

October 8, 2009

## **Victor R. Basili**

Professor of Computer Science  
University of Maryland  
College Park, Maryland 20742

### **Personal Data**

Born April 13, 1940, Brooklyn, New York  
U. S. Citizen  
Married, three children

### **Education**

Ph.D. in Computer Science, 1970  
University of Texas at Austin

M.S. in Mathematics, 1963  
Syracuse University

B.S. in Mathematics, 1961  
Fordham College

### **Experience in Higher Education**

1961-1963	Research Assistant, Computer Center, Syracuse University
1963-1965	Instructor, Mathematics and Computer Science, Providence College
1965-1967	Assistant Professor, Mathematics & Computer Science, Providence College
1967-1969	Research Assistant, Computer Science Department, University of Texas at Austin
1969-1970	Curriculum Coordinator, Southwest Region Educational Computer Network, University of Texas at Austin
1970-1975	Assistant Professor, Computer Science, University of Maryland
1975-1982	Associate Professor, Computer Science, University of Maryland
1975-2007	Member, Applied Mathematics Program, University of Maryland
1982-2007	Professor, Computer Science, University of Maryland
2007-present	Professor Emeritus, Computer Science, University of Maryland
1982-1988	Chairman, Computer Science Department, University of Maryland
1985-2007	Professor, Institute for Advanced Computer Studies, University of Maryland
1984-present	Research Professor, Institute for Advanced Computer Studies, University of Maryland
1997-2004	Executive Director, Fraunhofer Center Maryland, College Park, Maryland
2005-2009	Chief Scientist, Fraunhofer Center Maryland, College Park, Maryland
2009-present	Senior Research Fellow, Fraunhofer Center Maryland, College Park, Maryland
2001-2003	Non-Resident Visiting Professor, School of Computer Science & Engineering, Faculty of Engineering, University of New South Wales, Sydney, Australia

### **Experience Other than Higher Education**

#### **Publishing**

1973-1983	Consulting Editor, Auerbach Publishers, Incorporated
1978-1984	Editorial Board, <i>Journal of Systems and Software</i> , Elsevier
1980-1988	Editorial Board, <i>Transactions on Software Engineering</i> , IEEE Computer Society
1984-2007	Associate Editor, <i>Journal of Systems and Software</i> , Elsevier

1988-1992 Editor-in-Chief, *Transactions on Software Engineering*, IEEE Computer Society  
1996-present Editor-in-Chief, *Empirical Software Engineering Journal*, Springer  
1995-2003 Series Editor, *International Series in Software Engineering*, Springer

### **Government**

1974-1978 Consultant, ICASE, NASA Langley Research Center, Hampton, VA  
1975-1982 Expert in Computer Science and Mathematics, Naval Research Laboratory, Washington, D.C.  
1975-1977 Consultant, Naval Surface Weapons Center, Dahlgren Laboratory, Dahlgren, VA  
1976-2001 Director, NASA Goddard Space Flight Center, Software Engineering Laboratory  
1983 Consultant, RADC & NORAD, Cheyenne Mountain Complex Colorado Springs, CO  
1983-1984 Consultant, US Army Computer Systems Command, Fort Belvoir, VA  
1985 Consultant, Institute for Defense Analysis, Washington, DC  
1985-1987 Member, Defense Science Board Task Force on Software, Pentagon, Washington, D.C.  
1986 Member, Software Test and Evaluation Panel (STEP), GIT, Atlanta, GA  
1986-1987 Chairman, Advisory Group on the Use of Ada for the Advanced Automation (AAS) for the FAA, Mitre Corporation, McLean, VA  
1986-1988 Member, National Research Council Assessment Panel for NBS Institute for Computer Science and Technology, Gaithersburg, MD  
1987 Consultant, US Army Operational Test and Evaluation Agency, Arlington, VA  
1988 Consultant, Institute for Defense Analysis, Washington, D.C.  
1993 Consultant, FAA, Washington, D.C.  
1996 Consultant, US Army Research Lab, Aberdeen Proving Ground, MD  
2000 Member, Review Panel for Information Systems Center Chief SES position, NASA Goddard Space Flight Center, Greenbelt, MD

### **Industry**

1977-1978 Consultant, Computer Sciences Corporation, Falls Church, VA  
1977-1990 Consultant, IBM Federal Systems Division, Bethesda, MD  
1978 Consultant, International Business Services, Washington, D.C.  
1978-1979 Consultant, International Computing Company, Bethesda, MD  
1979 Consultant, General Dynamics, St. Louis, MO  
1980 Consultant, OAO Corporation, Beltsville, MD  
1980 Consultant, Litton/Mellonics, Arlington, VA  
1980 Consultant, GE Information Services Co., Rockville, MD  
1981-1984 Consultant, IIT Research Institute, Rome, NY  
1981 Consultant, Lesko/Fox, Washington, D.C.  
1981 Consultant, Western Electric, Princeton, NJ  
1983 Consultant, Computer Sciences Corporation, Falls Church, VA  
1983-1984 Consultant, IBM, Data Systems Division, Kingston, NY  
1983-1984 Consultant, GTE Laboratories, Waltham, MA  
1984-1987 Consultant, MCC, Austin, TX  
1984-1985 Consultant, Harris Corporation, Melbourne, FL  
1985-1986 Consultant, Computer Sciences Corporation, Falls Church, VA  
1985-1986 Consultant, AT&T Bell Labs, Naperville, IL  
1987-1988 Chairman, Board of Visitors, Software Productivity Consortium, Reston, VA  
1987-1995 Consultant, Motorola Inc., Schaumburg, IL  
1987 Consultant, Hewlett-Packard, Palo Alto, CA  
1987 Consultant, ICL, Manchester, England

1987	Consultant, Lexico
1987-89, 97	Consultant, Boeing Aerospace Company, Seattle, WA
1988	Consultant, ITT Research Institute, Rome, NY
1990-1991	Consultant, Coopers and Lybrand, New York, NY
1990-1991	Consultant, CTA Incorporated
1991-1993	Consultant, Andersen Consulting, Chicago, IL
1991	Consultant, Ericsson Telecom, Stockholm, Sweden
1991-1992	Consultant, IBM, Poughkeepsie, NY
1993	Consultant, Draper Laboratory, Cambridge, MA
1993-1995	Consultant, United Technology Corporation, Hartford, CT
1994-1995	Consultant, Montgomery Associates
1995-1996	Consultant, SOFTIN, Naples, Italy
1995-1996	Consultant, CONSORZIO SOFTIN, Portici-Napoli, Italy
1995, 1997	Consultant, Whirlpool Corporation, Benton Harbor, MI
1995	Consultant, Xerox Corporation, Webster, NY
1996	Consultant, CSIRO, Information Technology & Software Engineering, Australia
1996-1997	Consultant, OMRON, Nagoya, Japan
1996	Consultant, Fried, Frank, Shriver & Jacobson, Washington, D.C.
1996-1998	Consultant, DAIMLER-BENZ AG, Ulm/Donau, Germany
1997	Consultant, Lucent Bell Laboratories, Murray Hill, NJ
1999	Consultant, O'Melveny & Myers LLP, Washington, D.C.

### **Awards, Activities, and Membership in Professional Honor Societies**

#### **Society Memberships**

Listing in WHO'S WHO in the EAST

Listing in WHO'S WHO in COMPUTER EDUCATION AND RESEARCH

American Association of University Professors (1964-1982)

ACM: Association for Computing Machinery (1964-present)

Special Interest Groups on Programming Languages and Software Engineering

President of the Rhode Island Chapter (1964-1965)

Vice President of the Rhode Island Chapter (1965-1966)

Faculty Moderator for the Providence College Student Chapter (1964-1967)

Faculty Moderator for the University of Maryland Student Chapter (1970-1976)

Member, Executive Board, Technical Committee on Software Engineering

Fellow of the ACM (1997)

Member, Fellows Subcommittee (2002-2007)

IEEE Institute of Electrical and Electronic Engineering, Inc. (1980 – present)

Member of the Computer Society (1980-present)

Member, Technical Committee on Software Engineering (1980- present)

Regular Member of the IEEE, April 1983

Chairman, Transactions Advisory Board, IEEE Computer Society (1983-1984)

Senior Member (1984)

Member, Board of Governors (elected), IEEE Computer Society (1986-1988)

Fellow of the IEEE (1990)

Editor-in-Chief, *Transactions on Software Engineering*, (1988-1992)

Member, IEEE Software Process Achievement Awards Committee (1994-present)

Member, IEEE Fellow Evaluation Committee (1995-1996)

Computing Research Association:

Elected Board Member (1984-1993)

Treasurer (1989-1991)

IESE – Insitut Experimentelles Software Engineering  
Member of IESE Kuratorium  
Joint Measurement Project (internal)  
ISERN - International Software Engineering Research Network.  
Founder & Member (1992 – present)  
Washington Academy of Sciences  
Member (1997 – present)

## Awards

IEEE Computer Society Outstanding Paper Award:  
“A Controlled Experiment Quantitatively Comparing Software Development Approaches,” by V. Basili and R. Reiter, Jr., *IEEE Transactions on Software Engineering*, May 1981 (given in the COMPCON, Fall 1982).

IEEE Meritorious Service Certificate:  
“For continued service in providing the highest quality of IEEE Computer Society technical conferences and their publications,” (presented at COMPSAC Conference, October 1985).

NASA Group Achievement Award:  
NASA/Gamma Ray Observatory (GRO) Dynamics Simulator Ada Experiment Team, “For their initiative, software engineering skills and dedication to a software research effort that has produced critical results required for future NASA software development efforts,” (presented at NASA, May 1989).

Elected to grade of Fellow, IEEE, “For contributions to software quality and productivity,” (January 1990).

Productivity Improvement and Quality Enhancement Award:  
NASA/GSFC, the “Cleanroom” Software Team, “in recognition of the demonstrated application of cutting-edge software technology toward the significant improvement of both software productivity and quality for major NASA software systems,” (June 1990).

ASM Award:  
To the Software Engineering Laboratory from Software Quality Engineering, for the "Most Significant Contribution to the Software Measurement Industry by an Organization," (October 1991).

IEEE Meritorious Service Certificate:  
“For technical leadership as Editor-in-Chief of the *Transactions on Software Engineering*, 1987-1992.”

Distinguished Alumnus Award:  
Department of Computer Science, University of Texas at Austin (February 1993).

CRA - Computing Research Association Honor Award Plaque:  
For outstanding contributions and services as a member of the CRA Board of Directors from 1988-1993 (August 1993).

IEEE Computer Society Award for Software Process Achievement:  
For the Software Engineering Laboratory located at NASA/Goddard Space Flight Center (August 1994).

NASA Group Achievement Award:  
In recognition of the significant impact on NASA software products and for advancing the state-of-the-art of the software industry (May 1996).

IEEE Computer Society, Society of Golden Core:  
For various contributions to the Society's success (June 1996).

ACM Society:  
Elected to Fellow, "for outstanding technical and professional achievement in information technology,"  
selected in November 1996, awarded on March 2, 1997.

Washington Academy of Sciences:  
"For Outstanding Contributions to Mathematics and Computer Science," (May 1997)

ACM SIGSOFT Outstanding Research Award (June 2000).

IEEE/ACM ISESE Best Paper Award:  
F. Shull, V. Basili, J. Carver, J. Maldonado, G. Travassos, M. Mendonca, and S. Fabbri, "Replicating  
Software Engineering Experiments: Addressing the Tacit Knowledge Problem," *Proceedings of the First  
International Symposium on Empirical Software Engineering*, Nara, Japan (October 2002).

IEEE Computer Society 2003 Harlan D. Mills Award:  
"For significant contributions to programming languages, program reading and writing, and empirical  
methods, (May 2003).

Brazilian Computer Society Best Paper Award:  
J. Carver and V. Basili, "Identifying Implicit Process Variables to Support Future Empirical Work,"  
*Proceedings of the 17th Brazilian Symposium on Software Engineering* (October 2003).

Honorary Degree:  
Laurea Honoris Causa in Ingegneria Informatica, Universita Degli Studi Del Sannio, Benevento (BN), Italy  
(April 2004).

