Robert Gibson Crispen (Bob)

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Professional interests

3D graphics, visualization, modeling, and virtual worlds

Real time and hardware in the loop simulation

System and software architectures

Network-centric and Web-enabled systems

Education

BA In liberal arts, psychology concentration (1968) Johns Hopkins University. Courses in IBM Assembler, COBOL, Systems Analysis, FORTRAN (Tulsa Junior College), Advanced Programming and Artificial Intelligence (University of North Alabama),C (University of Alabama in Huntsville), MPX-32 Internals and Device Drivers, Ada (I, II, III, IV), C++, Versant, UML, XML, Rational Rose RT.

Computing

Languages: Virtual Reality Modeling Language (internationally recognized authority); C++; C (network, device, and protocol drivers for Unix and VxWorks, Win32API); Ada-83 and 95 (cited as contributor in *Ada Quality and Style*, 1994); Assemblers for MC680x0, i960, SEL/Gould/Encore, MC6809, IBM 370; FORTRAN-77; Forth-83 (developed a Forth-83 compiler for the MC6809).

Scripting and Markup: PHP, MySQL, XHTML, CSS, XML, XSLT, DTDs, XSDs, JavaScript, Java, a little Perl.

Operating systems (internals, drivers): Unix (SysV & BSD), VxWorks, MPX-32.

Development environments and tools: MSVC++, VxWorks, LCC-Win32, gcc, Rational Rose, Rose RT, Integrity, ClearCase, CVS, CVSWeb (admin), majordomo, hypermail, Movable Type and WordPress weblog systems, Amaya, TopStyle Pro, Paint Shop Pro, POVRay, VizX3D, Nendo.

Professional Highlights

2005-Present: Retired

1986-2005: The Boeing Company, 499 Boeing Blvd. Huntsville AL 35824

Embedded Software Engineer IV for a large aerospace company. Principal assignments in R&D and rapid development projects.

Ada Simulator Validation program: first redevelopment of a flight simulator in the Ada programming language. I worked on the I/O and executive and getting two computers to talk to one another over an HSD bus link, and then stayed on to do the wind profiles, part of the flight software, and general on-site integration and debugging. (1986)

Modular Simulator programs: on the internal R&D program I got segments of a real-time simulation running on different computers tied together by Ethernet to function as one simulation,

and I developed an embedded training component using a real time inference engine. I helped Wind River Systems port Verdix Ada to VxWorks. On the contract R&D program for the Air Force, I developed the executive, I/O, and Bus Interface Unit, which tied the parts of the simulation together over an FDDI network. (1987-89)

The structural model I developed for the Mod Sim program was combined with work Gary Kamsickas did on systems engineering a generic air vehicle training system to form the Domain Architecture for Reuse in Training Systems (DARTS). We used DARTS as the basis of the demonstration of process-driven reuse and domain engineering we did with the Software Productivity Consortium for the **STARS program**, for which our team received an "Outstanding" Quality Pride award. (1990-1992) Other groups within the company have used DARTS for their projects, including the Lunar Rover and Space Station Payload Rack simulations.

Avenger trainer for DIS: wrote executive, cockpit interface, missile dynamics, and audio software for an Avenger trainer which was the first simulation from an aerospace company certified to operate in the DIS network. I turned DARTS into a virtual network architecture, VNET, for this system. Following this, I helped people on the International Space Station program adapt DARTS+VNET for their rack system architecture. (1992-1994)

Developed software for the **Advanced Computing Group** to convert models from Boeing CAD to Open Inventor and animated these models to illustrate a proposal. Received an "Outstanding" Quality Pride award. This work led to my interest in 3D modeling and Virtual Reality Modeling Language (VRML) which led my being able to serve as a company-wide resource in **3D modeling and animation**. (1994-1998)

Around this time our group joined the **Phantom Works** organization, though we were frequently loaned out as resources to other groups. I developed the website and email list and archive software for the group, wrote readiness test and recovery software for **MIR Pathfinder** program, worked on system architecture and hardware interface for the **E-FOGM** program, and contributed to the 1553 bus software on the **International Space Station**. (1999-2000)

Designed and implemented vehicle dynamics software for **Ground-based Missile Defense** program. (2001)

Designed and implemented a **web-based configuration management and groupware** system using PHP and MySQL for GMD and Theater Sim R&D program. (2001-2002)

Member of the system architecture team for the **Future Combat Systems** Lead System Integrator. (2003)

Designed and implemented **XML tools** for the Network Centric Operations thrust in XSLT and C++ using Xerces, Xalan, and MSXML that allowed their scenario modeling tool to import HLA federations. Received Bronze Phantom Award. (2003)

Wrote Southern Cross **data analysis and visualization** tool using C++ and the QT API to enable post-mission analysis of larger HLA simulations. (2003)

Boeing Rocketdyne organization Space Shuttle main engine **Advanced Health Monitoring System**. Developed C++ coding guide for Phase III. Developed Real Time Vibration Monitoring System simulator using TI Code Composer on a custom 5-CPU TMS320C40 DSP board. (2004-2005). Left when NASA de-funded the program.

