Robert J Cloutier, Ph.D.

Associate Professor, Stevens Institute of Technology
Systems Engineering Program Director

Stevens Institute of Technology *201-216-5378 (v)*
School of Systems and Enterprises *856-470-0458 (c)*
Castle Point on Hudson *robert.cloutier@stevens.edu*
Hoboken, NJ 08062

Dr. Cloutier is a tenured professor at Stevens Institute of Technology. His research interests include system architecting, model based systems engineering, complex patterns for systems engineering, and visualizing socio-technical systems. He has 17 peer reviewed journal articles and received over $4.0M in grants. His teaching evaluations average a 3.6/4.0, and his research and doctoral mentoring has resulted in 4 graduated doctoral students. Dr. Cloutier also holds a concurrent appointment as Associate Professor, Hogskolen i Buskerud og Vestfold, Kongsburg, Norway. Before joining Stevens, Dr. Cloutier spent over 20 years at Lockheed Martin, The Boeing Company, and a commercial e-commerce consulting firm. His roles have included system architect, enterprise architect, and principal systems engineer. He was an Associate Technical Fellow at Boeing. Dr. Cloutier served eight years in the United States Navy. He received his BS from the US Naval Academy, his MBA from Eastern University, and a Ph.D. from Stevens Institute of Technology. He holds a current Secret Clearance.

SCHOLARSHIP and RESEARCH

- 17 refereed journal publications (15 published, 2 accepted)
- Number 1 downloaded article for 2010 in Systems Engineering journal with > 1350 downloads (Title: The Concept of Reference Architectures)
- Number 2 downloaded article for 2012 in Systems Engineering journal with > 1100 downloads (Title: Developing a stakeholder-assisted agile CONOPS development process)
- 29 refereed conference proceedings
- 10 published technical reports
- Over $4.0M grants/funded research (PI, Co-PI, and Sr. Researcher). Over $3.4M as PI/Co-PI

ADVISING &ACADEMIC AWARDS by STUDENTS

- Produced 4 Ph.D.'s, 2 Master's with Thesis
- One doctoral student received 2013 SSE Best Dissertation Award
- One master's student received 2011 SSE Excellence in Research Award
- One master's student received 2011 SSE Excellence in Research Award; one awarded an Innovation and Entrepreneurship Graduate Fellowship (2 yrs.)
- Two undergraduate student awarded an Innovation and Entrepreneurship Summer Scholarship; one CHI Healthcare Scholars Program Stipend)

SERVICE

- NSF Compact and Efficient Fluid Power (CCEFP) Engineering Research Center (ERC) Science Advisory Board
- Associate Editor, Journal of Enterprise Transformation
- Senior Associate Editor, North America, International Journal of Information Technology and Systems Approach
- President, INCOSE Delaware Valley Chapter
- Master of Ceremonies for 2013 INCOSE International Symposium
- Scribe, Institute Graduate Curriculum Committee
- Chair, SSE Curriculum Committee

PROFESSIONAL AWARDS

- Stevens 2009-2010 Alexander Crombie Humphreys Distinguished Associate Professor Teaching Award at Stevens
- Stevens 2010-2011 Provost Outstanding Research and Scholarship Award
- Product Development Management Association Visions Award, 2010

TEACHING

- Average instructor rating of 3.6 (4.0 scale)
- Own and teach 1 graduate & 2 Undergraduate courses

Education

Ph.D. Systems Engineering, Stevens Institute of Technology, Hoboken, NJ, 2006
Thesis: "Applicability of Patterns to Architecting Complex Systems"
Advisor: Dr. Dinesh Verma

M.B.A. Leadership, Eastern College, St. Davids, PA, 1999

B.S. Physical Science, United States Naval Academy, Annapolis, MD, 1978.