Honorary Degree:  
Doctor Honoris Causa in Natural Science (Dr. rer. nat h.c.), Fachbereich Informatik der Technische  
Universitat Kaiserslautern, Germany (January 2005).

Symposium in Honor of Victor Basili:  
Foundations of Empirical Software Engineering: Legacy of Victor R. Basili  
Held at the 27th International Conference on Software Engineering (ICSE 2005), St. Louis, MO, consisting  
of speeches by colleagues and a book of selected papers by Vic Basili published (May 2005).

Written in Honor of Victor Basili:  
F. Shull, C. Seaman, M. Zelkowitz, "Victor R. Basili's Contributions to Software Quality," *IEEE Software*,  
vol. 23(1): 16-18, January/February 2006.

Fraunhofer Silver Medal:  
For contributions to the Fraunhofer Institute. One of only six who have received this honor, and the only  
non-German to receive this medal, October 2007.

### **Professional Activities**

#### **Advisory Committees/Boards**

Member, Computer Science Advisory Committee for the Washington Technical Institute (1971-1974).

Advisor, Panel on Computing, Committee on the Undergraduate Program in Mathematics, which published Recommendations for an Undergraduate Program in Computational Mathematics (1971).

Member, Advisory Panel on Programming Languages and Implementation for the Computer Science and Engineering Research Study (COSERS), sponsored by the National Science Foundation, Jack Schwartz, section chairman; Bruce Arden, editor (1976).

Member, Advisory Panel on Software Methodology and Implementation for the Computer Science and Engineering Research Study (COSERS) sponsored by the National Science Foundation, Harlan Mills, section chairman; Bruce Arden, editor (1976).

Member, study group on Analysis of Software Metrics and Experimentation sponsored by the Office of Naval Research (1979-1980).

Member, Ad Hoc Advisory Committee, DOD Software Technology Initiative (STARS) (1983).

Member, National Science Foundation Computer Science Advisory Board (1983-1984).

Member, Departmental Review Committee, Michigan Technical University (1984).

Member, IBM Advanced Automation System, IBM Bethesda, MD (1989).

Member, National Advisory Board, College of Computing, Georgia Tech (1991- 1994).

Member, Software Productivity Consortium Advisory Board (1992-96).

Member, Xerox Engineering Excellence Council (1993).

Member, Verdex Corporation Board of Directors (1993-1994).

Founding Member, ISERN - International Software Engineering Network (1993- present).

Member, Search Committee, for the EIC of *IEEE Transactions on Software Engineering* (1995).

Member, Steering Committee for the IEEE/ACM International Conference on Software Engineering (1981-1988; 1991-1996).

Member, Advisory Committee, Airlie Software Council, DoD Best Practices Initiative (1994-2000).

Member, IEEE Software Process Achievement Awards Committee (1994 to 2008).

Member, Q-Labs Advisory Board, College Park, MD (1995-2001).

Member, Advisory Board (Kuratorium) of the Fraunhofer Institute for Experimental Software Engineering (IESE), Kaiserslautern, Germany (1996 to present).

Member, Advisory Committee, Information Sciences and Technology Laboratory at Bellcore, Morristown, NJ (1996).

Member, Planning Workshop Committee on Machinery for Predictability of Complex Systems, National Science Foundation, Arlington, VA (September 27, 1996).

Chairman, NSF Workshop on a Software Research Program for the 21<sup>st</sup> Century, Greenbelt, MD (October 15-16, 1998).

Member, NSF Workshop on Scalable Enterprises, Rosalyn, VA (April 26-27, 1999).

Member, Federal Reserve Web Technologies Roundtable, Kansas City, MO (September 21-22, 1999).

Member, NSF Committee of Visitors to oversee the administration of research funding by the Division of Computer-Communications Research, Arlington, VA (June 5-6, 2003).

Member, IEEE Computer Society Harlan Mills Award Committee (1998-2002 and 2004-present).

Member, ACM Fellows Award Committee (2002-2006).

Member, Software Engineering Institute International Process Research Consortium (2004-2005).

Chair, ACM Fellows Award Committee (2005-2006).

Member, IEEE Computing Society Fellow Award Committee (various years).

Member, Empirical Approach to Software Engineering (EASE) Project, Japan (2005-2006).

Member, Networking and Information Technology Technical Advisory Group (TAG), President's Council of Advisors on Science and Technology (PCAST), (2006-2007).

Member, 60<sup>th</sup> IEEE Computer Society Anniversary Award Committee (2007).

#### **Guest Editor**

*Journal of Systems and Software*, Special Issue on the Second Software Life Cycle Management Workshop, volume 1, number 3, April 1980.

*IEEE Software*, Special Issue on Software Quality Assurance (with H.D. Rombach) September 1987.

#### **Keynote Addresses**

“Quantitative Evaluation of Software Methodology,” First Pan Pacific Computer Conference, Melbourne, Australia (September 1985).

“Software Quality Fundamentals,” ATT Bell Labs Software Quality Day, Chicago, IL (October 1987).

“Software Quality Fundamentals,” Software Engineering ANNI, Rome, Italy (February 1988).

“Evaluating Software Testing,” Third International Conference on Software Testing, Crystal City, VA (June 1988).

“Maintenance-Reuse-Oriented Software Development,” International Conference on Software Maintenance, Phoenix, AZ (October 1988).

“Software: An Evolving Technology,” AICA, Congresso Annuale (Annual Computer Conference), Cagliari, Italy (September 1988).

“Software Development: A Paradigm for the Future,” COMPSAC 1989, Orlando, FL (September 1989).

“The Experience Factory: Packaging Software Engineering Experience,” Pacific Northwest Software Quality Conference, Portland, OR (October 1990).

“Using Software Measurement to Learn and Improve,” International Conference on Applications of Software Measurement, San Diego, CA (November 1990).

“The Future Engineering of Software,” Inauguration of the Advanced Institute of Science and Technology at Nara, Osaka, Japan (May 1992).

“The Software Engineering Laboratory: An Example Experience Factory,” Motorola Software Engineering Symposium, Schaumburg, IL (June 1992).

“The Experimental Paradigm in Software Engineering,” IEEE International Symposium on Software Reliability Engineering, Raleigh, NC (October 1992).

“Evolving Process to Fit the Organization,” International Workshop on Evolution in Software Processes, Domaine Gault Estate, McGill University, Quebec, Canada (January 1993).

“The Experience Factory: Packaging Software Experience,” Third Annual Computer Sciences Industrial Forum (CSIF '93), University of Texas at Austin, Austin, TX (February 1993).

“Software Measurement: Learning about the Software Business,” Cooperstown Workshop, Rome Laboratories, Cooperstown, NY (September 1993).

“The Experience Factory and its Relationship to Other Improvement Paradigms,” Fourth European Software Engineering Conference, Garmish, Germany (September 1993).

“Applying the Goal/Question/Metric Paradigm in the Experience Factory,” Tenth Annual Workshop, CSR - Centre for Software Reliability, Application of Software Metrics and Quality Assurance in Industry, Amsterdam, The Netherlands (September 1993).

“Building an Experience Factory for Maintenance: Reengineering Process and Product,” International Conference on Software Maintenance, Victoria, BC (September 1994).

“Evolving and Packaging Reading Technology,” Second Annual European Industrial Symposium on Cleanroom Software Engineering, Berlin, Germany (March 1995).

“Software Engineering Laboratory,” Seventh Annual Oregon Workshop on Software Metrics, Silver Falls, OR (June 1995).

“Building a Software Measurement Program to Improve Software Productivity and Quality,” XVII Taller de Ingenieria de Sistemas Conference, University of Chile, Santiago, Chile (July 1995).

“Evolving and Packaging Technology through Experimentation,” Third International Conference on Quality in Software, Florence, Italy (January 1996).

“The Role of Experimentation: Past, Current and Future,” Eighteenth International Conference on Software Engineering, Berlin, Germany (March 1996).

“The Maturing of the Quality Improvement Paradigm in the SEL,” SQM 1996 Congress, Gesellschaft fur

Software-Qualitäts Sicherung mbH, Koln, Germany (March 1996).

“Building Core Competencies,” CITS, VIII International Conference on Software Technology: Software Quality, Curitiba, Parana, Brasil (June 1997).

“The Experimental Validation and Packaging of Software Methods and Techniques,” International Conference on Software Maintenance (ICSM), Bari, Italy, October 4-5, 1997.

“Developing Valid Evaluation Criteria for Software Empirical Studies,” Metrics 1997, Albuquerque, NM (November 1997).

“Software as a Business Competency,” SEPG 1998, Chicago, IL (March 1998).

International Conference on Software Engineering & Knowledge Engineering, SEKE 1999, Germany (June 1999).

“Software Improvement Feedback Loops: The SEL Experience,” PSQT 1999, St. Paul, MN (October 1999).

“Using Experiments to Build a Body of Knowledge,” EWSPT 2000, Salzburg, Austria (February 2000).

“Software Improvement Feedback Loops: How to Develop a Learning Organization,” ASM 2001, San Diego, CA (February 2001).

“Software Improvement Feedback Loops: The SEL Experience,” JS 2001, Lockheed Martin, Orlando, FL (June 2001).

“Implementing the Experience Factory Concepts as a Set of Experience Bases,” SEKE 2001, Buenos Aires, Argentina (June 2001).

“Building an Experience Base for Software Engineering: A Report on the First CeBASE eWorkshop,” PROFES 2001, Kaiserslautern, Germany (September 2001).

“A Light-Weight Process for Capturing and Evolving Defect Reduction Experience,” (with M. Lindvall and F. Shull), ICECCS 2002, Greenbelt, MD (December 2002).

“Distilled Experiences from Several COTS Projects,” Second International Conference on COTS-Based Software Systems, Ottawa, Canada (February 2003).

“Matching Software Measurements to Business Goals,” 2003 Software Management Conference, San Jose, CA (June 2003).

“The Role of Empirical Study in Software Engineering,” Eighteenth IFIP World Computer Conference, Toulouse, France (August 2004).

“Empirically Evolving Software Engineering Techniques,” ICSM 2004, Chicago, IL (September 2004).

“Using the Experience Factory to Improve the Software Acquisition Process,” Second Annual Symposium on the Acquisition of Software, KIPA and the Minister of Information and Communication in Korea (November 2004).

“Empirical Software Engineering: Where are we headed?,” 27th International Conference on Software

Engineering, ICSE 2005, during *Foundations of Empirical Software Engineering - The Legacy of Victor R. Basili* (May 2005).

“The Role of Empirical Study in Software Engineering,” given at the 30th NASA/IEEE Software Engineering Workshop, SEW-30, (April 2006).

“Software Engineering Instruction and Education Theory: A Dialogue” (with Patricia Basili), 19th Conference on Software Engineering Education and Training, CSEET 2006, Hawaii (April 2006).

“Is There a Future for Empirical Software Engineering?” 5<sup>th</sup> ACM-IEEE International Symposium on Empirical Software Engineering, ISESE 2006, Rio de Janeiro, Brazil (September 2006).

“Bridging the Gap between Business Strategy and Software Development,” Software & Systems Quality Conference, Duesseldorf, Germany (April 2007).

“The Influence of Organizational Structure on Software Quality: An Empirical Case Study,” the Australian Conference on Software Measurement, ASCOM , (November 2007).

“Using Measures and Risk Indicators for Early Insight Into Software Product Characteristics such as Software Safety, Keynote Address at the 19<sup>th</sup> International Symposium on Software Reliability Engineering, Seattle, WA, November 2008.

### **Conference Committees**

Program Schedule Chairman, Symposium on High-Level Language Machine Architecture, presented by ACM and IEEE Computer Society, College Park, MD (1973).

Program Committee, Trends and Applications 1975, IEEE Computer Society, Washington Chapter, NBS, Gaithersburg, MD (June 1975).

Program Committee, 15th Annual ACM/NBS Technical Symposium, NBS, Gaithersburg, MD (June 1976).

Program Committee, First through Twenty-First Software Engineering Workshops, NASA Goddard Space Flight Center (1976-1996).

Tutorial Chairman, COMPCON 1977, IEEE Computer Society, Chicago, IL (September 1977).

