Unix kernel and various utilities and utility packages. Participated in the early development of USENET, as well.

**Client: Honeywell**

**10/80 - 2/81**

Skills used: Honeywell Level 6, GCOS

During a brief reprise, tracked down a particularly nasty operating system bug in the Honeywell Level 6 GCOS Mod 400 file system code.

**Client: Motorola**

**4/80 - 10/80**

Skills used: IBM mainframe, MVS, Xerox Sigma-9, SPF, TSO, TSS, JCL, Panvalet, MPL, Z80 Assembler, Warnier-Orr

Participated in team software development of an electronic mobile exchange (EMX) cellular telephone system. Performed initial code development, laboratory tests, and release package generation.

Development was carried out in Motorola Programming Language (MPL) and Z80 assembler using Warnier-Orr design techniques. Utility, development, and support functions required detailed knowledge of SPF, Panvalet, TSO, TSS, and JCL, on both a Xerox Sigma-9 and an IBM 360.

**Client: Honeywell**

**10/78 - 4/80**

Skills used: Honeywell Level 6, TOTAL, Honeywell Level 66, GCOS

Provided general system support for Honeywell Level 6 machines running GCOS 6 Mod 400. Provided required trouble-shooting and new development for both the engineering computing facility machines and machines requiring custom operating system modifications to support a real-time process control environment. Tasks included design and implementation of drivers for an add-on Level 6 hardware clock, an intelligent Techtran mini-floppy, a Chromatics color-graphics CRT, and a DSI paper tape reader/punch. A number of support functions necessitated

development on the Honeywell Level 66 mainframe using Level 66 GCOS. Performed extensive modification and enhancements to a Motorola 6800 cross-assembler running on a Honeywell Level 66. Performed installation of the TOTAL Database Management System on the Honeywell Level 6. Generated system-specific support required for the machine, in conjunction with the software vendor.

**Employer: Sargent & Lundy, Engineers**

**8/77 - 10/78**

Skills used: Prime, PRIMOS, Prime Macro Assembler (PMA), FORTRAN, COBOL

Developed and implemented an in-house order tracking system, dubbed Reprographics Order Monitoring and Control System (ROMACS), in Prime COBOL running on a Prime 300. This necessitated development of support modules for the operating system in Prime Macro Assembler (PMA) and Prime FORTRAN.

Maintained a Prime 300 minicomputer, including PRIMOS and utility package upgrades and support. Developed a medium-security logging, accounting, and mail package for the Prime 300, as well as numerous system utilities and commands.

**IIT Research Institute**

**9/75 - 8/77**

Skills used: DG Nova/SuperNova, Assembler, Sperry Univac 1108, FORTRAN

Responsible for both hardware fabrication and software control program modifications for a process control application for the U.S. Army. This system used an assembler program running on a DG Nova to control a custom line, which assembled and sewed field artillery powder bags. Provided software support to the U.S. Navy Seafarer ELF project. This involved utilizing FORTRAN on a Sperry-Univac 1108 mainframe to develop and maintain a simulation package to provide both EMF field density calculations and graphic representation of various components of the system being modeled, such as physical terrain, field gradients, and physical constructs. This necessitated the design and implementation of a general-purpose custom database package and graphics library.

Teaching

**Bolsa Mexicana de Valores, Mexico City, Mexico**

**Employer: Systems Development Corporation**

**Dates: various from 12/96-04/97**

Provided on-site training of the technical and trading staff of the Bolsa on all aspects of the sdcSENTRY system, from site planning through installation and use. This necessitated general instruction in TCP/IP networking, as well as application-specific training.

**Analysts International, Internal Training**

**Employer: Analysts International Corporation**

**Dates: various**

Skills used: Unix, C, various others

Developed and taught courses in, among other topics, the Unix operating system, Unix shell programming, and Unix OS internals.

Operating System Internals

**Client: AT&T Bell Telephone Laboratories**

**1982**

Skills used: Unix, C

Taught a course on the internals of the Unix operating system to software engineers.

Miscellaneous Advanced Computing Topics

**Employer: Professional Organization, /usr/group Chicago**

**Dates: various**

Prepared and presented educational lectures on electronic mail systems, the Internet, Unix UUCP communications networks; a practical guide to design and implementation of a local area/wide area network; and sundry other topics.

Presented lectures on *Disaster Recovery Planning*, including an unpublished white paper, *Disaster Planning and Recovery*.

**Employer: Professional Organization, SUN Users Group** **1991**

Prepared and presented a detailed educational lecture on electronic mail and the Internet as a guest lecturer from usr/group Chicago (UNIFORUM)

Affiliations:usr/group Chicago (UNIFORUM)

Member of the Board, 1991-1992

Board Member at Large, 1987-1991

CLOUT Project co-administrator, 1987-1991

CLOUT Project director emeritus and administrator, 1991-2003

Member of the Midwest Chapter of the High-Technology Crime Investigation Association (HTCIA)

**EDUCATION**

Bachelors Degree, Computer Science, Illinois Institute of Technology, 1977