Teaching and Advising

Current Appointments

Associate Professor (Tenure effective 9/1/2014), Systems Engineering, Stevens Institute of Technology*, Hoboken, NJ: 2007 – Present*

Concurrent Appointment

Associate Professor II of Systems Engineering, HØGSKOLEN I BUSKERUD OG VESTFOLD*, Kongsburg, Norway: 2009 – Present*

Courses Taught

Fundamentals of Systems Engineering (SYS625)
Stevens Institute of Technology, 2006 – 2010
This course discusses fundamentals of systems engineering. Initial focus is on need identification and problems definition. Thereafter, synthesis, analysis, and evaluation activities during conceptual and preliminary system design phases are discussed and articulated through examples and case studies. Emphasis is placed on enhancing the effectiveness and efficiency of deployed systems while concurrently reducing their operation and support costs. Accordingly, course participants are introduced to methods that influence system design and architecture from a long-term operation and support perspective.

Systems Architecture and Design (SYS650)
Stevens Institute of Technology, 2006 – Present
This course is designed to enable engineers, scientists, and analysts from all disciplines to recognize potential benefits resulting from the application of robust engineering design methods within a systems engineering context. By focusing on links between sub-system requirements and hardware/software product development, robust engineering design methods can be used to improve product quality and systems architecting. Topics such as Design and Development Process and Methodology, Need Analysis and Requirements Definition, Quality Engineering, Taguchi Methods, Design of Experiments, Introduction to Response Surface Methods, and Statistical Analysis of Data will be presented.

Advanced System and Software Architecture Modeling and Assessment (SYS750)
Stevens Institute of Technology, 2010 – Present
This course presents the fundamentals of complex systems architecting using the Object Modeling Group's (OMG) SysML. It addresses the differences between functional decomposition and object oriented decomposition while architecting complex systems. Emphasis is placed on modeling mission objectives to the definition of the system level architecture. Topics include identification of system level architecture alternatives and considerations, including definition of objectives for physical (hardware) and logical (software) structure, information and system assurance, behavior, cost, performance and human integration based on the system concept at every level of system decomposition. System of System (SoS) architecture is examined, addressing composition of multiple systems and engineering new, emergent behavior in the SoS. Examples used will come from a variety of operational environments (e.g. communications systems, space systems, weapon systems, etc.) Special consideration is given to the importance of effective construction and transitioning of the SysML models to software engineering for software intensive systems projects.

Engineering Design VI (EM322)
Stevens Institute of Technology, 2012 – Present
This course is an integral part of the Engineering Management program - it provides students with experience and tools for new product/process development. Students will participate in a semester long class project meant to provide the students with insights that will serve to improve their senior project experience. Participation will be in small groups, and will complement EM385. Students will explore the detail design through validation in the systems engineering lifecycle. Tools that have been introduced in earlier engineering management courses may be brought together as part of this pre senior design experience. Students will be required to maintain an engineering notebook throughout the course.

Project Management (EM275)
Stevens Institute of Technology, 2014 – Present
This course presents the tools and techniques for project definition, work breakdown, estimating, resource planning, critical path development, scheduling, project monitoring and control and scope management. Students will use project management software to accomplish these tasks. In addition, the student will become familiar with the responsibilities, skills and effective leadership styles of a good project manager. The role organization design plays in project management will also be addressed.

System Architecture and Design (SEAD6201)
Buskerud University College, 2009 – Present
This course is designed to enable engineers, scientists, and analysts from all disciplines to recognize potential benefits resulting from the application of robust engineering design methods within a systems engineering context. By focusing on links between

sub-system requirements and hardware/software product development, robust engineering design methods can be used to improve product quality and systems architecting. Topics such as Design and Development Process and Methodology, Need Analysis and Requirements Definition, and Quality Engineering, are presented.

Systems Engineering Fundamentals (EIN6551C)
University of Central Florida, 2011
This course is intended to provide the rationale for and the value of systems engineering concepts and principles. The student will come away with an understanding of various systems engineering related terms and definitions; and the systems engineering process. The importance of modeling systems in the context of the broader system of systems is presented. Throughout the course, a hands-on approach to the systems engineering process will be utilized.