Technical Chairman, Second Software Life Cycle Management Workshop, Atlanta, GA (August 1978).

Tutorial Chairman, Workshop on Quantitative Software Models for Reliability, Complexity and Cost, Kiameshia Lake, NY (October 1979).

Program Committee, Minnowbrook Workshop on Software Performance, Third through Tenth workshops (1980-1988).

Local Arrangements Chairman, ACM Sigmetrics Symposium/Workshop: Quality Metrics, Blue Mountain, NY (March 1981).

Program Chairman, First ACM SIGSOFT Software Engineering Symposium: Evaluating Tools and Methodology, Pingree Park, CO (June 1981).

Program Co-Chairman, COMPCON 1981: Productivity, IEEE Computer Society, (September 1981).

Program Co-Chairman, Sixth International Conference on Software Engineering (ICSE), Tokyo, Japan (September 1982).

Program Committee, IEEE Computer Society Workshop on Software Engineering Technology Transfer, Miami, FL (April 1983).

Program Committee, International Conference on Software Engineering (ICSE):

7th	Orlando	FL	March	1984
8th	London	England	August	1985
9th	Monterey	CA	March	1987
10th	Singapore	Singapore	April	1988
11th	Pittsburgh	PA	May	1989
14th	Melbourne	Australia	May	1992

Co-Chair, Software Engineering Environment Workshop, University of Maryland, Greenbelt, MD (May 1986).

Program Committee, Workshop on Empirical Studies of Programmers, Washington, D.C. (June 1986).

American Co-Organizer, NSF Mori Initiative Workshop on Software Engineering, Honolulu, HI (January 1987).

Co-Chair, First International Conference on Software Quality Improvement, Tokyo, Japan (February 1989).

Co-Chair, Second International Conference on Software Quality Improvement, Kyoto, Japan (January 1990).

Co-Chair, Third International Conference on Software Quality Improvement, Tokyo, Japan (January 1991).

Program Committee, Fourth International Conference on Software Engineering and Knowledge Engineering, Capri, Italy (June 1992).

Program Committee, Fifth International Conference on Software Engineering and Knowledge Engineering, San Francisco, CA (June 1992).

Co-Organizer, Workshop on Experimental Software Engineering, Dagstuhl, Germany (October 1992).

General Chair, Fifteenth International Conference on Software Engineering, Baltimore, MD (May 1993).

Co-Chair, First International Workshop on Software Engineering Data (IWSED), Nara, Japan (October 1993).

Workshop Committee, Software Engineering Education, held in conjunction with the Sixteenth International Conference on Software Engineering, Sorrento, Italy (May 1994).

Program Committee, Intern. Conference on Software Metrics, London, England (October 1994).

Co-Chair, Second International Workshop on Software Engineering Data (IWSED), Hiroshima, Japan (November 1994).

Program Committee, Nineteenth Software Engineering Workshop, NASA Goddard Space Flight Center,

Greenbelt, MD (December 1994).

General Chair, Seventh International Conference on Software Engineering & Knowledge Engineering, (SEKE), Rockville, MD (June 1995).

Co-Chair, Third International Workshop on Software Engineering Data (IWSED), College Park, MD (October 1995).

Co-Chair, International Software Engineering Research Network (ISERN), College Park, MD (October 1995).

Program Committee, Sixth International Conference on Applications of Software Measurement, Software Quality Engineering, Orlando, FL (October 1995).

Program Committee, Third International Software Metrics Symposium, Technical University of Berlin, Berlin, Germany (March 1996).

Program Committee, International Conference on Software Reuse, British Columbia, Canada (1998).

Member, Program Committee, Fourth International Conference on Achieving Quality in Software, Venice, Italy (1998).

Chairman, Harlan Mills Symposium at ICSE 1999, Los Angeles, CA (May 1999).

Steering Committee, IEEE/ACM International Symposium on Empirical Software Engineering (2002, 2003, 2004).

Program Committee, Conference on Software Engineering Education and Training, Ottawa, Canada (April 2005).

Program Committee, Software Process Workshop, Beijing, China (May 2005).

Program Committee, Schloss Dagstuhl International Conference and Research Center For Computer Science (June 2006).

### **Graduate Students Supervised**

#### **M.S. Degree Completed**

Carol Griffin	Mechanical Education--An Investigation of the Development, Applications, and Future of CAI (scholarly paper), 1971.
Patricia McGowan	A TWS for LALR(1) Languages (scholarly paper), 1971.
David Weiss	A Survey of Data Definition Facilities in Programming Languages (scholarly paper), 1973.
Gloria Lambert	Large-Scale File Processing-POGOL (scholarly paper) published in Proceedings, Symposium on Principles of Program-Languages, ACM '73.
Eileen Buckholtz	Computer Application in A Cable Television Environment (scholarly paper) published in Proceedings, ACM National Conference, 1973.

Charles Brown	Regular Expressions and the Automatic Construction of Compiler Scanners (scholarly paper), 1973.
J. Michael Kamrad	A Semantic Description of A Subset of the SNOBOL4 Language, 1974.
Josephine Peck	A Proposed Computer Science Curriculum for Two-Year Colleges (scholarly paper), 1975.
James Mandel	Semantic Models of Programming Languages (scholarly paper), 1975.
John Perry	An Experiment in Bootstrapping A Portable Compiler ,1976.
William Windle	Information System/Program Design, 1976.
Susan Gorlin	A Hierarchical Family of Models for the SIMPL Family of Languages, 1977.
Thomas Mapp	Applicability of the Rayleigh Curve to the Software Engineering Laboratory Environment (scholarly paper), 1978.
Karl Freburger	The Software Engineering Laboratory: Relationship Equations (scholarly paper), 1979.
Stephen Sutton	Flex, An Automated Process Design Language, 1979.
John Beane	Estimating and Scheduling of Programmer Effort Early in Software Development (scholarly paper), 1980.
Anna Mary Miller	A Study of the Musa Reliability Model, 1980.
Barry Perricone	Relationships between Computer Software and Its Associated Errors: An Empirical Investigation (scholarly paper), 1981.
Gene Shuman	Understanding and Documenting Programs Using Stepwise Abstractions, 1981.
Gino Picasso	The Rayleigh Curve as A Model for Effort Distribution Over the Life of Medium Scale Software Systems, 1981.
Carl Doerflinger	Monitoring Software Development Through Dynamic Variables, 1983.
Elizabeth Katz	A Taxonomy of Metrics in Terms of an Ada Development (scholarly paper), 1983.
Richard Selby	Metric Analysis and Data Validation Across FORTRAN Projects (scholarly paper), 1983.
James Ramsey	Examining Functional Acceptance Testing with Structural Coverage Metrics (scholarly paper), 1983.
David G. Preston	Software Metrics and Error Proneness: A Replication (scholarly paper), 1984.

N. M. Panlilio-Yap	Finding Relationships between Effort and Other Variables in the Software Engineering Laboratory (scholarly paper), 1985.
C. Loggia Ramsey	ARROWSMITH-P - A Prototype Expert System for Software Engineering Management (scholarly paper), 1985.
Lee Doubleday	ASAP: An Ada Static Source Code Analyzer Program, 1987.
Jon D. Valett	The Dynamic Management Information Tool (Dynamite): Analysis of the Prototype, Requirements, and Operational Scenarios, 1987.
James W. Gray III	Techniques for Formal Program Specification, 1987.
M.K. Daskalantonakis	A Proposed Architecture for the TAME System from the User's Perspective, 1988.
Stephen Hartman	On Using the Ada Use Clause (scholarly paper), 1988.
Carolyn Brophy	Lessons Learned in Transition to Ada from A Fortran Environment, 1989.
Sara Qian	Tools for Understanding Software Components, 1989.
Ara Kouchakdjian	Lessons Learned Using Cleanroom Software Engineering in the Software Engineering Laboratory, 1990.
Salwa Abd-El-Hafiz	A Tool for Understanding Programs Using Functional Specification Abstraction, 1990.
Robert Alan Spangler	Analyzing the Cleanroom Software Development Methodology in the Development of a Large Application, 1991.
William Thomas	Evolutionary Models for Software Engineering Resource Allocation, 1992.
Chris Hetmanski	An Approach to Accounting for Human Factors when Building Software Engineering Models, 1993.
Yuling Ma	Evaluating Effort Estimation Model Using GQM, 1996.
Forrest Shull	An Inductive Method for Discovering Design Patterns from Object-Oriented Software Systems, 1996.
Jiro Okayasu	A QIP-based Framework of Lightweight Formal Methods Introduction in Industry, 1997.
Duy Huyhn	A Method for Improving Software-Intensive Systems' Dependability, 2002.
Rola Alameh	Investigating the Effects of HPC Novice Programmer Variations on Code Performance, 2007.
<b>Ph.D. Degree Completed</b>	
A. J. Turner	Iterative Enhancement: A Practical Tech. for Software Development, 1976.

- A. B. Carmichael      A Characterization of A Hierarchy of Information Structure Models of Programming Languages, 1976.
- R. W. Reiter            Investigating Software Development Approaches, 1979.
- C. W. Barth             The Design and Implementation of A High-Level Co-Routine Structure, 1980.
- David Weiss             Evaluating Software Development by Analysis of Change Data, 1981.
- Douglas D. Dunlop     An Investigation of Functional Correctness Issues, 1982.
- David H. Hutchens     Characterizing Software with Objective Measurements, 1983.
- Richard W. Selby      A Quantitative Approach for Evaluating Software Technologies, 1984.
- Bok Gyu Joo             Adaptation and Composition of Program Components, 1990.
- John W. Bailey         A Component Factory for Software Source Code Re-engineering and Reuse, 1992.
- James Gray III         Multi-level Security of Probabilistic Systems, 1992.
- S.K. Abd-El-Hafiz      A Knowledge-based Approach to Program Understanding, 1993.
- Lionel Briand          Assessing and Managing Risk During Software Development and Maintenance, University of Paris-Sud, France, 1994.
- Chris Lott              Measurement-Based Feedback in a Process-Centered Software Engineering Environment, 1996.
- Jim Baumann          Characterization and Incremental Improvement of Subjective Questionnaire-Based Software Maintainability Evaluation Methods, 1996.
- Carolyn Seaman        Organizational Issues in Software Development: An Empirical Study of Communication, 1996.
- William Thomas        Evolutionary Approaches for Software Engineering Empirical Modeling, 1997.
- Manoel G. Mendonca    An Approach to Improving Existing Measurement Frameworks, 1997.
- Forrest J. Shull        Developing Techniques for Using Software Documents: A Series of Empirical Studies, 1998.
- Zhijun Zhang          The Design and Empirical Studies of Perspective-Based Usability Inspection, 1999.
- Daniil Yakimovich     A Comprehensive Reuse Model for COTS Software Products, 2001.
- Jyrki Kontio            Software Engineering Risk Management: A Method, Improvement Framework, and Empirical Evaluation, Helsinki University of Technology, 2001.

Sira Vegas	Identifying Relevant Information for Testing Technique Selection: An Instantiated Characterization Schema, Polytechnic University of Madrid, 2002.
Jeffrey Carver	The Impact of Background and Experience on Software Inspections, 2003.
Lorin Hochstein	Development of an Empirical Approach to Building Domain-Specific Knowledge Applied to High-End Computing, 2006.
Taiga Nakamura	Recurring Software Defects in High End Computing, 2007.
Daniela Cruzes	Secondary Analysis on Experimental Software Engineering Studies, 2007.
Alessandro Sarcia	An Approach to Improving Parametric Estimations Models in the Case of Violation of Assumptions Based upon Risk Analysis, 2008.

