

Dr. Mark C. Paulk

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Institute for Software Research
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Education

University of Pittsburgh, Pittsburgh, PA

Ph.D., Industrial Engineering, 2005.

Dissertation: “An Empirical Study of Process Discipline and Software Quality.”

Chair: Dr. Mainak Mazumdar, Industrial Engineering.

Committee: Drs. Jayant Rajgopal and Kim Needy, Industrial Engineering. Dr. Chris Kemerer, Katz Business School. Dr. Marc Kellner, Software Engineering Institute.

Vanderbilt University, Nashville, TN

M.S., Computer Science, 1980.

Thesis: “The Classification Space: Applying Factor Analysis to Information Retrieval.”

Honors: Harold Stirling Vanderbilt scholar.

University of Alabama in Huntsville, Huntsville, AL

B.S., Mathematics/Computer Science, 1978.

Honors: National Merit Scholar. Graduated with highest honors.

Research Interests

Software process: including best practices for software engineering, software engineering standards, process definition and improvement, process maturity, organizational change management, empirical research, statistical thinking, statistical process control of software processes, high maturity practices, and agile methods.

Sourcing and service management: best practices for service providers, offshoring, model validation, service management standards, and best practice frameworks.

Work History

Institute for Software Research, Carnegie Mellon University

Senior Systems Scientist, responsible for research into application of quality and process principles to software engineering.
January 2010 – present

IT Services Qualification Center, Institute for Software Research, Carnegie Mellon University

Senior Systems Scientist, responsible for work in eSourcing and research into application of quality and process principles for service providers.
November 2002 – December 2009

Software Engineering Institute, Carnegie Mellon University

Senior Member of the Technical Staff, responsible for work on the Capability Maturity Model for Software and research into the application of quality and process principles for software organizations.
September 1987 – November 2002

System Development Corporation (bought by Burroughs, merged into Unisys)

Senior Systems Analyst, responsible for analysis, design, and implementation of systems software to support distributed processing and real-time experiments.
June 1980 – September 1987

System Development Corporation

Programmer Intern, responsible for programming network software.
June 1979 – August 1979

Online Applications Research

June 1978 – August 1978
Programmer Intern, responsible for programming missile simulations.

Marshall Space Flight Center, NASA

June 1977 – August 1977
Programmer Intern, responsible for programming fluid flow simulations.

Contributions to Process and Quality Research

Dr. Paulk led the team that developed the Capability Maturity Model (CMM) for Software, which was fundamental to applying the principles of Total Quality Management to the software process. Improvement programs based on the Software CMM significantly impact software cost, schedule, and quality by improving business performance while reducing variability, as shown in many studies, some of which were co-authored by Dr. Paulk. Process maturity, as measured by the Software CMM, was incorporated as a cost driver in the well-known COCOMO II cost estimating model, indicating the impact of maturity. The Software CMM was used around the world and inspired development of the CMM Integration for Development (CMMI-DEV) model that has now replaced it. Dr. Paulk formalized the staged architecture used in the Software CMM to measure organizational maturity and identify a roadmap for organizational transformation, based on Watts Humphrey's software process maturity framework.

Dr. Paulk extended these ideas to the continuous representation for process capability as part of his contributions to ISO/IEC 15504 (Process Assessment) while acting as co-project editor of Part 2 (the reference model) of the standard. His work on the capability dimension in this standard provides a general way of describing the capability of a specific process, which is easily extensible to areas other than software engineering. The continuous representation he crafted was directly used in the Systems Engineering CMM and adapted into a variety of other best practice frameworks. Both the staged and continuous representations were adopted by CMMI-DEV, and many process management frameworks use a variant of either the staged or continuous representations.

Dr. Paulk has also contributed to other IEEE and ISO standards as an author and reviewer, including ISO/IEC 12207 (Software Life Cycle Processes), where he drafted the improvement process section, and the ISO 9000 (Quality Management Systems) family of standards, as a reviewer of ISO 9001 and ISO 9000-3 (Guidelines for the Application of ISO 9001 to the Development, Supply, and Maintenance of Software). He is an active member of the IEEE Standards Association as part of his emphasis on deploying best practices to the community.

Many best practice frameworks have been published, but few have been broadly accepted. Dr. Paulk's papers and talks on the effective use of the Software CMM were crucial to its success. His architectural work on staged and continuous representations has been adapted and adopted in many process management frameworks. He has emphasized the importance of navigating the quagmire of standards and models by integrating the good ideas from a diverse set of standards, models, and methodologies.

Dr. Paulk's research on agile methods, such as Scrum and Extreme Programming, targets making appropriate choices for the business environment of the software project. He emphasizes aligning software processes with the business objectives of the organization. He is a strong advocate of the pragmatic use of models, standards, and methodologies that drive bottom-line performance – an advocacy aligned with the engineering philosophy of the economical solution of problems.

