

Curriculum Vitae of Peter R. Bono, Ph.D.

Peter R. Bono Associates, Inc., P.O. Box 705, Yarmouth Port, MA 02675

Tel: +1-508-375-9420

CURRENT CONSULTING CONTRACTS

November 2001 – present

Consultant for Command Technology, Inc., Groton, CT. CTI is a privately owned, full-service company, established in 1981, specializing in Interactive Information Delivery Systems, E-Commerce Solutions, WWW and Wireless Data Delivery Systems, Maintenance, Repair & Overhaul Management Systems, Electronic Data Delivery & Conversion, and Turnkey Systems.

Currently, I am the developer of two different Web-based extranet applications—one for Rolls-Royce Helicopter (Indianapolis) and one for Rolls-Royce Naval Marine (Walpole, MA). In past years, I developed web-sites and standalone applications for large commercial aeronautics companies and for the US Government.

Skills required for these projects include user interface design; use of DHTML and JavaScript on the client-side; familiarity with PHP, CGI and ASP.NET scripting on the server-side; interfacing to mySQL, Microsoft SQLServer, and Oracle SQL databases; knowledge of the SGML, XML, and CGM standards; programming Web Services; programming in the Borland Delphi language including its ECO extensions; programming in Microsoft C#; use of the Lead Technologies LEADTOOLS graphics and imaging tool kit; familiarity with relational databases via an SQL programming interface (Oracle, mySQL, MS SQLServer); testing; and documentation.

PREVIOUS POSITIONS and CONSULTING CONTRACTS

July 2004-January 2005

Consultant working on two Department of Defense research projects: Integrated Battle Command and Universal Collaboration Environment. Funded by DARPA (the Defense Advanced Research Project Agency) and working with a colleague, I have designed and implemented a Measurement and Monitoring (MMS) Workbench used to gather, calculate, store, and visualize summary information (abstracted as metrics) derived from the raw data exchanged among the components of any system (abstracted as messages). In the particular domain covered by these DARPA contracts, we are studying the behavior of *ad hoc* collaborations of individuals brought together to perform a task, such as answering some set of questions, formulating a plan, or analyzing a problem. These collaborations are multicultural and multiorganizational in nature: the participants are from different countries with different traditions and educational and value systems. The purpose of the MMS Workbench is to facilitate experiments that could test the empirical usefulness of various metrics that purport to indicate how well a collaboration is proceeding. If a metric is useful, its value could be monitored in real-time by the collaboration facilitator, who could intercede if s/he detected negative trends and problems that need mitigation.

Technologies used for this project include Visual Studio.NET, ASP.NET, C#, Web Services, XML, and SQL.

September 2000 – October 2001

Consultant for the Mitsubishi Electric Research Laboratory (MELCO) in Murray Hill, NJ. MERL Murray Hill is an advanced development laboratory specializing in digital TV, digital communication and the convergence of television, communications, and computer technologies. MERL Murray Hill works closely with MELCO's semiconductor, communications, and living environment & digital media equipment business units. In partnership with Lucent

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and MELCO laboratories in Japan, MERL Murray Hill designed the world's first chip set capable of receiving US HDTV broadcasts.

I worked with a team of implementers in the area of prototyping the delivery of Web-enabled services to the home, automobile, and office via wireless communications channels.

My specific responsibilities included:

- participating in the design of the distributed architecture and the Web site implementation strategies to be followed;
- participating in detailing the design of the communications protocols to be used;
- detailing the design and implementing the client-side user interface;
- detailing the design and implementing the server-side application processing.

In the course of my work, I have used extensively:

- Dynamic HTML
- Active Server Pages with VB Script
- JavaScript
- XML

I have also during the past year written programs in Java, C, and C++, and I have a passing familiarity with Perl.

I have solid writing skills honed over many years of experience as an author, columnist, and project leader. Within this project, I have written and disseminated a number of design/implementation documents.

I work mainly from my office where I have a LAN of three PCs and three Unix/Linux workstations, so I can test all my client-side and server-side programs before delivery to the client. I have a DSL modem for high-speed data transfers with my client and a router to provide security from outside intrusions. I have an extensive technical library in my office.

I travel to my client's site periodically for a few days at a time to participate in project meetings, to obtain technical direction, and to mentor and conduct technology transfer with other project personnel.

MOST RECENT POSITION AT PFIZER

March 2000 – April 2000

Consultant for the Information Resource Department on the Central Research campus of Pfizer, Inc., in Groton, Connecticut. Pfizer is a Fortune 500 company that in 1999 spent \$2.4 billion on R&D alone. Pfizer has major R&D facilities in the UK and Japan as well as smaller facilities around the US and Western Europe. The Groton (CT) campus employs over 3,000 people, many of them Ph.D. chemists and biologists.