Research Design (MNGT520)
Eastern University, 2000 – 2006
This is an introduction to critical market research tools - including current methods, instrument design, measurement criteria, and quantitative analysis - used to guide management decisions in an ever-changing marketplace.

Quantitative Decision Making (MNGT650)
Eastern University, 2000-2006
This is a study of the necessary tools for making critical decisions concerning the effective allocation of resources, recognizing the importance of cost-reduction purposes.

Technical Application to Business (OMIS200)
Eastern University, 2000-2006
The current and future state of hardware and software technology as it relates to the business environment is explored. The objective is to provide the learner with an exposure to technological innovations that aid in the management decision-making process. A further study of how information support systems enhance organizational performance.

Managing IS/IT Organizations (OMIS450)
Eastern University, 2000-2006
Creative, effective approaches to planning and managing multi-platform information technology systems are explored. The objective is to provide the systems manager with techniques to elicit the full support of the parent organization by assuring that system projects are consistent with the organizational mission and long-range plans, thus assuring that program designs meet the needs of the whole organization, the customers whom the organization plans to serve, and the information technology personnel who utilize and/or maintain the systems.

Teaching Activities in Special Programs or Guest Lecture

[1] Invited Lecturer on Systems Engineering, 2nd International Spring School on Systems Engineering. This annual event is organized by the Technische University Munich and Fraunhofer Institute for Production Technology IPT - Project Group Mechatronic Systems Design. Munich, Germany, 12-16 May 2014

[2] Invited Lecturer on Systems Engineering, 1st International Spring School on Systems Engineering. This annual event is organized by the Technische University Munich and Fraunhofer Institute for Production Technology IPT - Project Group Mechatronic Systems Design. Paderborn, Germany, 8-12 April 2013

[3] Introduction to Systems Engineering. Part of the Systems Engineering Doctoral Lecture Series at Villanova University Doctoral Program. Guest Lecturer, March 2008

SCHOLARSHIP and RESEARCH

Writings

Books

[1] Cloutier, R. (2008). Applicability of Patterns to Architecting Complex Systems. Germany: VDM

Book Chapters

[1] Cloutier, R., & Bone, M. (2010). Systems Engineering. In D. Merino & J. Farr (Eds.), ASEM Handbook on Engineering Management: American Society of Engineering Management

[2] Cloutier, R., DiMario, M., & Polzer, H. (2009). Net Centricity and System of Systems. In M. Jamshidi (Ed.), System of Systems Engineering: Innovations for the 21st Century (pp. 191-217). Hoboken, NJ: Wiley

Published Articles

Refereed Journals

[1] Cowling, J., Morgan, C., and Cloutier, R. (2014). An Open Systems Development Conceptual Framework. International Journal of information and Systems Approach, 7(1), 41-54, January-June 2014, DOI: 10.4018/ijitsa.2014010103

[2] Sols, A., Romero, J., & Cloutier, R. (2012). Performance-Based Logistics and Technology Refreshment Programs: Bridging the Operational-Life Performance Capability Gap in the Spanish F-100 Frigates. Systems Engineering, 15(4), 422-432. DOI: 10.1002/sys.21207

[3] Mostashari, A., McComb, S. A., Kennedy, D. M., Cloutier, R., & Korfiatis, P. (2012). Developing a stakeholder-assisted agile CONOPS development process. Systems Engineering, 15(1), 1-13. DOI: 10.1002/sys.20190

[4] Squires, A., & Cloutier, R. (2010). Evolving the INCOSE reference curriculum for a graduate program in systems engineering. Systems Engineering, 13(4), 381-388. DOI: 10.1002/sys.20157

[5] Moore, D., Crowe, P., & Cloutier, R. (2011). Driving Major Change – The Balance between Methods and People. Crosstalk. The Journal of Defense Software Engineering, 24(3), 11-14