Dr. Paulk developed and teaches a class on software process at Carnegie Mellon University as part of the Masters in Software Engineering. He also developed and teaches a class on capability improvement for service organizations, which focuses on applying statistical thinking to service

providers, and a class on agile methods. He also teaches database design for the Industrial Engineering Department at the University of Pittsburgh as field faculty.

Dr. Paulk's work at the IT Services Qualification Center focused on best practices for sourcing and service management. He is a co-author of the eSourcing Capability Model for Service Providers.

Books and Monographs

E.B. Hyder, K.M. Heston, M.C. Paulk, and W.E. Hefley, *The eSourcing Capability Model for Service Providers*, Van Haren Publishing, Zaltbommel, Netherlands, 2010.

M.C. Paulk, "An Empirical Study of Process Discipline and Software Quality," Ph.D. diss., University of Pittsburgh, 2005.

M.C. Paulk, C.V. Weber, B. Curtis, and M.B. Chrissis, *The Capability Maturity Model: Guidelines for Improving the Software Process*, Addison-Wesley Publishing Company, Reading, MA, 1995.

M.C. Paulk, "The Classification Space: Applying Factor Analysis to Information Retrieval," Vanderbilt University, Computer Science Department, Master's Thesis, 1980.

Book Chapters and Collected Papers

M.C. Paulk and M. Iqbal, "eSCM-SP v2: eSourcing Capability Model for Service Providers, Version 2," Chapter 17 in *Frameworks for IT Management, A Pocket Guide*, E. Rozemeijer, J. van Bon, and T. Verheijen (eds), Van Haren Publishing, 2006.

M.C. Paulk and M. Iqbal, "eSCM-SP v2: eSourcing Capability Model for Service Providers, Version 2," in *Frameworks for IT Management*, J. van Bon and T. Verheijen (eds), Van Haren Publishing, 2006.

M.C. Paulk, B. Curtis, M.B. Chrissis, and C.V. Weber, "The Capability Maturity Model for Software," in *Software Engineering, Volume 2: The Supporting Processes, Third Edition*, R.H. Thayer and M. Dorfman (eds), 2005.

M.C. Paulk, "Extreme Programming from a CMM Perspective," Chapter 42 in *Extreme Programming Perspectives*, M. Marchesi, G. Succi, D. Wells, and L. Williams (eds), Addison-Wesley, Boston, MA, 2002.

M.C. Paulk, "Capability Maturity Model for Software," in *Encyclopedia of Software Engineering, Second Edition, Volume 1*, J.J. Marciniak (ed), John Wiley & Sons, New York, NY, 2002, pp. 97-112.

M.C. Paulk, "Models and Standards for Software Process Assessment and Improvement," in *Software Process Improvement*, R. Hunter and R.H. Thayer (eds), IEEE Computer Society Press, Los Alamitos, CA, October 2001, pp. 5-37.

Mark Paulk, "XP from a CMM Perspective," in *eXtreme Programming Pros and Cons: What Questions Remain?* IEEE Computer Society Dynabook, November 2000.

M.C. Paulk, C.V. Weber, and M.B. Chrissis, "The Capability Maturity Model for Software," Chapter 1 in *Elements of Software Process Assessment and Improvement*, K. El Emam and N.H. Madhavji (eds), IEEE Computer Society Press, Los Alamitos, CA, 1999.

M.C. Paulk, "Using the Software CMM with Small Projects and Small Organizations," Chapter 6 in *Software Process Improvement: Concepts and Practices*, E. McGuire (ed), Idea Group Publishing, Hershey, PA, 1999, pp. 76-92.

M.C. Paulk, "Software Process Appraisal and Improvement: Models and Standards," in *Advances in Computers, Volume 46*, M.V. Zelkowitz (ed), Academic Press, San Diego, CA, 1998, pp. 2-33.

M.C. Paulk, "Using the Capability Maturity Model for Software to Drive Change," Chapter 10 in *Information Systems Innovation and Diffusion: Issues and Directions*, T.J. Larsen and E. McGuire (eds), Idea Group Publishing, Hershey, PA, 1998, pp. 196-219.

M.C. Paulk, B. Curtis, M.B. Chrissis, and C.V. Weber, "Capability Maturity Model for Software," in *Software Engineering*, M. Dorfman and R.H. Thayer (eds), IEEE Computer Society Press, Los Alamitos, CA, 1997, 427-438.

M.C. Paulk, B. Curtis, M.B. Chrissis, and C.V. Weber, "The Capability Maturity Model for Software," in *Software Engineering Project Management, Second Edition*, R.H. Thayer (ed), IEEE Computer Society Press, Los Alamitos, CA, 1997, pp. 48-59.