### **Post Doctoral Students**

Dieter Rombach	1984-1986	Current Position: Professor, University of Kaiserslautern, Germany and Director of the Fraunhofer Institute for Experimental Software Engineering.
Robert France	1989-1991	Current Position: Professor, Colorado State University
Sandro Morasca	1991-1993	Current Position: Professor, Università degli Studi dell'Insubria, Italy
Lionel Briand	1993-1994	Current Position: Associate Professor, Systems and Computer Engineering Department, Carleton University, Ottawa, Canada.
Walcelio Melo	1993-1996	Current Position: Principal Consultant, Oracle do Brasil, Brasilia, Brazil.
Carolyn Seaman	1996-1997	Current Position: Associate Professor, University of Maryland, Baltimore County, Baltimore, Maryland.
Filippo Lanubile	1996-1998	Current Position: Associate Professor, University of Bari, Italy.
Manoel Mendonca	1998-2000	Current Position: Professor, Salvador University, Salvador, Brazil.
Forrest Shull	1998-1999	Current Position: Scientist, Fraunhofer Center, College Park, Maryland.
G. Travassos	1998-2000	Current Position: Professor, Federal University of Rio de Janeiro, Brazil.
Jeff Carver	2003-Present	Current Position: Assistant Professor Mississippi State University, Mississippi.
Sima Asgari	2003-2007	Current Position: Faculty Research Assistant, ESEG, University of Maryland, College Park, Maryland.
Paolo Donzelli	2003-Present	Current Position: Head, Division for Research and ICT, Department for Innovation and Technology, Office of the Prime Minister, Italy.

## Grants, Contracts and Awards

OFFICE OF NAVAL RESEARCH, N0014-67-A-0239-0021

Algorithmic Graph Theory and Applications, January 1, 1972 - June 30, 1976, (with W. Rheinboldt). Total award: \$90,000.

NASA/ GSFC, NGR-68812-152

Study of Systems Implementation Languages for GSFC POCCNET, September 24, 1975 - September 23, 1976. Total award: \$20,939.

NASA/GSFC, NSG-5123

Evaluation of Software Engineering Disciplines (Software Engineering Laboratory), August 1, 1976 - February 18, 1982, (with M. Zelkowitz). Total award: \$329,014.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH, AFOSR 77-3181

Programming Language Construct Evaluation, January 1, 1977 - December 31, 1978, (with M. Zelkowitz). Total award: \$110,732.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Programming Language and Software Engineering, January 1, 1979 - December 31, 1979, (with J. Gannon, R. Hamlet, and M. Zelkowitz). Total award: \$108,500.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Programming Languages and Software Engineering, January 1, 1980 - December 31, 1985, (with J. Gannon, R. Hamlet, R. Yeh, and M. Zelkowitz). Total award: \$1,328,188.

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Programming Languages and Software Engineering, March 1987 - April 1992, (with J. Gannon and M. Zelkowitz). Total award: \$890,234.

IBM

The Impact of Programming Environment on Programming Productivity March 1, 1981 - July 31, 1983, (with J. Gannon, R. Hamlet, R. Yeh, and M. Zelkowitz). Total award: \$162,397.

NSA

Studies on Software Metrics, September 30, 1981 - February 28, 1982. Total award: \$19,999.44.

NASA/GSFC, NSG-5123

Evaluation of Software Engineering Disciplines (Software Engineering Laboratory), March 1, 1982 - August 31, 1986. Total award: \$474,885.

OFFICE OF NAVAL RESEARCH - Department of Defense Advanced Research Projects Office

Experiments on the Effective Use of Ada, December 1, 1981 - June 30, 1984. Total award: \$347,472.

NSA

Pilot Project Instrumentation, August 4, 1982 - February 3, 1983. Total award: \$15,370.

NASA/GSFC

Research in Requirements and Software Design, September 1, 1983 - August 31, 1986, (with M. Zelkowitz). Total award: \$386,117.

#### NSF

A Testbed for Parallel Algorithm Development, July 1, 1983 - June 30, 1988, (with A. Agrawala, J. Minker, A. Rosenfeld, G. Stewart, M. Weiser). Total award: \$4,300,000.

#### BURROUGHS CORPORATION

Research Support and Equipment Grant, January 1, 1985 - December 31, 1985, (with M. Zelkowitz). Total award: \$247,000.

#### OFFICE OF NAVAL RESEARCH

Measurable Environment for Ada Programming, July 1, 1985- June 30, 1987. Total award: \$119,000.

#### IBM

Analysis of Factors Contributing to Software Quality in a Production Environment, June 1985 - December 1985. Total award: \$95,000.

#### AIRMICS, 19K-CN983-C

Ada Reuse Metrics, August 1987 - October 1989, (with D. Rombach). Total award: \$355,094.

#### AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Programming Languages and Software Engineering, March 1987 - April 1992, (with J. Gannon, M. Zelkowitz ). Total award: \$890,234.

#### OFFICE OF NAVAL RESEARCH, N00014-90-J-4091

Using Formal Specifications to Develop Software, February 1, 1987 - September 30, 1993, (with J. Gannon and J. Purtilo). Total award: \$588,630.

#### NASA/GSFC, NSG-5123

Evaluation of Software Engineering Methodologies, November 1, 1984 - September 30, 1992, (with M. Zelkowitz). Total award: \$1,599,243.

#### NASA/GSFC, NSG-5123

Evaluation of Software Engineering Methodologies, October 1, 1992 - September 30, 1996, (with M. Zelkowitz). Total award: \$1,999,981.

#### NSF

A Pattern Recognition Approach to Software Engineering Empirical Modeling, March 15, 1993 - March 14, 1996. Total award: \$291,759.

#### IBM Corporation, Center for Advance Studies, Toronto, Canada

Process Reuse Studies, January 1, 1993 - December 30, 1994. Total award: \$75,000.

#### HUGHES CORPORTATION

Information Systems Interoperability Technology for Case Management Systems, February 15, 1997 - December 31, 1997, (with Gianluigi Caldiera). Total award: \$20,000.

#### HUGHES CORPORATION

Experience Factory for the ECS (EOS Core System), September 1, 1993 - March 30, 1997. Total award: \$495,000.

#### IBM

Using GQM and AF to Analyze and Improve Existing Measurement Frameworks, January 2, 1995 -

December 31, 1997. Total award: \$75,000.

WESTINGHOUSE

Object-Oriented Software Development Experiment, 1994-1995. Total award: \$20,000.

WESTINGHOUSE

Software Reuse Project, 1995-1996. Total award: \$25,000.

IRST

Object-Oriented Function Points, (with Gianluigi Caldiera), February 25, 1997 - December 31, 1997. Total award: \$22,000.

NASA/GSFC, NCC5170

Evaluation of Software Engineering Methodologies, (with M. Zelkowitz), November 1, 1996 - October 31, 1999. Total award: \$1,200,000.

NSF, CCR 9706151

The Experimental Validation and Packaging of Software Technologies, August 1997 - August 2001, (with M. Zelkowitz). Total award: \$902,256.

MIPS-Q-Labs

Applying the Experience Factory to the Software Consulting Domain, August 1997 - July 1999. Total award: \$210,000.

AIR FORCE

Data Analysis Center Grant, sub-contractor with ITT Research, September 1997 - August 2002. Total award: \$475,000.

FRAUNHOFER CENTER FOR EXPERIMENTAL SOFTWARE ENGINEERING – MARYLAND

Funded by the Fraunhofer Gesellschaft and the State of Maryland, January 1998 - December 2003.  
\$3,600,000 base funding.

NSF, CCR 9820127

Workshop Symposium for IT A&D Program for the 21<sup>st</sup> Century, October 1, 1998 - November 30, 1998.  
Total award: \$21,300.

NSF CNPQ, CCR9900307

Collaborative Research to Develop, Validate and Package Analysis Techniques for Software Defect Detection, August 1, 1999 - July 31, 2003. Total award: \$79,706.

NASA/GSFC, NCC5464

Evaluation of Software Engineering Methodologies, November 1, 1999 – November 14, 2002, (with M. Zelkowitz). Total award: \$1,493,046.

NSF ITR, CCR 0086078

Collaborative Research for a National Center for Empirical Software Engineering, September 15, 2000 - August 31, 2003, (with M. Zelkowitz). Total award: \$2,108,454.

NASA, NCC2-1298

Empirical Research on High Dependability Computing, subcontract to Carnegie Mellon University, December 15, 2001 - December 14, 2006, (with M. Zelkowitz). Total award: \$2,812,905.

DARPA, NASA, DoE, ARL

High Productivity Computing Systems Analysis and Performance Assessment, September 2003- June 2007.

Total award: \$1,800,000.

**IAP - Industrial Associates Program support for research:**

VITRO, Performance of Ada in A Real-Time Environment, August 1985 - July 1992. Total award: \$350,000.

NEC, July 1985 - June 1986. Total award: \$50,000.

FINSEILGp (ITALSIEL), Software Reuse, July 1988 - June 1994. Total award: \$215,000.

AMDAHL, Software Testing, January 1988 - December 1989. Total award: \$50,000.

COOPERS & LYBRAND, 1990-1991. Total award: \$50,000.

BELLCORE, 1990-1991. Total award: \$50,000.

TOHO GAS COMPANY, 1991-1992. Total award: \$25,000.

MATSUSHITO PANASONIC, an Industrial Fellow Supporting the Development of Measurable Models of Software Quality, October 1991 - October 1996. Total award: \$80,000.

RICOH, Supporting Research in the Understanding of Programs, January 1993 - June 1993. Total award: \$25,000.

SOGEI, supporting the analysis and testing of user interface design and provide guidance for the building of such interfaces, December 1994 – December 1995, (with B.Shneiderman). Total award: \$30,000.

DAIMLER BENZ, an industrial Fellow supporting the application of the QIP and GQM Paradigms, September 1994 - August 1995. Total award: \$50,000.

FUJITSU, 2004. Total award: \$30,000.

**Publications**

**Books**

- B1. V. Basili and T. Baker, eds., Structured Programming, IEEE Press, IEEE Catalog No. 75CH1049-6, 1975 (revised 1977).
- B2. V. Basili and A. J. Turner, SIMPL-T, A Structured Programming Language, Paladin House Publishers, 1976.
- B3. V. Basili, Models and Metrics for Software Management and Engineering, IEEE Press, IEEE Catalog No. EHO-167-7, 1980.
- B4. V. Basili and T. Baker, eds., Structured Programming: Integrated Practices, IEEE Press, 1981.
- B5. H. Mills, V. Basili, J. Gannon, R. Hamlet, Principles of Computer Programming: A Mathematical Approach, Allyn & Bacon, 1987.
- B6. H.D. Rombach, V. Basili, and R. Selby, eds. Experimental Software Engineering Issues: Critical Assessment and Future Directives, Proceedings of Dagstuhl-Workshop, September 1992, Springer-

Verlag, #706, Lecture Notes in Computer Software, August 1993.

- B7. S. K. Abd-El-Hafiz and V. Basili, A Knowledge-Based Approach to Program Understanding, Kluwer Academic Publishers, July 1995.
- B8. S. Vegas, N. Juristo, and V. Basili, Identifying Relevant Information for Testing Technique Selection: An Instantiated Characterization Schema, Kluwer Academic Publishers, April 2003.
- B9. V.R. Basili, H.D. Rombach, K. Schneider, B. Kitchenham, D. Pfahl, and R.W. Selby, (Eds.), Empirical Software Engineering Issues: Critical Assessment and Future Directions, LNCS 4336, Springer, 2006.