[6] Bone, M., & Cloutier, R. (2010). État de l'ingénierie de systèmes dirigée par les modèles Résultats d'une enquête de l'OMG™ sur SysML. Génie Logiciel, n° 95(December), 34-38

[7] Cloutier, R., Muller, G., Verma, D., Nilchiani, R., Hole, E., & Bone, M. (2010). The Concept of Reference Architectures. Systems Engineering, 13(1), 14-27

[8] Sommer, K., & Cloutier, R. (2009). Clockspeeds in Architecture Evolution, Dead-Ends, and Discontinuities. Systems Research Forum, 3(1), 51-79

[9] Crowe, P., & Cloutier, R. (2009). Evolutionary Capabilities Developed and Fielded in Nine Months. Crosstalk, The Journal of Defense Software Engineering, 22(4), 15-17

[10] Linebarger, J., De Spain, M., McDonald, M., Spencer, F., & Cloutier, R. (2009). The Design for Tractable Analysis (DTA) Framework: A Methodology for the Analysis and Simulation of Complex Systems. International Journal of Decision Support System Technology, 1(2), 23. DOI:10.4018/jdsst.2009040105

[11] Herald, T., Verma, D., Lubert, C., & Cloutier, R. (2009). An obsolescence management framework for system baseline evolution - Perspectives through the system life cycle. Systems Engineering, 12(1), 1-20

[12] DiMario, M., & Cloutier, R. (2008). Applying Frameworks to Manage SoS Architecture. Engineering Management Journal, 20(4)

[13] Jain, R., Chandrasekaran, A., Elias, G., & Cloutier, R. (2008). Exploring the Impact of Systems Architecture and Systems Requirements on Systems

Integration Complexity. Systems Journal, IEEE, 2(2), 209-223. DOI: 10.1109/JSYST.2008.924130

[14] Cloutier, R., & Verma, D. (2007). Applying the concept of patterns to systems architecture. Systems Engineering, 10(2), 138-154

[15] Cloutier, R., & Verma, D. (2006). Applying Pattern Concepts to Enterprise Architecture. Journal of Enterprise Architecture, 2(2), 17

Other Journals and Proceedings

[1] Wing, A., Cloutier, R., & Felder, W. (2014). Airport Ramp Area Support System. 4th International Engineering Systems Symposium, CESUN 2014, Hoboken, NJ, June 8-11

[2] Floyd, D., Cloutier, R., Zigh, T. (2013). Nonlinear dimensionality reduction for structural discovery in image processing. Applied Imagery Pattern Recognition Workshop: Sensing for Control and Augmentation, 2013 IEEE (AIPR , vol., no., pp.1,6, 23-25 Oct. 2013
DOI: 10.1109/AIPR.2013.6749319

[3] Gandhi, S.J., Perez, S., Rushton, D., Cloutier, R., Bozkurt, I., & Pinto, C.A. (2012). Identification and Implementation of Patterns towards a Model of Environmental Sustainability. 2012 IAC of the American Society for Engineering Management, Virginia Beach, VA, October 17-20

[4] Cowling, J., & Cloutier, R. (2012). Open Governance in the Learning Organization. Third International Engineering Systems Symposium, CESUN 2012, Delft University of Technology, The Netherlands, June 18-20

[5] Gandhi, S.J., Perez, S., Rushton, D., Cloutier, R., Bozkurt, I., & Pinto, C.A. (2012). Identification and Implementation of Patterns towards a Model of Environmental Sustainability. 2012 IAC of the American Society for Engineering Management, Virginia Beach, VA, October 17-20

[6] Korfiatis, P., Cloutier, R., Zigh, T. (2012). Graphical CONOPS Development to Enhance Model Based Systems Engineering, Third International Engineering Systems Symposium, CESUN 2012, Delft University of Technology, The Netherlands, 18-20 June 2012

[7] Bone, M., Cloutier, R., and Korfiatis, P., (2012). Reference Architecture, Industrial and Systems Engineering Research Conference (ISERC), Orlando, FL, May 19-23