M.C. Paulk, B. Curtis, M.B. Chrissis, and C.V. Weber, "Capability Maturity Model for Software," in *Software Engineering*, M. Dorfman and R.H. Thayer (eds), IEEE Computer Society Press, Los Alamitos, CA, 1996, pp. 427-438.

J.J. Besselman, P. Byrnes, C.J. Lin, M.C. Paulk, and R. Puranik, "Software Capability Evaluations: Experiences from the Field," *SEI Technical Review '93*, 1993.

M.C. Paulk, B. Curtis, M.B. Chrissis, et al., "The Capability Maturity Model for Software," *SEI Technical Review '92*, ed. R.L. van Scoy, Software Engineering Institute, 1992.

Selected Journal Papers

- D.M. Northcutt and M.C. Paulk, "A Statistical Sampling Methodology for Process Assessments," *ASQ Software Quality Professional*, Vol. 12, No. 4, September 2010, pp. 19-28.
- M.C. Paulk, "The Impact of Process Discipline on Personal Software Quality and Productivity," *ASQ Software Quality Professional*, Vol. 12, No. 2, March 2010, pp. 15-19.
- M.C. Paulk, "A History of the Capability Maturity Model for Software," *ASQ Software Quality Professional*, Vol. 12, No. 1, December 2009, pp. 5-19.
- C.F. Kemerer and M.C. Paulk, "The Impact of Design and Code Reviews on Software Quality: An Empirical Study Based on PSP Data," *IEEE Transactions on Software Engineering*, Vol. 35, No. 4, July/August 2009, pp. 534-550.
- M.C. Paulk, K.L. Needy, and J. Rajgopal, "Identify Outliers, Understand the Process," *ASQ Software Quality Professional*, Vol. 11, No. 2, March 2009, pp. 28-37.
- M.C. Paulk and E.B. Hyder, "Common Pitfalls in Statistical Thinking," *ASQ Software Quality Professional*, Vol. 9, No. 3, June 2007, pp. 12-19.
- M.C. Paulk, "Factors Affecting Personal Software Quality," *Crosstalk: The Journal of Defense Software Engineering*, Vol. 19, No. 3, March 2006, pp. 9-13.
- M.C. Paulk, "Agile Methodologies and Process Discipline," *Crosstalk: The Journal of Defense Software Engineering*, Vol. 15, No. 10, October 2002, pp. 15-18.
- M.C. Paulk, "Extreme Programming from a CMM Perspective," *IEEE Software*, Vol. 18, No. 6, November/December 2001, pp. 19-26.
- M.C. Paulk, "Indian Software Excellence: Education and Process Pay Off," *Cutter IT Journal*, Vol. 13, No. 2, February 2000, pp. 23-27.
- M.C. Paulk, "Structured Approaches to Managing Change," *Crosstalk: The Journal of Defense Software Engineering*, Vol. 12, No. 11, November 1999, pp. 4-7.
- M.C. Paulk, "Using the Software CMM With Good Judgment," *ASQ Software Quality Professional*, Vol. 1, No. 3, June 1999, pp. 19-29.
- M.C. Paulk and D. Putman, "Assessing a Level 5 Organization," *Crosstalk: The Journal of Defense Software Engineering*, Vol. 12, No. 5, May 1999, pp. 21-27.
- J.D. Herbsleb, D. Zubrow, D.R. Goldenson, W. Hayes, and M.C. Paulk, "Software Quality and the Capability Maturity Model," *Communications of the ACM*, Vol. 40, No. 6, June 1997, pp. 30-40.
- M.C. Paulk, "Software Process Proverbs," *Crosstalk: The Journal of Defense Software Engineering*, Vol. 10, No. 1, January 1997, pp. 4-7.
- M.C. Paulk, S.M. Garcia, M.B. Chrissis, and W. Hayes, "SW-CMM v2: Feedback on Proposed Changes," *IEEE Software Process Newsletter*, IEEE Computer Society Technical Council on Software Engineering, No. 7, Fall 1996, pp. 5-10.
- M. Konrad, M.B. Chrissis, J. Ferguson, S. Garcia, B. Hefley, D. Kitson, and M. Paulk, "Capability Maturity Modeling at the SEI," *Software Process: Improvement and Practice*, Vol. 2, Issue 1, March 1996, pp. 21-34.