### **Book Chapters**

- C1. V. Basili, "The SIMPL Family of Programming Languages and Compilers," Graphen-Sprachen und Algorithmen auf Graphen, Applied Computer Science 1, Carl Hanser Verlag, Munich, Germany, 1976, pp. 49-85. Also Computer Science Center Technical Report TR-305, University of Maryland, June 1974.
- C2. V. Basili, W. Rheinboldt and C. Mesztenyi, "GRAAL - A Graph Algorithmic Language," in Sparse Matrices and Their Applications, D. Rose and R. Willoughby, eds., Plenum Press, NY, pp. 167-176, 1972.
- C3. V. Basili, "Some Supplementary Notes on the Graph Algorithmic Language GRAAL," Graphen-Sprachen und Algorithmen auf Graphen, Applied Computer Science 1, Carl Hanser Verlag, pp. 31-48, 1976.
- C4. V. Basili, "Language as a Tool for Scientific Programming," in Proceedings of the Third ICASE Conference on Scientific Programming, Academic Press, 1976.
- C5. V. Basili, "Structured Programming Foundations," in Structured Programming Tutorial, IEEE Press, IEEE Catalog No. 75CH1049-6, pp. 167-177, 1977.
- C6. V. Basili, "An Example of Program Development," in Structured Programming Tutorial, IEEE Press, IEEE Catalog No. 75CH1049-6, pp. 167-177, 1977.
- C7. V. Basili, "Structured Programming I, Portfolio in the Computer Programming Management Area," Auerbach Information Management Series (14-03-01), (update appears as a chapter in Structured Programming: Integrated Practices, Basili and Baker, eds., IEEE Press, 1978.)
- C8. V. Basili, "Structured Programming II, Portfolio in the Computer Programming Management Area," Auerbach Information Management Series (14-03-02), (update appears as chapter in Structured Programming: Integrated Practices, Basili and Baker, eds. IEEE Press, 1979.
- C9. V. Basili, "Structured Walk-through," in Structured Programming: Integrated Practices, IEEE Press, 1980.
- C10. V. Basili, "Program Segmentation Using Composite Design and Analysis," in Structured Programming: Integrated Practices, IEEE Press, 1980.
- C11. V. Basili, "Resource Models," in Software Metrics, MIT Press, pp. 111-130, 1981.
- C12. V. Basili, "Data Collection, Analysis and Validation," in Software Metrics, MIT Press, pp. 143-160, 1981.

- C13. V. Basili, Contributions to the chapters on Programming Languages and Software Methodology, in What Can Be Automated? (COSERS Report, sponsored by the NSF, Bruce Arden, ed.), MIT Press, 1985.
- C14. V. Basili, "A Plan for Empirical Studies of Programmers," in Empirical Studies of Programmers, E. Soloway and S. Iyengar, eds., Ablex Publishers, pp. 733-743, 1986.
- C15. V. Basili, "Measurement and Evaluation of Software Programming Environments," in Requirements for a Software Engineering Environment, Ablex Publishers, pp. 93-104, 1989.
- C16. V. Basili and H.D. Rombach, "Measurement Panel, Panel Report, Panel on Measurement," in Requirements for a Software Engineering Environment, Ablex Publishers, pp. 15-26, 1989.
- C17. V. Basili, "The Experimental Paradigm in Software Engineering," in Lecture Notes in Computer Science 706, Experimental Software Engineering Issues: Critical Assessment and Future Directives, H.D. Rombach, V. Basili, and R. Selby, eds., Proceedings of Dagstuhl-Workshop, September 1992, published by Springer-Verlag, 1993.
- C18. V. Basili, "Formal Methods in Systems Engineering," in Software Quality: A Modeling and Measurement View, Peter Ryan and Chris Sennett, eds., Springer-Verlag, pp. 71-80, 1993.
- C19. V. Basili, "The Experience Factory and its Relationship to Other Improvement Paradigms," in Lecture Notes in Computer Science 717, Proceedings of ESEC'93, Springer-Verlag, 1993.
- C20. V. Basili, "Applying the Goal/Question/Metric Paradigm in the Experience Factory," in Software Quality Assurance and Measurement: Worldwide Perspective, N. Fenton, R. Whitty, and Y. Lizuka, eds., International Thomson Computer Press, pp. 21-44, 1995.
- C21. V. Basili, "The Experience Factory and its Relationship to Other Quality Approaches," in Advances in Computers 41, Academic Press, 1995.
- C22. V. Basili, "Evolving and Packaging Reading Technologies," in Achieving Quality in Software, Proceedings of AQUIS '96, 1996.
- C23. F. Shull and V. Basili, "Reading Techniques," in The Testing Practitioner, by Erik van Veenendal, UTN Publishers, pp. 143-163, 2002.
- C24. S. Vegas, N. Juristo, and V. Basili, "A Process for identifying Relevant Information for a Repository: A Case Study for Testing Techniques," in Managing Software Engineering Knowledge, Aybuke Aurum, Ross Jeffery, Claes Wohlin, and Meliha Handzic, eds., Springer-Verlag, pp. 199-230, 2003.
- C25. F. Shull, J. Carver, G.H. Travassos, J.C. Maldonado, R. Conradi, and V.R. Basili, "Replicated Studies: Building a Body of Knowledge about Software Reading Techniques," in Lecture Notes on Empirical Software Engineering, N. Juristo and A. Moreno, eds., World Scientific Publications, pp. 39-84, 2003.
- C26. V. Basili, "The Role of Controlled Experiments in Software Engineering Research," in Empirical Software Engineering Issues, LNCS 4336, V. Basili et al., eds., Springer-Verlag, pp. 33-37, 2007.
- C27. L. Hochstein, T. Nakamura, F. Shull, N. Zazworka, V.R. Basili, and M.V. Zelkowitz, "An Environment for Conducting Families of Software Engineering Experiments", in Advances in Computers 74, M.V. Zelkowitz, ed., Elsevier, pp. 175-200, 2008.

- C28. S.A. Sarcia, G. Cantone, and V.R. Basili, "Auto-associative Neural Networks to Improve the Accuracy of Estimation Models" in Artificial Intelligence Applications for Improved Software Engineering Development: New Prospects, F. Meziane & S. Baleda, eds, IGI Global, pp. 00-00, 2009

### Journal Publications

- J1. W. Rheinboldt, V. Basili, and C. Mesztenyi, "On a Programming Language for Graph Algorithms," *BIT* vol. 12(2): 220-241, 1971.
- J2. V. Basili and A. Turner, "A Transportable Extendible Compiler," *Software Practices & Experiences*, vol. 5(3): 297-298, July-September 1975.
- J3. V. Basili, "A Structured Approach to Language Design," *Journal of Computer Languages*, vol. 1(3), 1975.
- J4. V. Basili and A. Turner, "Iterative Enhancement: A Practical Technique for Software Development," *IEEE Transactions on Software Engineering*, vol. 1(4), December 1975 (update appears as Portfolio 14-01-05, Auerbach Information Management Series 1978).
- J5. K. Harada and V. Basili, "Structured Programming Language for Compiler Writing: SIMPL-T (in Japanese)," *Information Processing*, Information Processing Society of Japan, vol. 17(3): 222-228, March 1976.
- J6. V. Basili and M. Zelkowitz, "Measuring Software Development Characteristics in the Local Environment," *Journal of Computers and Structures*, vol. 10: 39-43, 1979.
- J7. V. Basili and R. Reiter, Jr., "An Investigation of Human Factors in Software Development," *IEEE Computer*, vol. 12(12): 21-38, December 1979.
- J8. V. Basili and J. Perry, "Transporting Up: A Case Study," *Journal of Systems and Software*, vol. 1(2): 123-129, February 1980.
- J9. V. Basili and R. Noonan, "A Comparison of the Axiomatic and Functional Models of Structured Programming," *IEEE Transactions on Software Engineering*, vol. 6(1): 454-465, September 1980.
- J10. V. Basili and R. Reiter, Jr., "A Controlled Experiment Quantitatively Comparing Software Development Approaches," *IEEE Transactions on Software Engineering*, vol. 7(3): 299-320 (IEEE Computer Society Outstanding Paper Award), May 1981.
- J11. V. Basili and S. Sutton, "The Flex Software Design System: Designers Need Languages, Too," *IEEE Computer Magazine*, vol. 14(11): 95-102, November 1981.
- J12. V. Basili and K. Freburger, "Programming Measurement and Estimation in the Software Engineering Laboratory," *Journal of Systems and Software*, vol. 2(1): 47-57, 1981.
- J13. V. Basili and J. Beane, "Can the Parr Curve Help with the Manpower Distribution and Resource Estimation Problems?" *Journal of Systems and Software*, vol. 2(1): 59-69, 1981.
- J14. V. Basili and H. Mills, "Understanding and Documenting Programs," *IEEE Transactions on Software Engineering*, vol. 8(3): 270-283, May 1982.

- J15. V. Basili and D. Dunlop, "A Comparative Analysis of Functional Correctness," *ACM Surveys*, vol. 14(2): 229-244, June 1982.
- J16. V. Basili, J. Gannon, E. Katz, M. Zelkowitz, J. Bailey, E. Kruesi, and S. Sheppard, "Monitoring an Ada Software Development Project," *Ada Letters*, vol. 2(1): 58-61, July 1982.
- J17. V. Basili and D. Hutchens, "An Empirical Study of a Syntactic Complexity Family," *IEEE Transactions on Software Engineering*, vol. 9(6): 664-672, November 1983.
- J18. V. Basili, R. Selby and T. Phillips, "Metric Analysis and Data Validation Across FORTRAN Projects," *IEEE Transactions on Software Engineering*, vol. 9(6): 652-663, November 1983.
- J19. D. Dunlop and V. Basili, "A Heuristic for Deriving Loop Functions," *IEEE Transactions on Software Engineering*, vol. 10(3): 275-285, May 1984.
- J20. V. Basili and B. Perricone, "Software Errors and Complexity: An Empirical Investigation," *Communications of the ACM*, vol. 27(1): 42-52, January 1984.
- J21. M. Zelkowitz, R. Yeh, R. Hamlet, J. Gannon, and V. Basili, "Software Engineering Practices in the US and Japan," *IEEE Computer*, vol. 17(6): 57-66, June 1984.
- J22. V. Basili, S. Chang, J. Gannon, E. Katz, N. Panlilio-Yap, C. Ramsey, M. Zelkowitz, J. Bailey, E. Kruesi, S. Sheppard, "Monitoring an Ada Software Development," *Ada Letters*, vol. 4(1): 32-39, July/August 1984.
- J23. V. Basili and D. Weiss, "A Methodology for Collecting Valid Software Engineering Data," *IEEE Transactions on Software Engineering*, vol.10(3): 728-738, November 1984.
- J24. D. Weiss and V. Basili, "Evaluating Software Development by Analysis of Changes: Some Data from the Software Engineering Laboratory," *IEEE Transactions on Software Engineering*, vol. 11(2): 157-168, February 1985.
- J25. D. Dunlop and V. Basili, "Generalizing Specifications for Uniformly Implemented Loops," *ACM Transactions on Programming Languages and Systems*, January 1985.
- J26. D. Hutchens and V. Basili, "System Structure Analysis: Clustering with Data Bindings," *IEEE Transactions on Software Engineering*, vol. 11(8): 749-757, August 1985.
- J27. V. Basili, E. Katz, N.M. Panlilio-Yap, C. Ramsey, and S. Chang, "Characterization of an Ada Software Development," *IEEE Computer*, vol. 18(9): 53-65, September 1985.
- J28. C. Doerflinger and V. Basili, "Monitoring Software Development Through Dynamic Variables," vol. 11(9): 978-985, September 1985. Special issue of *IEEE Transactions on Software Engineering* containing the best papers selected from COMPSAC proceedings of 1982 and 1983.
- J29. V. Basili, R. Selby, and D. Hutchens, "Experimentation in Software Engineering," *IEEE Transactions on Software Engineering* vol. 12(7): 733-743, July 1986 (invited paper).
- J30. J. Gannon, E. Katz, and V. Basili, "Metrics for Ada Packages: An Initial Study," *Communications of the ACM*, vol.19(7): 616-623, July 1986.