1981-1986: George W. Moody (U.S.) Inc., Tulsa OK

Principal Engineer, Systems Design Engineer, Senior Systems Design Engineer for a flight simulation company.

Panel trainers for Boeing 727 Rudder, Elevator and Stab trim; Electrical System, Hydraulics. Detailed design, simulation and display software in MC6809 Asssembler, integration and test.

Hydraulics, Landing Gear and Secondary Flight Controls for B-747 and B-757 Ground Maintenance Simulators for British Airways. Developed design, acceptance test procedure, system simulation software in FORTRAN 77+, integration and test.

Electrical system for RC-135-W Operational Flight Trainer for SAC. Developed design, acceptance test procedure, lead electrical design, system simulation software in Fortran 77+, integration and test.

Hydraulics, Landing and Gear, and Secondary Flight Controls for Saab SF-340. Developed high level Instructor Station language and compiler into SEL/Gould Assembly language. Project engineer for U.S. phase

1969-1981: YMCA of Pittsburgh PA; Scottdale YMCA; YMCA of Tulsa OK

Youth Director, Branch Executive. Responsible for operations of YMCAs: budget, program, facilities, staff supervision and training, considerable work with volunteers, fund raising, youth counseling.

1968: G.C. Murphy Co. Store #221, Pittsburgh PA

Management trainee, stockroom.

Publications

"VRML Post-Production: The Secret of the Best VRML Worlds on the Web" , *InterActivity* Magazine, July, 1998, pp. 20-21. [http://vrmlworks.crispen.org/essays/tweaking.html]

Chapters 20 and 21 of *Core Web3D* by Walsh & Sevenier [http://www.coreweb3d.com/]

Referee of *IEEE Computer Graphics & Applications* March-April 1999

Referee of International Web3D Symposium *Proceedings* 1998 and 1999

"Testing a Technology for Reuse"[pdf] with Brett W. Freemon, *I/ITSEC Procedings*(1992). [http://www.crispen.org/Bob/testing.pdf]

"DARTS: A Domain Architecture for Reuse in Training Systems"[pdf] with Brett W. Freemon, K. C. King and William V. Tucker, *I/ITSEC Proceedings* (1993). [http://www.crispen.org/Bob/darts.pdf]

"Structural Model: Architecture for Software Designers"[pdf] with Lynn D. Stuckey, *TRI-Ada Proceedings* (1994). [http://www.crispen.org/Bob/structural_model.pdf]

"XML for Bloggers" written for the Boeing XML Community of Practice (2004). [http://blog.crispen.org/etc/xml_for_bloggers.html]

Organizations

SAE High Speed Ring Bus Specification Committee (1989)

Protocol Engines, Inc. Technical Advisory Board (1990)

Co-chair, Web3D Consortium color and lighting working group (1997-99) [http://web3d.org/"]

Elected by member companies of the Web3D Consortium to their Technical Advisory Board (1998)

Member, Cybertown World Builders Guild (1999-present)

Member, Web Standards Group [http://webstandardsgroup.org/] and Guild of Accessible Web Designers [http://www.gawds.org/] (2004-present)

Session Chair, Virtual Reality, SouthEastern Simulation Conference (1999)

Boeing HIPO (High Potential) program (1998-2000)

Member, Board of Trustees, Huntsville Boeing Employees Good Neighbor Fund (1990-1).

S&TS technology papers and brown bag courses:

Network Basics (1992)

An Introduction to Structural Models (1993);

Synthesizer Sound Systems: Music for Engineers and Engineering for Musicians (1993)

Computer Graphics for the Web (2000-2002)

Introduction to Web-based Applications (2000-2002)

Portfolio

VRML world for 1998 VRML Symposium. [http://ece.uwaterloo.ca/vrml98/vrml/monterey.wrl] Stills of this world were used as cover art for the 1998 Symposium *Proceedings* and CD-ROM[pdf]. [http://ece.uwaterloo.ca:80/vrml98/cdrom/contents.pdf]

VRML Conetree, an example of using VRML to display and navigate hierarchical information. [http://www.crispen.org/conetree.html]

Animated Dolphin, showing VRML's capability to do morphing and the effectiveness of specular highlights on rounded models. [http://vrmlworks.crispen.org/faq/dolphin.wrl]

Miscellaneous

Article about me in the Huntsville *Times* (feature article on page 1 of Business section) [http://www.crispen.org/Bob/hsv_times/index.html]

Win-GZ (Windows front end for gzip/gunzip), published at Simtel. [http://www.simtel.com/product.php?id=63053&sekid=0&SiteID=simtel.net"]

Contributor to hypermail open source project [http://www.hypermail-project.org/]

VRMLWorks, site dedicated to 3D on the Web [http://vrmlworks.crispen.org/]

VRML Tutorials [http://vrmlworks.crispen.org/tutorials/index.html]

Web Builders' Toolkit, a site dedicated to helping people use standards to develop and improve their websites. [http://toolkit.crispen.org/]

Articles for my son Patrick's ROADMAP [http://www.webreference.com/roadmap/] course and TOURBUS [http://www.tourbus.com/] newslettter on security, netiquette, 3D, graphics, audio tools and video tools and techniques.