- M.C. Paulk, C.V. Weber, B. Curtis, and M.B. Chrissis, "The SEI/CMM at Its Best: A High-Maturity Case Study," *The Software Practitioner*, Vol. 6, No. 1, January/February 1996, pp. 1,10-11.
- M.C. Paulk, M.D. Konrad, and S.M. Garcia, "CMM Versus SPICE Architectures," *IEEE Software Process Newsletter*, No. 3, Spring 1995, pp. 7-11.
- M.C. Paulk, "The Evolution of the SEI's Capability Maturity Model for Software," *Software Process: Improvement and Practice*, Vol. 1, Pilot Issue, Spring 1995, pp. 3-15.
- M.C. Paulk, "How ISO 9001 Compares With the CMM," *IEEE Software*, Vol. 12, No. 1, January 1995, pp. 74-83.
- M.C. Paulk and S.M. Garcia, "The Impact of Evolving the Capability Maturity Model to Version 1.1," *Crosstalk: The Journal of Defense Software Engineering*, Vol. 7, No. 9, September 1994, pp. 7-11.
- M.C. Paulk and M.D. Konrad, "An Overview of ISO's SPICE Project," *American Programmer*, Vol. 7, No. 2, February 1994, pp. 16-20.
- M.C. Paulk, "Comparing ISO 9001 and the Capability Maturity Model for Software," *Software Quality Journal*, Vol. 2, No. 4, December 1993, pp. 245-256.
- M.C. Paulk, B. Curtis, M.B. Chrissis, and C.V. Weber, "Capability Maturity Model, Version 1.1," *IEEE Software*, Vol. 10, No. 4, July 1993, pp. 18-27.
- B. Curtis and Mark Paulk, "Creating a Software Process Improvement Program," *Information and Software Technology*, Vol. 35, No. 6/7, June/July 1993, pp. 381-386.
- M.C. Paulk, "Real-Time Performance of Distributed Ada Programs," *ACM Ada Letters*, (Special Issue on the International Workshop on Real-time Ada Issues, 13-15 May 1987), Vol. VII, No. 6, Fall, 1987, pp. 77-80.
- M.C. Paulk, "The ARC Network: A Case History," *IEEE Software*, Vol. 2, No. 3, May 1985, pp. 62-69.

Selected Conference Papers

A.L. Ferreira, R.J. Machado, and M.C. Paulk, "On the Traceability of Multi-Model Quality Requirements," *Product Focused Software Development and Process Improvement (PROFES) Conference*, Torea Canne, Italy, June 2011.

A.L. Ferreira, R.J. Machado, J.G. Silva, R.F. Batista, L. Costa, and M.C. Paulk, "Quantitative Analysis of Best Practices Models in the Software Domain," *17th Asia Pacific Software Engineering Conference*, Sydney, December 2010.

A.L. Ferreira, R.J. Machado, J.G. Silva, R.F. Batista, L. Costa, and M.C. Paulk, "Improving Software Inspections Performance," *26th IEEE International Conference on Software Maintenance*, Timișoara, Romania, 12-18 September 2010.

A.L. Ferreira, R.J. Machado, and M.C. Paulk, "Size and Complexity Attributes for Multi-Model Improvement Framework Taxonomy: A Software Domain Best Practices Models Quantitative Analysis," *36th EUROMICRO Conference on Software Engineering and Advanced Applications*, Lille, France, 1-3 September 2010.

B. Balint, C. Forman, E. Hyder, M. Paulk and S. Slaughter, "Process Standardization and Performance in IT and Business Services Outsourcing: A Field Study," *Conference on Information Systems and Technology 2008*, Washington, DC, 11-12 October 2008.

M.C. Paulk, "A Taxonomy for Improvement Frameworks," *World Congress for Software Quality*, Bethesda, Maryland, 15-18 September 2008.

M.C. Paulk, "The Evolution of the Continuous Representation of Process Capability," *International Conference on Software Quality*, Denver, 16-17 October 2007.

B. Balint, C. Forman, S. Slaughter, E. Hyder, and M.C. Paulk, "Process Standardization and Performance Improvement across Outsourcing Service Delivery Centers," *Academy of Management*, Anaheim, CA, 8-13 August 2008.

M.C. Paulk, "Surviving the Quagmire of Process Models, Integrated Models, and Standards," *Proceedings of the ASQ Annual Quality Congress*, 24-27 May 2004, Toronto, Canada.

M.C. Paulk, "Some Explanatory Factors for Software Quality," *International Conference on Software Quality*, Dallas, October 2003.

M.C. Paulk, "Effect of Team Size on Effectiveness of Peer Reviews," *Applications of Software Measurement*, San Jose, CA, 3-6 June 2003.

M.C. Paulk, "Thinking About Change Management in High Maturity Organizations," *Proceedings of the IFIP WG 8.6 Working Conference on Diffusing Software Product and Process Innovations*, Banff, Canada, 8-10 April 2001.

M.C. Paulk, "Applying SPC to the Personal Software Process," *Proceedings of the Tenth International Conference on Software Quality*, New Orleans, LA, 16-18 October 2000, pp. 77-87.

M.C. Paulk, "Practices of High-Maturity Organizations," *Applications of Software Measurement*, San Jose, CA, 6-10 March 2000.