- J31. H.D. Rombach and V. Basili, "Quantitative Software Qualitätssicherung: Eine Methode für Definition und Nutzung geligneter Masse," German Computer Society, *GI Informatik Spektrum*, June 1987.
- J32. H.D. Rombach and V. Basili, "Implementing Quantitative SQA: A Practical Model," *IEEE Software*, vol. 4(5): 6-9, September 1987.
- J33. R. Selby, V. Basili, and T. Baker, "Cleanroom Software Development: An Empirical Evaluation," *IEEE Transactions on Software Engineering*, vol. 13(9): 1027-1037, September 1987.
- J34. V. Basili and R. Selby, "Comparing the Effectiveness of Software Testing Strategies," *IEEE Transactions on Software Engineering*, vol. 13(12): 1278-1296, December 1987.
- J35. V. Basili and H.D. Rombach, "The TAME Project: Towards Improvement-Oriented Software Environments," *IEEE Transactions on Software Engineering*, vol. 14(6), June 1988.
- J36. V. Basili, "Metodologia del Software," *Il Pensiero Informatico*, N.1, Gruppo Finsiel, Rome, Italy, pp. 6-10 (invited paper), December 1988.
- J37. H. Mills, V. Basili, J. Gannon, and R. Hamlet, "Mathematical Principles for a First Course in Software Engineering," *IEEE Transactions on Software Engineering*, vol. 15(5): 550-559, May 1989.
- J38. C. Ramsey and V. Basili, "An Evaluation of Expert Systems for Software Engineering Management," *IEEE Transactions on Software Engineering*, vol.15(6): 747-759, June 1989.
- J39. V. Basili, "Viewing Maintenance as Reuse-Oriented Software Development," *IEEE Software*, vol. 7(1): 19-25, January 1990.
- J40. M. Daskalantonakis, V. Basili, and R. Yacobellis, "A Method for Assessing Software Measurement Technology," *Quality Engineering* 3(1): 27-40, 1990-91.
- J41. G. Caldiera and V. Basili, "Identifying and Qualifying Reusable Software Components," *IEEE Computer*, vol. 24(2): 61-70, February 1991.
- J42. R. Selby and V. Basili, "Analyzing Error-Prone System Structure," *IEEE Transactions on Software Engineering*, vol. 17(2): 141-152, February 1991.
- J43. V. Basili and R. Selby, "Paradigms for Experimentation and Empirical Studies in Software Engineering," *Reliability Engineering and System Safety*, vol. 32(1-2): 171-193, 1991.
- J44. V. Basili and H.D. Rombach, "Support for Comprehensive Reuse", *Software Engineering Journal*, IEE British Computer Society, vol. 6(5): 303-316, September 1991.
- J45. V. Basili and J. Musa, "The Future Engineering of Software: A Management Perspective," *IEEE Computer*, vol. 24(9): 90-96, September, 1991. Reprinted in *Software Project Management Readings and Cases* by Chris F. Kemerer, pp. 30-40, The McGraw-Hill Companies, Inc., 1997.
- J46. V. Basili, G. Caldiera, and G. Cantone, "A Reference Architecture for the Component Factory," *ACM Transactions on Software Engineering and Methodology (TOSEM)*, vol. 1(1): 53-80, January 1992.
- J47. M. Oivo and V. Basili, "Representing Software Engineering Models: The TAME Goal Oriented

- Approach,” *IEEE Transactions on Software Engineering*, vol. 18(10): 886-898, October 1992.
- J48. L. Briand, V. Basili, and W. Thomas, “A Pattern Recognition Approach for Software Engineering Data Analysis,” *IEEE Transactions of Software Engineering*, vol. 18(11): 931-942, November 1992.
- J49. A. Delis and V. Basili, “Ada Reusability and System Design Assessment using The Data Binding Tool,” *International Journal of Software Engineering and Knowledge Engineering*, vol. 3(3), September 1993.
- J50. L. Briand, V. Basili, and C. Hetmanski, “Developing Interpretable Models with Optimized Set Reduction for Identifying High Risk Software Components,” *IEEE Transactions on Software Engineering*, vol.19(11):1028-1044, November 1993.
- J51. V. Basili, M. Daskalantonakis, and R. Yacobellis, “Technology Transfer at Motorola,” *IEEE Software Magazine*, vol. 11(2): 70-76, March 1994.
- J52. S.H. Kan, V. Basili and L.N. Shapiro, “Software Quality: An Overview from the Total Quality Management Perspective,” *IBM Systems Journal*, vol. 33(1), March 1994.
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- T90. V. Basili and S. Abd-El-Hafiz, "A Knowledge-Based Approach to the Analysis of Loops," University of Maryland, CS-TR-3122, UMIACS-CS-TR-93-79, March 1994.
- T91. V. Basili, L. Briand, and S. Morasca, "Defining and Validating High-Level Design Metrics," University of Maryland, CS-TR-3301, UMIACS-CS-TR-94-75, June 1994.
- T92. A. Porter, L.G. Votta Jr., and V.R. Basili, "Comparing Detection Methods For Software Requirements Inspections: A Replicated Experiment," University of Maryland, CS-TR- 3327, UMIACS-TR-94-93, July 1994.
- T93. V. Basili, L. Briand, W. Melo, and C. Seaman, "Characterizing and Assessing a Large-Scale Software Maintenance Organization," University of Maryland, CS-TR-3354, UMIACS-TR-94-112, November 1994.
- T94. V. Basili, L. Briand, and S. Morasca, "Property-based Software Engineering Measurement," University of Maryland, CS-TR-3368, UMIACS-TR-94-119, November 1994.
- T95. V. Basili, L. Briand, and S. Morasca, "Goal-Driven Definition of Product Metrics Based on Properties," University of Maryland, CS-TR-3346, UMIACS-TR-94-106, December 1994.
- T96. V. Basili, F. McGarry, R. Pajerski, G. Page, S. Waligora, and M. Zelkowitz, "Software Process Improvement in the NASA Software Engineering Laboratory," CMU/SEI-94-TR-22, ESC-TR-94-022, December 1994.
- T97. V. Basili, L. Briand, and W.M. Thomas, "Domain Analysis for the Reuse of Software Development Experiences," Nineteenth Annual Software Engineering Workshop, NASA/Goddard Space Flight Center,

Greenbelt, MD, December 1994.

- T98. V. Basili, J. Valett, S. Condon, L. Briand, and Y. Kim, "Building an Experience Factory for Maintenance," Nineteenth Annual Software Engineering Workshop, NASA/Goddard Space Flight Center, Greenbelt, MD, December 1994.
- T99. V. Basili, L. Briand, and W. Melo, "Measuring the Impact of Reuse on Quality and Productivity in Object-Oriented Systems," University of Maryland, CS-TR-3395, January 1995.
- T100. V. Basili, W. Thomas, and A. Delis, "An Analysis of Errors in a Reuse-Oriented Development Environment," University of Maryland, CS-TR-3424, UMIACS-TR-95-24, February 1995.
- T101. V. Basili, A. Porter, and L. Votta, Jr., "Comparing Detection Methods For Software Requirements Inspections: A Replicated Experiment," University of Maryland, CS-TR-3327.1, UMIACS-TR-94-93.1, April 1995.
- T102. V. Basili, L. Briand, and W. Melo, "A Validation of Object-Oriented Design Metrics as Quality Indicators," University of Maryland, CS-TR-3443, UMIACS-CS-TR-95-40, April 1995.
- T103. V. Basili and G. Caldiera, "The Experience Factory Strategy and Practice," University of Maryland, CS-TR-3483, UMIACS-TR-95-67, May 1995.
- T104. V. Basili, "Finding an Experimental Basis for Software Engineering" (interview), *IEEE Software*, vol. 28(3), pp. 92-93, May 1995.
- T105. V. Basili, L. Briand, S. Condon, Y. Kim, W. Melo, and J. Valett, "Understanding and Predicting the Process of Software Maintenance Releases," University of Maryland, CS-TR-3502, UMIACS-TR-95-79, August 1995.
- T106. V. Basili, S. Green, O. Laitenberger, F. Shull, S. Sorumgaard, and M. Zelkowitz, "The Empirical Investigation of Perspective-Based Reading," Twentieth Software Engineering Workshop, NASA/Goddard Software Engineering Laboratory (SEL), College Park, MD, November 1995.
- T107. V. Basili, S. Green, O. Laitenberger, F. Shull, S. Sorumgaard, and M. Zelkowitz, "The Empirical Investigation of Perspective-Based Reading," University of Maryland, CS-TR-3585, UMIACS-TR-95-127, December 1995.
- T108. V. Basili, L. Briand, Y. Kim, W. Melo, and C. Seaman, "Qualitative Analysis for Maintenance Process Assessment," University of Maryland, CS-TR-3592, UMIACS-TR-96-7, January 1996.
- T109. V. Basili and C. Seaman, "Communication and Organization in Software Development: An Empirical Study," University of Maryland, CS-TR-3619, UMIACS-TR-96-23, April 1996.
- T110. V. Basili, S. Plfeeger, L. Briand, and K. El-Emam, "Measuring Maturity," Letter to the editor, *IEEE Software*, vol. 13(4), pp. 10 & 12, July 1996.
- T111. V. Basili, J. Kontio, and H. Englund, "Experiences from an Exploratory Case Study with a Software Risk Management Method," University of Maryland, CS-TR-3705, UMIACS-TR-96-75, August 1996.
- T112. V. Basili, S. Green, O. Laitenberger, F. Lanubile, F. Shull, S. Sorumgaard, and M. Zelkowitz, "Packaging Researcher Experience to Assist Replication of Experiments," International Software Engineering

Research Network (ISERN) Meeting, Sydney, Australia, August 1996.

- T113. V. Basili, L. Briand, and S. Morasca, "Attribute Properties and Measurement Scales," Letter to the editor, *IEEE Transactions on Software Engineering*, vol. 22(10), October 1996.
- T114. V. Basili, G. Caldiera, F. Lanubile, and F. Shull, "Studies on Reading Techniques," Twenty-First Software Engineering Workshop, Goddard Space Flight Center, Greenbelt, MD, December 1996.
- T115. V. Basili, S. Condon, S. Kraft, J. Kontio, C. Seaman, and Y. Kim, "Evolving the Reuse Process," Twenty-First Software Engineering Workshop, Goddard Space Flight Center, Greenbelt, MD, December 1996.
- T116. V. Basili and J. Kontio, "Risk Knowledge Capture in Riskit Methods," Twenty-First Software Engineering Workshop, Goddard Space Flight Center, Greenbelt, MD, December 1996.
- T117. V. Basili, F. Shull, and W. Melo, "An Inductive Method for Discovering Design Patterns from Object-Oriented Software Systems," University of Maryland, CS-TR-3597, UMIACS-TR-96-10, December, 1996.
- T118. A. Parra, C. Seaman, V. Basili, S. Kraft, S. Condon, S. Burke, and D. Yakimovich, "The Package-Based Development Process in the Flight Dynamics Division," Twenty-Second Software Engineering Workshop, NASA/Goddard Space Flight Center, Greenbelt, MD, December 1997.
- T119. R. Pajerski and V. Basili, "The SEL Adapts to Meet Changing Times," Twenty-Second Software Engineering Workshop, NASA/Goddard Space Flight Center, Greenbelt, MD, December 1997.
- T120. V. Basili, F. Lanubile, and F. Shull, "Investigating Reading Techniques for Framework Learning," University of Maryland, CS-TR-3896 and UMIACS-TR-98-26, April 1998.
- T121. A. Parra, D. Schultz, J. Boger, S. London, R. Webby, M. Morisio, D. Yakimovich, J. Carver, M. Stark, V. Basili, and S. Kraft, "Baselining the New GSFC Information Systems Center: The Foundation for Verifiable Software Process Improvement," Twenty-Third Software Engineering Workshop, NASA/Goddard Spaceflight Center, Greenbelt, MD, December 1998.
- T122. V. Basili, F. Shull, and F. Lanubile, "Building Knowledge through Families of Software Studies: An Experience Report," University of Maryland, CS-TR-3983 and UMIACS-TR-99-05, January 1999.
- T123. V. Basili, C. Seaman, R. Tesoriero, and M. Zelkowitz, "OSMA Software Program Domain Analysis Guidebook," University of Maryland, CS-TR-4003 and UMIACS-TR-99-16, March 1999.
- T124. V. Basili et al., "Final Report, NSF Workshop on a Software Research Program for the 21<sup>st</sup> Century," *Software Engineering Notes*, vol. 24(3), May 1999.
- T125. F. Shull, G. Travassos, J. Carver, and V. Basili, "Evolving a Set of Techniques for OO Inspections," University of Maryland, CS-TR-4070, October 1999.
- T126. G. Travassos, F. Shull, M. Fredericks, and V. Basili, "Detecting Defects in Object Oriented Designs: Using Reading Techniques to Increase Software Quality," *ACM SIGPLAN Notices*, vol. 34(10), pp. 47-56, October 1999.
- T127. D. Yakimovich, G. Travassos, V. Basili, "A Classification of Software Components Incompatibilities for

COTS Integration,” Twenty-Fourth Software Engineering Workshop, NASA/Goddard Space Flight Center, Greenbelt, MD, December 1999.