As one result of the Senior Management meeting in Tampa in late January 2000, it was decided to develop a prototype corporate portal and digital dashboard for Central Research. Part of the motivation for this was the pending acquisition of Warner-Lambert and the need to present a unified interface to all employees. The project operated on a very tight deadline: we had about 4 weeks to design and implement a prototype corporate portal for senior management review using commercial technology supplied by Vignette Corporation. Working closely with Pfizer employees and other contractors, I:

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- Helped design and gain management approval for a prototype corporate portal that demonstrated both customization (web pages seen and links displayed are dependent upon an individual's role in the organization) and personalization (page layout and other modules are dependent upon personal preferences retained across sessions).
- Designed and implemented the SQL database tables that supported the prototype corporate portal.
- Wrote several of the Vignette scripts that implemented the actions needed to support the prototype corporate portal.
- Wrote many of the Vignette scripts that implemented content management (create, modify, delete) for all the SQL tables.
- Tested the prototype implementation and fed results back to the contractors.
- Documented the prototype implementation so that follow-on efforts by Pfizer will be able to build from the investment made to date, even if Vignette software is not used in the next implementation.

This assignment was a direct follow-on to the previous assignment described immediately below.

PREVIOUS POSITIONS AT PFIZER

December 1999 – February 2000

Consultant for the Clinical Business Systems Unit (CBSU) of the U.S. Clinical organization on the Central Research campus of Pfizer, Inc., in Groton, Connecticut. In this assignment, I evaluated corporate portals (CPs) and digital dashboards with respect to Pfizer's business goals and needs. During my three months on this project, I:

- Developed a feasibility prototype / demonstration using only Dynamic HTML and client-side JavaScript. We also started to experiment extending that prototype with Active Server Page technology and Java.
- Helped prepare a PowerPoint presentation complementing the demonstration and used to explain to senior management the workings and potential benefits of a CP-approach to Intranet deployment and access.
- Researched and made a "paper evaluation" of numerous portal technology vendors' offerings; interviewed vendor references. Organized and scheduled vendor presentations to Pfizer staff.
- Developed a draft Evaluation Matrix for assessing the potential value to Pfizer of each Vendor's product.
- Developed a draft Project Plan for the evaluation and selection of Portal Technology.
- Implemented a Corporate Portal Web Site for internal Project use, so that all information gathered could be shared by all interested parties within Pfizer CR.

October 1997 – November 1999

Consultant for the Discovery Informatics group at the Central Research campus of Pfizer, Inc., in Groton, Connecticut. My role within Discovery Informatics (DI) at Pfizer involved looking at new technologies and evaluating them with respect to Pfizer's business goals and needs. During my two years in DI, we looked at, introduced, and employed tools for:

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- Scientific Data Visualization
- Data Mining and Text Mining
- Desktop Videoconferencing and Collaborative Work
- Video streaming and Distributed Learning

For all technologies, especially those involving multimedia, we have to be sensitive to infrastructure and deployment issues—particularly those affecting the networking topology, switches and routers, and quality of service.

From Dec. 1998 to Nov. 1999, I chaired an internal, multi-departmental committee tasked to look at Collaborative Technologies that could improve dramatically the productivity of Pfizer scientists during the pharmaceutical drug discovery process.

PREVIOUS NON-PFIZER POSITION (1994-1997)

Vice-President, Fraunhofer Center for Research in Computer Graphics, Inc., Providence, Rhode Island, a \$3.5 million, not-for-profit applied R&D institution affiliated with the Fraunhofer Gesellschaft of Munich, Germany, a \$800 million organization. Shared management responsibility for daily operations and led the R&D efforts of the Global Visualization Services group. Key projects included:

- Portable 3D Ultrasound workstation for Battelle and the US Army based on TeleInViVo.
- Other medical visualization (e.g., CT, MRI, MRA) using TeleInViVo, a collaborative 3D volume visualization tool.
- Non-medical visualization (e.g., for geology, for underwater sound, for humanitarian demining, for biological data) using TeleInViVo.
- Internet-based, life-long learning (e.g., education and training).
- Intranet tools and digital libraries (e.g., CD-ROM publishing and our internal web pages).

EDUCATION, HONORS, AND MEMBERSHIPS

- AB in mathematics, *cum laude*, from Harvard College (1967).

MS (1969) and Ph.D. (1972) in Computer and Communication Sciences from the University of Michigan, Ann Arbor, Michigan. Thesis topic: *Automatic Adaptive Information Retrieval*.

- Member of the Phi Kappa Phi and Sigma Xi academic honorary societies.
- First winner of the NCGA Award for the Advancement of Standards in Computer Graphics, presented at NCGA '89.
- Member of ACM, ACM-SIGGRAPH, IEEE Computer Society, and the Eurographics Association. Elected to the Eurographics Executive Committee for 12 years; elected to Fellowship in the Eurographics Association in 1993.