M.C. Paulk, "Analyzing the Conceptual Relationship Between ISO/IEC 15504 (Software Process Assessment) and the Capability Maturity Model for Software," *Proceedings of the Ninth International Conference on Software Quality*, Cambridge, MA, 4-6 Oct 1999, pp. 293-303.

M.C. Paulk, "Toward Quantitative Process Management With Exploratory Data Analysis," *Proceedings of the Ninth International Conference on Software Quality*, Cambridge, MA, 4-6 Oct 1999, pp. 35-42.

M.C. Paulk, "The Capability Maturity Model for Software, Version 2," *Proceedings of the Ninth Annual Software Technology Conference*, Salt Lake City, UT, 27 April - 2 May 1997, Track 10, pp. 247-302.

M.C. Paulk, "Effective CMM-Based Process Improvement," *Proceedings of the 6th International Conference on Software Quality*, Ottawa, Canada, 28-31 October 1996, pp. 226-237.

M.C. Paulk, S.M. Garcia, and M.B. Chrissis, "The Continuing Improvement of the CMM: Version 2," *Proceedings of the Fifth European Conference on Software Quality*, Dublin, Ireland, 16-19 September 1996.

M.C. Paulk, "Process Improvement and Organizational Capability: Generalizing the CMM," *Proceedings of the ASQC's 50th Annual Quality Congress and Exposition*, Chicago, IL, 13-15 May 1996, pp. 92-97.

M.C. Paulk, "A Perspective on the Issues Facing SPICE," *Proceedings of the Fifth International Conference on Software Quality*, Austin, TX, 23-26 October 1995, pp. 415-424.

M.D. Konrad, M.C. Paulk, and Allan W. Graydon, "An Overview of SPICE's Model for Process Management," *Proceedings of the Fifth International Conference on Software Quality*, Austin, TX, 23-26 October 1995, pp. 291-301.

M.C. Paulk, "The Rational Planning of (Software) Projects," *Proceedings of the First World Congress for Software Quality*, ASQC, San Francisco, CA, 20-22 June 1995, section 4.

M.C. Paulk and M.D. Konrad, "Measuring Process Capability Versus Organizational Process Maturity," *Proceedings of the 4th International Conference on Software Quality*, Washington, DC, 3-5 October 1994.

M.C. Paulk, "U.S. Quality Advances: The SEI's Capability Maturity Model," *Proceedings of the Third European Conference on Software Quality*, Madrid, Spain, 3-6 November 1992.

B. Curtis and M.C. Paulk, "The Superior Software Organization," *Proceedings of the Eighth Annual National Joint Conference on Software Quality and Productivity*, NSIA Quality and Reliability Assurance Committee, 10-12 March 1992, Arlington, VA, pp. 802-810.

M.C. Paulk, W.S. Humphrey, and G.J. Pandelios, "Software Process Assessments: Issues and Lessons Learned," *Proceedings of ISQE92*, Juran Institute, 10-11 March 1992, pp. 4B/41-4B/58.

M.C. Paulk, "Comparing Host and Target Environments for Distributed Ada Programs," *Proceedings of the First International Conference on Ada Programming Language Applications for the NASA Space Station*, 2-5 June 1986, section E.3.6.

M.C. Paulk, "Problems with Distributed Ada Programs," *Proceedings of the Fifth Phoenix Conference on Computers and Communication*, 26-28 March 1986, pp. 396-400.

M.C. Paulk and J.D. Johannes, "Ada and SREM," *Proceedings of the 23rd Annual Southeastern Regional ACM Conference*, 14-16 April 1985, pp. 320-326.

K.H. White and M.C. Paulk, "A Distributed Real-Time Testbed Using a Time-Sharing Computing System," *COMPSAC 85*, pp. 182-188.

M.C. Paulk, "The ARC Network: Case Study of a Local Area Network," *Proceedings of the Fourth International Conference on Distributed Computing Systems*, 14-18 May 1984, pp. 312-318.

M.C. Paulk, "Interprocess Communication in Ada," *Proceedings of IEEE Southeastcon '84*, 8-11 April 1984, pp. 33-35.

M.C. Paulk, "The Application-Network Interface: Human Engineering in Interprocess Communication," *Proceedings of the 15th Southeastern Symposium on System Theory*, 28-29 March 1983, pp. 202-204.

M.C. Paulk, "Some Comparative Measures of Computer Interconnection," *Proceedings of the Third International Conference on Distributed Computing Systems*, 18-22 October 1982, pp. 456-460.

M.C. Paulk, "Some Practical Considerations in Local Network Design," *Proceedings of the 20th Annual Southeastern Regional ACM Conference*, 1-3 April 1982, pp. 1-4.

M.C. Paulk, "Patterns and Factor Analysis," *Proceedings of IEEE Southeastcon '81*, 5-8 April 1981, pp. 876-880.