- T128. V. Basili, F. Shull, I. Rus, and O. Laitenberger, “Improving Software Inspections by Using Reading Techniques,” The International Conference on Software Engineering (ICSE), Tutorial, June 2000.
- T129. Z. Zhang, V. Basili, and B. Shneiderman, "Perspective-based Usability Inspection: An Empirical Validation of Efficacy," University of Maryland, CS-TR-4193 and UMIACS-TR-2000-72, October 2000.
- T130. M. Lindvall, V. Basili, B. Boehm, P. Costa, F. Shull, R. Tesoriero, L. Williams, and M. Zelkowitz, “Results from the 2nd eWorkshop on Agile Methods,” Technical Report 02-109, Fraunhofer Center for Experimental Software Engineering, College Park, MD, August 2002.
- T131. R. Conradi, V. Basili, J. Carver, F. Shull, and G. Travassos, “A Pragmatic Documents Standard for an Experience Library: Roles, Documents, Contents, and Structure,” University of Maryland, CS-TR-4235 and UMIACS-TR-2001-24, April 2001.
- T132. G. Travassos, F. Shull, J. Carver, and V. Basili, “Reading Techniques for OO Design Inspections,” University of Maryland, CS-TR-4353 and UMIACS-TR-2002-33, April 2002.
- T133. J. Carver, F. Shull, and V. Basili, “Investigating the effect of Process Experience on Inspection Effectiveness,” University of Maryland, CS-TR-4441, March 2003.
- T134. J. Carver, J. Van Voorhis, and V. Basili, “Investigating the Interaction Between Inspection Process Specificity and Software Development Experience,” University of Maryland, CS-TR-4532, October 2003.
- T135. V. Basili, S. Asgari, J. Carver, L. Hochstein, J. Hollingsworth, F. Shull, and M. Zelkowitz, “A Pilot Study to Evaluate Development Effort for High Performance Computing,” University of Maryland, CS-TR-4588, April 2004.
- T136. S. Fabbri, J. Maldonado, E. Hohn, L. Martimiano, M. Mendonca, F. Shull, J. Carver, and V. Basili, “Data Analysis of the First Two PBR Replications in Readers Project,” University of Sao Paulo, Brazil, TR-225, May 2004.
- T137. R. Carbon, M. Ciolkowski, C. Denger, M. Lindvall, F. Shull, P. Costa, D. Rombach, and V. Basili, “Inspections and Pair Programming – Competing or Complementary? Experiences from an Expert eWorkshop,” Fraunhofer Center – Maryland, FCMD-TR-04-101, May 2005.
- T138. L. Hochstein and V. Basili, “HPC- The ASC-Alliance projects: A case study of large-scale parallel scientific code development,” University of Maryland, CS-TR-4834 and UMIACS-TR-2006-50, October 2006.
- T139. P. Donzelli, F. Shull, S. Asgari, and V. Basili, "High Dependability Computing Program: Evolving a Dependability Requirements Elicitation and Modeling Framework Based on Use," University of Maryland, CS-TR-4851 and UMIACS-TR-2007-06, November 2006.
- T140. L. Hochstein, T. Nakamura, F. Shull, N. Zazworka, M. Voelp, M.V. Zelkowitz, and V. Basili, “An Environment of Conducting Families of Software Engineering Experiments,” University of Maryland, CS-TR- 4877 and UMIACS-TR-2007-28, May 2007.

T141. S.A. Sarcia, V.R. Basili, and G. Cantone, "An Approach to Improving Parametric Estimation Models in the Case of Violation of Assumptions Based Upon Risk Analysis," University of Maryland, CS-TR-4928 and UMIACS-TR-2008-20, December 2008.

### Invited Talks and Tutorials

#### "The TAME Project"

Anni '90'	Rome	Italy	February 14-19, 1988
Northeastern University	Boston	MA	May 5, 1988
Vitro	Silver Spring	MD	October 14, 1988
Fudan University	Fudan	China	February 1-4, 1989

#### "Software Quality Fundamentals"

Natnl. Edu. Quality Initiative	Washington	DC	May 1988
Mentor Graphics	Beaverton	OR	September 1988
Tektronix	Beaverton	OR	September 1988

"Resource Models," COMSAT, Clarksburg, MD, June 1988.

"Software Quality: Future Direction," Embedded Processing Conference, Washington, D.C., June 1988.

"Tutorial: Software Quality Fundamentals," Verilog, Carcassonne, France, July 4-5, 1988.

#### "TAME: Tailoring A Measurement Environment"

NSA	Baltimore	MD	August 1988
Digital Equipment Co.	Nashua	NH	August 1988

"Validating Software," COMSAT, Clarksburg, MD, September 6, 1988.

"Software Metrics," INTEL, Hillsboro, OR, September 9, 1988.

"Reuse: A Comprehensive Framework," Software Engineering Workshop, Cagliari, Italy, September 1988.

"Reusing Existing Software," CRIAI Research Institute, Naples, Italy, September 16, 1988.

"Measurement and Modeling," First International Workshop on Software Quality Improvement, Tokyo, Japan, February 6-10, 1989.

"Improving the Software Process and Product in A Measurable Way," Nippon Electric Company, Tokyo, Japan, February 13-15, 1989.

"The Role of Product Assurance in Software Development," IBM, Rockville, MD, March 1989.

"Software Reliability," College of Engineering Spring Reliability Seminar Series, University of Maryland, College Park, MD, April 6, 1989.

"Reuse Activities at the University of Maryland," Contel, Chantilly, VA, May 31, 1989.

"Software Quality," SYSTECH, Rome, Italy, June 12-13, 1989.

"Software Development: A Paradigm for the Future," Symposium on Software Factories, University of Bari,

Italy, June 1989.

“Metrics for Software Project Management,” Motorola, Schaumburg, IL, October 1990.

“Improving the Software Process and Product in A Measurable Way”

SRA/Japan	College Park	MD	July 1989
IBM Canada, Ltd.	Toronto	Canada	February 1990
IBM Canada, Ltd.	Toronto	Canada	March 1990
IBM	Denver	Colorado	March 1990
IBM	Toronto	Canada	May 1990
IBM	Poughkeepsie	NY	May 1990
Marconi Underwater Systems	Hertfordshire	England	July 1990
IBM	Manassas	VA	September 1990
IBM	Armonk	NY	September 1990
Pacific Northwest	Portland	OR	October 1990
Westinghouse	Pittsburgh	PA	December 1990
Pretoria University	Johannesburg	So. Africa	February 1991

“Improving the Software Resource Estimation and Allocation in A Measurable Way,” IBM Bethesda, MD, September 13-14, 1989.

“Packaging Experience for an Improved Process,” IBM Bethesda, MD, December 14-15, 1989.

“Recent Advances in Software Measurement,” Bull Company, NH, May 1990.

“The Experience Factory: Packaging Software Experience”

IBM	Thornwood	NY	May 1990
Coopers & Lybrand	New York	NY	May 1990
Bull Company	New Hampshire	NH	May 1990
Northrop Corporation	Los Angeles	CA	June 1990
Hughes Aircraft Company	Los Angeles	CA	October 1990
Syracuse University	Syracuse	NY	October 1990
Purdue University	West Lafayette	IN	November 1990
USC	Los Angeles	CA	November 1990
NIST	Gaithersburg	MD	March 1991
Ericsson	Oslo	Norway	September 1991
Ericsson	Arendal	Norway	September 1991
IBM	Yorktown Heights	NY	November 1991
Symposium Metriken ‘92’	Munich	Germany	January 1992
IBM	Tucson	AZ	April 1992
IBM	San Jose	CA	April 1992
SEKE ‘92’	Capri	Italy	June 1992
Universita degli Studi di Bari	Bari	Italy	March 1993

“Software Quality Improvement: An Organized Approach”

IBM	Dallas	TX	May 1991
Ericsson Telecom	Stockholm	Sweden	May 1991

“Support for Comprehensive Reuse,” Nippon Electric Company. (NEC), Omni Park Central Hotel, New York, NY, May 20, 1991.

“Software Reuse: Concepts, Capabilities, Management,” Witwatersrand and Pretoria Universities, Johannesburg, South Africa, October 1991.

“Software Quality: A Modeling and Measurement View,” Formal Methods Workshop ‘91, Drymen, Scotland, November 1991.

“Resource Modeling,” Seventh International Cocomo Est. Meeting, SEI, Pittsburgh, PA, November 1991.

“Packaging Software Experience: A Motivation for Software Research”

Kaiserslautern University	Kaiserslautern	Germany	January 1992
Georgia Tech	Atlanta	GA	April 1992
University Rome 2	Rome	Italy	June 1992

“A Sample Experience Factory: The Software Engineering Laboratory at NASA/GSFC,” Columbia University, NY, February 1992.

“The Experience Factory: Packaging Software Engineering Experiences for Project Development,” National Engineering Consortium: “InfoVision ComForum,” Orlando, FL., 19-20 November 1992.

“Software Modeling and Experimentation,” Florida Atlantic University, Boca Raton, FL, February 1993.

“Applying the Goal/Question/Metric Paradigm in the Experience Factory,” at CASE Center, Syracuse University, Syracuse, NY, October 6, 1993.

“Measurement, Modeling, Analysis, and Experimentation in Software Engineering,” at the National Academy of Sciences, Washington, D.C., October 1993.

“The Experience Factory: How to Build and Run One,” Sixteenth International Conference on Software Engineering, Sorrento, Italy, May 1994.

“Software Measurement Implementation and Practice,” Seminar Sponsored by Kaman Sciences Corporation, Utica, NY, at the Center for Adult Education, University of Maryland, College Park, MD, August 1994.

“The Experience Factory: How to Build and Run One,” Stockholm University and Royal Institute of Technology, Stockholm, Sweden, October 1994.

“Improved Productivity of Quality Software,” SOFT - 13, Linkoping University, Linkoping, Sweden, October 1994.

“A Capability Based Software Organization: Building Core Competencies in Software,” SYSTECH, Rome, Italy, October 1994.

“The State and Use and Defect on US Companies,” Kyoto, Japan, November 1994.

“Software Quality Assessment,” Wayne State University, Detroit, MI, December 1994.

“Software Engineering as a Laboratory Science,” University of Colorado at Colorado Springs, January 1995.

“The Experience Factory: Building Software Competencies in Your Business,” Siemens Corporate Research, Edison, New Jersey, February 1995.

“Building a Software Measurement Program to Improve Software Productivity and Quality,” CS Transport, Paris, France, March 1995.

“Evolving and Packaging Reading Technology,” Second Annual European Industrial Symposium on Cleanroom Software Engineering, Berlin, Germany March 1995.

“Software Engineering as a Laboratory Science,” University of Minnesota, Minneapolis, MN, April 1995.

“The Experience Factory: How to Build and Run One (with Frank McGarry),” International Conference on Software Engineering (ICSE), Seattle, WA, April 1995.

“Software Engineering as a Laboratory Science,” Center for Research and Information, Montreal, Canada, May 1995.

“Evolving and Packaging Reading Technologies,” Third International Conference on Achieving Quality in Software (AQUIS), Florence, Italy, January 1996.

“Using Measurement to Build Core Competencies in Software,” Nanzam University, Nagoya, Japan, February 1996.

“Using Measurement to Build Core Competencies in Software,” Motorola Australia Software Centre (MASC), Adelaide, Australia, February 1996.

“A Practical Approach to Software Quality,” CSIRO, Division of Information Technology, Canberra, Australia, February 1996.

“The Maturing of the Quality Improvement Paradigm in the SEL,” CSIRO, Division of Information Technology, Canberra, Australia, February 1996.

“The Experience Factory,” CSIRO, Division of Information Technology, Canberra, Australia, February 1996.

“Using Measurement to Build Core Competencies in Software,” University of Linkoping, Sweden, March 1996.

“The Experience Factory: How to Build and Run One,” Eighteenth International Conference on Software Engineering (ICSE), Berlin, Germany, March 1996.

“Building Software Development Experiences Through Experimentation,” University of Kaiserslautern, Kaiserslautern, Germany, September 1996.

“Reuse and the NASA Software Strategic Plan” (Workshop), Building Reusable Software, George Mason University, School of Information Technology and Engineering, Fairfax, Virginia, September 1996.