[8] Squires, A., Cloutier, R. (2011). Applying the Plan-Do-Check-Act Cycle to Develop Best Practices in Remote Online Systems Engineering Education, Proceedings of the 21st Annual International Symposium of INCOSE. Denver, Colorado. June 20-23. ISBN 978-1-937076-00-9

[9] Bone, Mary, and Robert Cloutier. (2011). Applying Systems Engineering Modeling Language (SysML) to System Effort Estimation Utilizing Use Case Points, Proceedings of the 21st Annual International Symposium of INCOSE, Denver, Colorado. June 20-23. ISBN 978-1-937076-00-9

[10] Squires, A., Cloutier, R. (2011). Comparing Perceptions of Competency Knowledge Development in Systems Engineering Curriculum: A Case Study, Proceedings from the 118th American Society for Engineering Education (ASEE) Annual Conference, Vancouver, BC, Canada, June 26-29

[11] Ph.D. Systems Engineering "Systems Engineering Process Tailoring Patterns", May 2011Bone, M., Cloutier, R., Korfiatis, P., and Carrigy, A. (2010). System Architecture: Complexities Role in Architecture Entropy, IEEE System of Systems Engineering Conference, June 2010, Loughborough, UK

[12] Squires, A. and Cloutier, R. (2010). Evaluating the Effectiveness of Classroom Discussion Approaches Used in the Remote Delivery of Systems Engineering Education, Proceedings from the American Society for Engineering Education (ASEE) 2010 Annual Conference, Louisville, Kentucky, June 20-23

[13] Bone, M. and Cloutier, R. (2010). The Current State of Model Based Systems Engineering: Survey Results From the OMG SysML Request for Information 2009, 8th Conference on Systems Engineering Research (CSER), Hoboken, NJ March 17-19

[14] Squires, A., Cloutier, R. (2010). Developing a Strategy to Measure Systems Engineering Competency Knowledge Demonstrated in the Remote Asynchronous Online Classroom, 8th Conference on Systems Engineering Research (CSER), Hoboken, NJ, March 17-19

[15] Cloutier, R., DeSpain, M., Linebarger, J. and Spencer, F. (2009). Agile Development of Tractable Analyses and Simulations of Complex Systems, International Council of Systems Engineers (INCOSE), 19th International Symposium of INCOSE, 3rd Asia-Pacific Conference on Systems Engineering, Singapore, July 20-23

[16] Cloutier, R., Bone, M., and Verma, D. (2009). Architecture Entropy, International Council of Systems Engineers (INCOSE), 19th International Symposium of INCOSE, 3rd Asia-Pacific Conference on Systems Engineering, Singapore, July 20-23

[17] Crowe, P., Mostashari, A., Mansouri, M., Cloutier, R. (2009). Reference Framework and Model for Integration of Risk Management in Agile Systems Engineering Lifecycle of the Defence Acquisition Management

Framework, International Council of Systems Engineers (INCOSE), 19th International Symposium of INCOSE, 3rd Asia-Pacific Conference on Systems Engineering, Singapore, July 20-23

[18] Cloutier, R., E. Gill, D. Verma, and M. Bone. (2009). A Case Study: Application of the Systems Modeling Language (SysML) in the early phases of a Complex Space System Project, Conference on Systems Engineering Research (CSER), Loughborough, UK, April 20-23

[19] Cowling, J., and Cloutier, R. (2009). A System of Systems perspective on Open Source Software Projects, Conference on Systems Engineering Research (CSER), Loughborough, UK, April 20-23

[20] DeSpain, M. Darby, M., and Cloutier, R. (2008). Security in the 21st Century, INCOSE International Symposium, Utrecht, The Netherlands, June 2008

[21] Cloutier, R., and Griego, R. (2008). Applying Object Oriented Systems Engineering to Complex Systems. 2nd Annual IEEE Systems Conference, Montreal, Canada, April 4-7