Selected Technical Reports

B. Balint, C. Forman, S. Slaughter, E. Hyder, and M.C. Paulk, "Knowledge Transfer and Quality Practices in the Implementation of a Sourcing Capability Model," Sloan Industry Studies Working Papers, 2007 Number WP-2007-03.

T. Kaul and M.C. Paulk, "Comparing the eSourcing Capability Model for Service Providers and Six Sigma," Carnegie Mellon University, IT Services Qualification Center, CMU-ITSQC-06-004, November 2006.

E.B. Hyder, K.M. Heston, and M.C. Paulk, "The eSCM-SP v2.01: Model Overview," Carnegie Mellon University, IT Services Qualification Center, CMU-ITSQC-06-002, September 2006.

E.B. Hyder, K.M. Heston, and M.C. Paulk, "The eSCM-SP v2.01: Practice Details," Carnegie Mellon University, IT Services Qualification Center, CMU-ITSQC-06-003, September 2006.

M.C. Paulk, S. Guha, W.E. Hefley, E.B. Hyder, and M. Iqbal, "Comparing the eSCM-SP and CMMI: A comparison between the eSourcing Capability Model for Service Providers v2 and the Capability Maturity Model Integration v1.1," Carnegie Mellon University, IT Services Qualification Center, CMU-ITSQC-05-005, 16 December 2005.

M.C. Paulk, S.L. Dove, S. Guha, E.B. Hyder, M. Iqbal, K.O. Jacoby, D.M. Northcutt, and G.E. Stark, "Measurement and the eSourcing Capability Model for Service Providers v2," Carnegie Mellon University, Institute for Software Research International, CMU-ISRI-04-128, January 2005.

M.C. Paulk and M.B. Chrissis, "The 2001 High Maturity Workshop," Software Engineering Institute, Carnegie Mellon University, CMU/SEI-2001-SR-014, January 2002.

M.C. Paulk and M.B. Chrissis, "The November 1999 High Maturity Workshop," Software Engineering Institute, Carnegie Mellon University, CMU/SEI-2000-SR-003, March 2000.

M.C. Paulk, D.R. Goldenson, and D.M. White, "The 1999 Survey of High Maturity Organizations," Software Engineering Institute, Carnegie Mellon University, CMU/SEI-2000-SR-002, February 2000.

R.C. Linger, M.C. Paulk, and C.J. Trammell, "Cleanroom Software Engineering Implementation of the Capability Maturity Model (CMM) for Software," Software Engineering Institute, CMU/SEI-96-TR-023, December 1996.

M.C. Paulk, C.V. Weber, S.M. Garcia, M.B. Chrissis, and M.W. Bush, "Key Practices of the Capability Maturity Model, Version 1.1," Software Engineering Institute, CMU/SEI-93-TR-25, DTIC Number ADA263432, February 1993.

M.C. Paulk, B. Curtis, M.B. Chrissis, and C.V. Weber, "Capability Maturity Model for Software, Version 1.1," Software Engineering Institute, CMU/SEI-93-TR-24, DTIC Number ADA263403, February 1993.

M.C. Paulk, "An Evaluation of the Interim Ada Language System," System Development Corporation, TM-HU-355/000/00, 20 November 1984.

Presentations (2009 to present)

- “Scrum Research at Carnegie Mellon,” 16 March 2009, Scrum Gathering.
- “Selecting and Implementing a Best Practices Framework,” 20 May 2009, ASQ World Conference on Quality and Improvement.
- “Scrum,” MSE Student Presentation Series, 21 May 2009.
- “Extreme Programming: Best Practices, Tradeoffs, and Variants,” 28 July 2009, PMI – IT & Telecom SIG’s Scrum Alliance Webinar Series.
- “Myths, Realities, and Best Practices in Managing Agile Software Development,” 12 Aug 2009, Bay Area Alumni Chapter (San Francisco).
- “Balancing Process, Innovation, and Risk,” 9 Sept 2009, JUSE Software Quality Symposium.
- “Understanding High Maturity,” 10 Sept 2009, JUSE Software Quality Symposium.
- “Agile Methods and Process Discipline,” 9 Nov 2009, ASQ International Conference on Software Quality.
- “The Impact of Process Discipline on Personal Productivity and Quality,” 10 November 2009, ASQ International Conference on Software Quality.
- “Defining ‘Good’ Processes,” 23 August 2010, Improving Systems and Software Engineering Conference.
- “High Maturity for All Disciplines,” 24 August 2010, Improving Systems and Software Engineering Conference.
- “Agile Methods and Process Discipline,” 26 August 2010, Improving Systems and Software Engineering Conference.
- “CMMI-Based Process Improvement Overview,” 30 August 2010, CMU Australia, Adelaide, Australia.
- “Implementing CMMI for High Performance, an Executive Seminar,” 31 August 2010, CMU Australia, Adelaide, Australia.
- “Change Management for Process Improvement,” 5 Oct 2010, Seminario Internacional BPM y BPO, Santiago, Chile.
- “eSCM: Best Practices in Sourcing and Service Delivery,” 6 Oct 2010, Seminario Internacional BPM y BPO, Santiago, Chile.
- “Adopting Scrum,” 9 Feb 2011, ASQ International Conference on Software Quality, San Diego.
- “Principles of Process Maturity and Capability,” 16 May 2011, ASQ World Conference on Quality and Improvement, Pittsburgh.
- “An Introduction to Software Quality,” 18 May 2011, ASQ World Conference on Quality and Improvement, Pittsburgh.
- “Improving Process Capability and Organizational Maturity,” 6 June 2011, Workshop on Setting Standards for Searching Electronically Stored Information in Discovery (DESI IV), Pittsburgh.