“Improving the Quality of Software,” Goucher College, Randallstown, MD, November 1996.

“Evolving and Packaging Reading Technologies through Experimentation,” Howard University, Washington, D.C., February 1997.

“Building Software Development Experiences through Experimentation,” Cairo University, Faculty of Engineering, Engineering Mathematics Department, Giza, Egypt, March 1997.

“Organizing The Reuse of Software Experiences,” ESIG/FIIA 97, Third International Forum on Applied Computer Science, Tunis, Tunisia, March 1997.

“The Experience Factory: How to Build and Run One” (with F. McGarry), Nineteenth International Conference on Software Engineering (ICSE), Boston, MA, May 1997.

“Evolving and Packaging Reading Techniques Through Experimentation,” University of California at San Diego, San Diego, CA, March 1998.

“The Experience Factory: How to Build and Run One,” Twentieth International Conference on Software Engineering (ICSE), Kyoto, Japan, April 1998.

“The Maturing of the Quality Improvement Paradigm in the SEL,” The Washington, D.C. Quality Assurance Association (WDC-QAA), Sallie Mae Membership Meeting, Reston, VA, May 1998.

“Using Experiments to Build a Body of Knowledge,” The Polytechnic University of Madrid, Madrid, Spain, January 1999.

“Software Improvement Feedback Loops: The SEL Perspective,” Lockheed-Martin, February 1999.

“Reading Techniques in the Software Life Cycle: Theory and Experience,” Verona, Italy, March 1999.

“Software Improvement Feedback Loop: The SEL Experience,” American Society for Quality, Columbia, MD, April 1999.

“Evaluating the Cleanroom Process in the SEL,” Daimler-Chrysler, Germany, May 1999.

“Using Experiments to Build a Body of Knowledge,” Perspectives of System Informatics (PSI), Novosibirsk, Russia, July 1999.

“Software Process Improvement: Prerequisite for Future Competitiveness,” ABB and Software Process Improvement Symposium, Dattwil, Switzerland, September 1999.

“Evolving and Packaging Reading Techniques,” SBES Conference, Florianopolis, Brazil, October 1999.

“Using Experiments to Build a Body of Knowledge,” Federal University of Rio de Janeiro, Brazil, October 1999.

“Evolving and Packaging Reading Techniques Through Experimentation,” Telcordia Technologies, Morristown, NJ, November 1999.

“Process Improvements for Software Quality and Reliability,” Comverse Network System, Boston, MA, January, 2000.

“Using Experiments to Build a Body of Knowledge,” Universidade de Sao Paulo, Sao Paulo, Brazil, March 2000.

“Software Improvement Feedback Loops: The SEL Perspective,” and “Using Experiments to Build a Body of Knowledge,” University of Alberta, Edmonton, Canada, April 2000.

“Using Experiments to Build a Body of Knowledge,” Fifth Annual Electrical Engineering, Computing and

Systems Research Review Day, University of Maryland University College, May 2000.

“Software Improvement Feedback Loops: The SEL Experience,” Software Process Improvement Network (SPIN) Meeting, University of Maryland at Baltimore County, July 2000.

“Software Measurement Implementation and Practice,” A professional development seminar sponsored by the Data & Analysis Center for Software (DACS), Los Alamos, NM, August 2000.

“Improving Software Inspections by Using Reading Techniques” (with F. Shull and I.Rus), tutorial given at ICSE Conference, Toronto, Canada, May 2001.

“Implementing the Experience Factory Concepts as a set of Experience Bases,” Osaka University, Osaka, Japan, June 2001.

“Software Improvement Feedback Loops: The SEL Experience,” Tenth Software Development Expo and Conference, Tokyo, Japan, June 2001.

“Using Experiments to Build a Body of Knowledge,” IPSJ/SIGSE, Tokyo, Japan, June 2001.

“Current Status of Software Quality Research in NASA,” NASDA, Tokyo, Japan, June 2001.

“Using Defect Analysis to Identify Process Goals,” Workshop on Statistical Methods in Software Engineering for Defense Systems, National Academy of Sciences, Washington, D.C., July 2001.

“Building an Experience Base for Software Engineering: A Report on the First eWorkshop,” PROFES, Kaiserslautern, Germany, September 2001.

“Software Measurement Implementation and Practice,” a professional development seminar sponsored by the Data & Analysis Center for Software (DACS), Sandia Labs, Albuquerque, NM, November 2001.

“Experimentation in Software Engineering” (with R. Tesoriero, P. Costa, M. Lindvall, I. Rus, F. Shull, and M. Zelkowitz), Fifth Workshop on NSF-CNPq Readers Project, Salvador, Brazil, January 2002.

“Experimentation in Software Engineering,” University of Rome Tor Vergata and University of Sannio, Rome and Benevento, Italy, March 2002.

“Building an Experience Base for Software Engineering: A Report on the First CeBASE eWorkshop,” University of Sannio, Benevento, Italy, March 2002.

“Implementing the Experience Factory Concepts as a Set of Experience Bases,” University of Sannio, Benevento, Italy, March 2002.

“Implementing the CeBASE Method on the Future Combat Systems (FCS) Program” (with B. Boehm), Software Technology Conference, Salt Lake City, UT, April 2002.

“Software Measurement Implementation and Practice,” Eighth IEEE International Software Metrics Symposium, Ottawa, Canada, June 2002.

“Packaging the Software Engineering Experience in CeBASE,” ISERN, Nara, Japan, September 2002.

“Software Engineering Meets High Performance Computing,” HPCS Software Productivity Workshop,

Arlington, VA, January 2003.

“Complex Systems of Systems: Software Benefits, Risks, and Strategies” (with B. Boehm), Conference on the Acquisition of Software-Intensive Systems, Arlington, VA, January 2003.

“Top Ten Risks in Complex Systems of Systems” (with B. Boehm), Software Technology Conference, Salt Lake City, UT, April 2003.

“Empirical Software Engineering,” MITRE, Arlington, VA, October 2003.

“Empirical Software Engineering: The Synergistic Relationship Between Research and Practice” (Tutorial with F. Shull), Rome, Italy at the ISERN and ISESE Conferences, September and October 2003.

“Empirical Software Engineering: The Synergistic Relationship Between Research and Practice,” Osaka and Tokyo, Japan, November 2003.

“The Role of Empirical Study in Software Engineering”

SPIN	Washington	D.C.	February 2005
University of California, Irvine	Irvine	CA	February 2006
University of Kentucky	Lexington	KY	March 2006

“Using Visualization to Understand Dependability: A Tool Support for Requirements Analysis,” ( with P. Donzelli and D. Hirschbach), given at the 29th NASA/IEEE Software Engineering Workshop (SEW-29), April 2005.

“Better Empirical Science for Software Engineering,” (with S. Elbaum), given at the 28th International Conference on Software Engineering (ICSE 2006), May 2006.

“Establishing a Measurement Program,” Wipro, Chicago, IL, August 2006.

“Large Scale Information Systems and Software,” President’s Council of Advisors on Science and Technology(PCAST), Chicago, IL, August 2006.

“The Role of Empiricism in Software Engineering,” Microsoft Research, Redmond, WA, September 2006.

“Using Empirical Study to Learn about the Development of High-End Codes,” University of Illinois at Chicago, Chicago, IL, November 2006.

“The Role of Empirical Study in Software Engineering”, Microsoft Research Redmond Lab, Microsoft Corporation, Redmond, Washington, February 2007.

“Bridging the Gap between Business Strategy and Software Development,” ICIS 2007, University of Maryland - Baltimore County, Baltimore Maryland & SQS Software Quality Systems AG, Cologne, Germany, April 2007. Similar talks given at CAI, Cobolt, and University of Campinas (Sao Paulo, Brazil).

The CeBASE Projects: My Collaborations with Barry Boehm, ICSE 2007, Barry Boehm Tribute: Lifetime Contributions, Minneapolis, Minnesota, May 2007.

Tutorial on GQM+Stragies Conference Presentation by V.R. Basili and J. Muench, University of Oulu – Online Webinar, October 2007.

“A Methodology for Using Measures to Assess Software Safety Risk from an Independent Testing Perspective (with K. Dangle and L. Esker), ITEA Symposium, Atlantic City, November 2008.

### **Instructional Television System (Video) - Commercial Tapes**

“Improving the Software Process and Product in a Measurable Way,” IEEE Computer Society Press, Order no. 1990 AV, Part 1 and 2 of 2 Parts, dated 1989.

“The Software Factory,” IEEE Computer Society Press, From the 1990 IBM Colloquium in Computer Science Technology Series, Order no. 2094 AV, Part 1 and 2 of 2 Parts, dated 1990.

“The Experience Factory: A Capability Based Software Organization,” ITS – Instructional Television System at the University of Maryland, Tape 1 and 2 of 2 Tapes, dated October 13-14, 1992.

### **Topics Taught at University of Maryland**

Programming, Introductory Programming, Structured Programming  
Programming Languages  
Runtime Environment of Programming Languages  
Translation of Formal Languages  
Semantic Models of Programming Languages  
Compiler Writing  
Language Design  
Transportability  
Documentation  
Software Engineering  
Software Measurement and Evaluation  
Software Quality  
Quantitative Approach to Software Management and Engineering

### **University Service Other than Teaching**

Member, Search Committee for Chair for Dept. of Computer Science (1973-1974)  
Member, MPSE Division Council (1975-1976)  
Member, MPSE Division Affairs Committee (1975-1976)  
Member, MPSE Division Executive Committee (1975-1976)  
Member, Search Committee for Chair of Computer Science Department (1978-1979)  
Member, MPSE Division Computing Committee (1979-1980)  
Member, University Library Advisory Committee (1980-81, 1982)  
Member, Chancellor’s Advisory Committee on Academic Computing (1980-1981)  
Member, Search Committee for Vice Chancellor for Academic Affairs (1981-1982)  
Chairman, Computer Science Department (1982-1988)  
Member, FULCRUM, IBM Proposal Committee (1984)  
Proposal Manager (with Thomas Bode, IT), University of Maryland/IT Research Institute, Software Engineering Institute Proposal (1983-1985)  
Member, Software Productivity Consortium Proposal Committee (1984-1985)  
Member, Search Committee for Director of Institute for Advanced Computer Studies (1986-1987)  
Chairman, Industrial Associates Program (1983-present)  
Member, Review Committee for CfAR (1990)  
Member, University Conflict of Interest Committee (1990)  
Member, College APAC (Academic Planning Advisory Committee) (1991)

Member of Faculty Advising Group, chaired by Vice President for Academic Affairs (1990-1991)  
Member, College Strategic Planning Committee's subcommittee on retention, recruitment, retirement (1992)  
Member, Search Committee for Director of University of Maryland Institute for Advanced Computer Studies (1992-1994)  
Chairman, Software Engineering Professional Master's Degree Committee  
Member, Dean's Committee to Evaluate UMIACS, (1993)  
Member, UMCP Senate (1994- June 1997)  
Member, Search Committee for Chairman of University of Maryland Department of Computer Science (1994-1995)  
Member, UMIACS/CFAR Merger Committee (1995)  
Secured support and approval for the Fraunhofer Center – Maryland  
Chairman, Search Committee for Chair of Physics Department (1999)  
Review Committee for Computer Science Department Chairman (2004-2005)

**Department/Institute Committees (various years)**

Faculty Recruiting Committee  
Member, Department Council  
Member, Strategic Planning Council  
Industrial Associates Program Coordinator (1983-1995)  
Teaching Review Committee (1994-1995)  
Merit Review Committee (1994-95, 2003-04)  
Member, UMIACS APT Committee, Education Committee (1988-present)  
Member, UMIACS Steering Committee (1988-present)  
Chairman, UMIACS APT Committee (1999-2001, 2003-04, 2004-05)  
Member, Computer Science Advisory Board Committee (2004-2005)  
Member, Computer Science APT Committee (2005-2007)  
Member, Computer Science Department Salary Committee for Professorial Faculty (2006)  
Member, UMIACS Salary Committee for Professorial Faculty (2006)  
Member, Plan of Organization Rewrite Committee (2006)