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PROFESSIONAL ACTIVITIES

- Chair of the American National Standards Institute Technical Committee, X3H3, on Computer Graphics (1979 to 1994). Head of the US Delegation to the International Standards Organization Subcommittee on Computer Graphics, ISO/IEC JTC1/SC24 (1979 to 1989). Convener of the ISO Graphics Architecture Working Group, SC24/WG1 (1989 to 1994).
- Creator and technical manager of NCGA's Integrate '88, '89, and '90 demonstrations of systems integration.
- Creator of and instructor at numerous tutorial courses delivered at SIGGRAPH, NCGA, Nicograph, and Eurographics conferences and speaker at numerous industry forums, such as those organized by Frost & Sullivan, Electronic Publishing Association, Graphics Communication Association, ACM, NCGA, and IEEE.
- Associate Editor of the Elsevier journal, *Computers & Graphics*, 1995-2007.
- Regular columnist for the bimonthly publication of the National Computer Graphics Association.

PRIOR WORK EXPERIENCE

Thirty-five years' experience with both government (DOD, NIST) and commercial practices.

- Managing Director (1991-1993) of Fraunhofer Computer Graphics Research Group, a start-up activity for the Fraunhofer Gesellschaft in the USA. Responsible for both technical direction and operational oversight.
- Eight years self-employed consulting experience (1986-1993), including hands-on familiarity with mainframe, minicomputer, and microcomputer hardware and software. Clients included such organizations as Intel, IBM, Pansophic Systems, Precision Visuals, Inc., Honeywell, the US Department of Commerce, and the US Department of Defense.
- Strategic marketing responsibilities (1984-1986) for Graphic Software Systems, Inc.'s range of commercial, PC-based graphics software tools operating under DOS and UNIX.
- Program management responsibilities (1983-1984) for a Naval training and simulation system as a Government contractor for Ship Analytics Corp. Heavy emphasis on user-interface design.
- Product development responsibilities (1981-1983) for commercial, scientific, and business graphics products--both software tools and end-user applications—as Vice President and a founder of Athena Systems, Inc., Pawcatuck, Connecticut.
- Ten years' experience with the Department of the Navy, both as a military officer (Lieutenant) in Washington, DC (1972-1975), and as a civilian scientist at the Naval Underwater Systems Center (NUSC), New London, Connecticut (1975-1981).

Chief technical lead on a major procurement of graphics systems for the Navy (1974-75) and chief technical management responsibility for NUSC (1977-1980) for a large software development effort (greater than 500,000 lines of code) involving simulation and modeling and employing precursors to the object-oriented methodologies widely known today.

- Part-time and summer work at Arthur D. Little, Inc., Cambridge, Massachusetts (1966-1971), while I was attending Harvard and the University of Michigan.

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REPRESENTATIVE PUBLICATIONS

- "Integrating Data Mining and Visualization Processes," with N. Grady, L. Auvil, A. Beck, and C. Meneses, in *Information Visualization in Data Mining and Knowledge Discovery*, U. Fayyad, G. Grinstein, A. Wierse (eds.), Morgan Kaufmann, 2002.
- "CASUS Presenter—VRML based Interactive 3D Visualization and Animation for Discrete Simulation Data," with V. Luckas, W. Müller, and A. Schäfer, submitted for a 3D Visualization Workshop at Brown University, April, 1997.
- "TeleInViVo: Towards Collaborative Volume Visualization Environments," with J. Coleman, A. Goettsch, A. Savchenko, H. Kollmann, K. Wang, and E. Klement, *Computers & Graphics*, Vol. 20, Number 6, November/December, 1996.
- "TeleInViVo: Telemedicine on the Desktop and on the Road," with J. Coleman, E. Klement, A. Savchenko, and A. Goettsch, *Computer Graphik Topics*, Vol. 8, No. 3 (1996).
- "Personalized Publishing," presentation (with CD-ROM) at the Fraunhofer Symposium, *Global Enterprises ... Global Cooperation*, Providence, Rhode Island, May, 1995.
- "CD-ROM Publishing on Demand," *Computer Graphik Topics*, Vol. 6, No. 3 (part 1 of article—1994—with M. Kokula) and Vol. 7, No. 2 (part 2 of article—1995—with D. Mann and J. Yandle).
- "Natural Hazards Decision Support Consortium," with R. Strack, *Computer Graphik Topics*, Vol. 6, No. 3 (1994).
- Co-author of *PC Graphics Using GKS*, Prentice-Hall, 1990.
- "The Role of Graphics Standards in CALS," in *The C4 HANDBOOK CAD, CAM, CAE, CIM*, C. Machover (ed.), TAB Books, 1989.
- "Guidelines for Determining when to Use GKS and when to Use PHIGS," *Computers & Graphics*, 13(1), January 1989.
- Co-author of *CGM and CGI: Metafile and Interface Standards for Computer Graphics*, Springer-Verlag, 1988. Also published in French as *CGM et CGI: normes de métafichiers et d'interfaces pour l'infographie* by Masson Publishers, Paris, 1992.
- "Uses for the CGM in Raster-to-Vector Conversion," in *CGM in the Real World*, Mumford and Skall (eds.), Springer-Verlag, 1988.
- Co-editor of *GKS: Theory and Practice*, Springer-Verlag, 1987.
- Guest editor of a Special Issue on Graphics Standards, *IEEE Computer Graphics and Applications*, 6(8), August 1986.

INTERESTS

Travel and photography; bird watching; reading about science, medicine, biology, and natural history; classical and "golden oldies" music.