Teaching Experience

“Seminar in Software Process.” Carnegie Mellon University, 17-690. Developed and first taught in 1995; taught annually since then.

“Database Design.” University of Pittsburgh, IE 2004. First taught in 2010 for the Industrial Engineering Department. One of the IE core graduate courses.

“Agile Methods.” Carnegie Mellon University, 17-626. Developed and first taught in 2012. Taught as a brown-bag series of seminars prior to becoming a class.

“Capability Improvement for Service Providers.” Carnegie Mellon University, 08-617. Developed and first taught in 2006 as 95-839 for the Heinz School of Public Policy, with a structure based on the eSourcing Capability Model for Service Providers. Revised to focus on applying statistical thinking in service providers using D.J. Wheeler’s *Making Sense of Data: SPC for the Service Sector*. Co-listed 08-611 in Spring 2007 as an ISR course, changed to 08-617 in Spring 2009.

ITSqc-authorized trainer (and course developer) for

- *The eSourcing Capability Model for Service Providers*
- *Capability Determination Methods for eSourcing Capability Models*
- *The eSourcing Capability Model for Client Organizations*

SEI-authorized trainer (and course developer) for

- *Software Capability Evaluation Team Training*
- *Introduction to the Software CMM*
- *Introduction to the Software CMM: Instructor Training*
- *High Maturity with Statistics*
- *Statistical Process Control for Software*

Media

“Integrating into Global Scientific Collaboration,” one-day seminar on DVD for consulting client, 2005.

“Seminar in Software Process” distance education course, Carnegie Mellon University 17-690. Created 2004, revised 2006.

“High Maturity Practices” interview by Carol Dekkers on “Quality Plus e-talk” radio show, 28 Nov 2000.

In addition to these, a diverse set of presentations by Dr. Paulk on various topics have been recorded and distributed by various professional societies and companies.

Professional Memberships and Activities

Editor of ASQ Software Quality Professional, 2011-present.

Fellow of the American Society for Quality (ASQ). M'91, SM'96, F'09.

ASQ Certified Software Quality Engineer, 1998-present.

Senior Member of the Institute of Electrical and Electronics Engineers (IEEE). M'78, SM'90.

Member of the IEEE Standards Association, 1997-present.

Member of the Project Management Institute, 2009-present.

Member of the ISO Study Group to define the needs and requirements for the Process Assessment Body of Knowledge, 2010-present.

Member of the Board of Advisors for SoftwareInspection.org, 2009-present.

Certified ScrumMaster, 2009-present.

Affiliate of the Industry Studies Association (formerly the Sloan Industry Studies Program), 2007-present.

ITSqc Authorized Lead Evaluator (eSCM-SP), 2005-present.

Member-at-Large of the Executive Committee for the Carnegie Mellon Faculty Senate, 2010-2011.

Member of working group to establish the "ASQ Software Division Position Statement on Agile Methods," 2009-2011.

Member of working group to revise IEEE P730 (Software Quality Assurance Process), 2009-2012.

Member of the Carnegie Mellon University Research Council, 2008-2011.

Member of the Carnegie Mellon Faculty Senate, 2007-2011.

Participant in ASQ Certified Software Quality Engineer (CSQE) exam development process.

Regular Member of the Institute for Operations Research and the Management Sciences (INFORMS), 2006-2008.

SEI Authorized Lead Assessor (Software CMM), 1998-2003.

SEI representative to ISO/IEC JTC1/SC7 (Software Engineering), 1991-1995.

U.S. leader for ISO JTC1/SC7/TG10 (Software Process Assessment), 1992-1995.

Co-project editor for ISO/IEC 15504 Part 2 (Software Process Assessment – Baseline Practices Guide), 1992-1995.

Member of the program committee (partial list) for:

- 1999 Managing Software Innovation and Technology Change Workshop, Happy Valley, Pennsylvania
- 2001 International Conference on Software Quality (ICSQ), Pittsburgh
- 2005 World Congress for Software Quality (WCSQ), Munich
- 2005 Software Engineering Conference in Russia (SEC-R), Moscow
- 2006 SPICE Conference, Luxembourg
- 2006 Software Engineering Conference in Russia (SEC-R), Moscow
- 2007 SPICE Conference, Seoul
- 2007 International Conference on the Quality of Information and Communications Technology (QUATIC), Lisbon
- 2008 SPICE Conference, Nuremberg
- 2008 World Congress for Software Quality (WCSQ), Bethesda, Maryland
- 2009 SPICE Conference, Turku, Finland
- 2009 Software Engineering Conference in Russia (SEC-R), Moscow
- 2010 Conference on Software Engineering Education and Training (CSEET), Pittsburgh
- 2010 International Conference on the Quality of Information and Communications Technology (QUATIC), Porto, Portugal
- 2010 Central and Eastern Europe Software Engineering Conference in Russia (CEE-SECR), Moscow
- 2011 International SPICE Conference, Dublin
- 2011 World Congress for Software Quality (WCSQ), Shanghai
- 2012 Institute for Software Excellence (ISE) at the World Conference for Quality and Improvement (WCQI), Anaheim, California
- 2012 International SPICE Conference, Palma de Mallorca, Spain

Session chair (partial list) at:

- 1996 Hawaii International Conference on System Sciences
- 2006 INFORMS National Meeting, Pittsburgh

Reviewer of, and contributor to, DOD, IEEE, and ISO standards, including:

- *DOD MIL-STD-498 (Software Development)*
- *DOD MIL-STD-2167A (Defense System Software Development)*
- *IEEE Software Engineering Body of Knowledge*
- *IEEE 730 (Software Quality Assurance Process)*
- *ISO 9001 (Quality Management Systems)*
- *ISO 9000-3 (Software Guideline for Quality Management Systems), now ISO 90003*
- *ISO/IEC 12207 (Software Life Cycle Processes)*
- *ISO/IEC 15288 (System Life Cycle Processes)*
- *ISO/IEC 15504 (Process Assessment)*

On the editorial boards for the journals:

- *Software Process: Improvement and Practice*, published by John Wiley & Sons (1995 to present)
- *Software Quality Professional*, published by the American Society for Quality (1998 to 2010)
- *International Journal of Information Systems in the Service Sector*, published by IGI Global and the Information Resources Management Association (2007 to present)

Best Paper/Best Practices judge for India SEPG Conference, 1999-2003.

Reviewer for the journals:

- *ACM Transactions on Software Engineering and Methodology*
- *ASQ Software Quality Professional*
- *Empirical Software Engineering*
- *IEEE Software*
- *IEEE Systems, Man, and Cybernetics*
- *IEEE Transactions on Software Engineering*
- *IET Software*
- *IIE Proceedings*
- *Information and Software Technology*
- *International Journal of Information Systems in the Service Sector*
- *Journal of Information and Systems Science*
- *Software Practice and Experience*
- *Software Process: Improvement and Practice*
- *Software Quality Journal*
- *Systems Research and Behavioral Science*

Reviewer for the publishers:

- *Addison-Wesley Publishing Company*
- *Elsevier*
- *John Wiley & Sons Publishing Company*
- *Pearson Education*
- *Prentice-Hall Publishing Company*

Honors and Awards

“Extreme Programming from a CMM Perspective” (published in 2001) selected as one of “*IEEE Software’s* 25th-Anniversary Top Picks” (*IEEE Software*, January/February 2009).

“Capability Maturity Model, Version 1.1” (published in 1993, co-authored with Weber, Curtis, and Chrissis) selected as one of “The Most Cited *IEEE Software* Articles” (*IEEE Software*, January/February 2009).

1999 *Crosstalk* Top 10 Author.

1999 ISO/IEC JTC1/SC7 Software Engineering Standards Committee Achievement Award for contributions as co-project editor of ISO/IEC TR 15504-2 (Information Technology – Software Process Assessment Part 2: A Reference Model for Processes and Process Capability).

1995 Carnegie Mellon Certificate of Merit for Excellence in Satisfying Customers: Capability Maturity Model for Software Team.

1992 SEI Customer Satisfaction Award for work in developing the Capability Maturity Model for Software.

1987 Unisys Exemplary Action Award for contributions to the Ada Multilingual Environment internal research and development project.

1986 Burroughs Achievement Award for Excellence for work in supporting Strategic Defense Initiative experiments.

1978-1980 Harold Stirling Vanderbilt scholar at Vanderbilt University.

1978 Graduated with highest honors from the University of Alabama in Huntsville.

1974-1978 National Merit scholar at the University of Alabama in Huntsville.