[22] Zdanis, L. and Cloutier, R. (2007). The Use of Behavioral Diagrams in SysML, 5th Conference on Systems Engineering Research, Hoboken, NJ, March 14-16

[23] Cloutier, R., Verma, D., and Boardman, J. (2006). Application of Patterns to Systems Engineering and Architecting, Proceedings of the 16th Annual International Symposium of INCOSE, July 9-13

[24] Cloutier, R. (2005). Toward the Application of Patterns to Systems Engineering, Conference on Systems Engineering Research (CSER), Hoboken, NJ. March 23-25

[25] Cloutier, R. (2004). Migrating from a Waterfall Systems Engineering Approach to an Object Oriented Approach – Lessons Learned, Joint INCOSE/ICSE Region II Conference, Las Vegas, NV, September 15-18

[26] Cloutier, R., Fickle, C., Watson, J., and Winkler, A. (2003). Modeling a System of Systems Using UML, Conference on Systems Engineering Research (CSER), Stevens Institute of Technology, Hoboken, NJ

Articles Completed and Accepted for Publication

Refereed Journals

[1] Farr, John V., Cloutier, Robert, and Saltysiak, Thomas I. (2015 Expected). An Architectural Framework for Nation States in Support of Peace

Building Operations. Submitted to and currently under review by Journal for Enterprise Transformation

[2] Cloutier, R., Sauser, B., Bone, M., Taylor, A. (2015 Expected). Theoretical Methodology for Transitioning Systems Thinking to Model Based Systems Engineering: Systemigrams to SysML Models. Accepted 8/15/2014 by IEEE Transactions on Systems, Man and Cybernetics

Articles Submitted but not yet accepted for Publication

Refereed Journals

None

Published Reports

[1] Cloutier, R. (PI), Hamilton, D., Zigh, T., Korfiatis, P., Esfahbod, B., Zhang, P., Pape, P., O'Brian, J., & Weeks, S. Graphical CONOPS prototype to demonstrate emerging methods, processes, and tools at ARDEC. Final Technical Report (SERC-2011-TR-031-2) Systems Engineering Research Center

[2] Cloutier, R. (PI), Hamilton, D., Zigh, T., Korfiatis, P., Esfahbod, B., Zhang, P., Pape, P., O'Brian, J., & Weeks, S. Prototype of a Graphical CONOPS (Concept of Operations) Development Environment for Agile Systems Engineering. Final Technical Report (SERC-2013-TR-030-2) Systems Engineering Research Center

[3] Cloutier, R. (PI), McComb, S., Deshmukh, A., Zigh, T., Korfiatis, P., Esfahbod, B., Zhang, P., & Hall, K. (2012). Prototype of a Graphical CONOPS (Concept of Operations) Development Environment for Agile Systems Engineering, Final Technical Report (SERC-2011-TR-030). Systems Engineering Research Center

[4] Robert Cloutier (PI), Teresa Zigh, Peter Korfiatis, Behnam Esfahbod, Peizhu Zhang, and John Santanello, Graphical CONOPS prototype to demonstrate emerging methods, processes, and tools at ARDEC, Final Technical Report SERC-2011-TR-031, Systems Engineering Research Center, March 2012

[5] Robert Cloutier (PI), Peter Korfiatis, Kyle Thompson-Bass, Communications Effects Server (CES) Model for Systems Engineering Research, Final Technical Report SERC-2011-TR-023, Systems Engineering Research Center, January 2012

[6] Robert Cloutier and Mary Bone. (2010). Compilation of SysML RFI- Final Report, Systems Modeling Language (SysML) Request for Information OMG Document: syseng/2009-06-01. February 20, 2010

[7] Robert Cloutier, Ali Mostashari, Sara McComb, Abhijit Deshmukh, Deanna Kennedy, Peter Korfiatis, and Anne Carrigy, Investigation of a Graphical CONOPS Development Environment for Agile Systems Engineering, Final Technical Report SERC-2010-TR-007, May 31, 2010

[8] Robert Cloutier, Robert, Ali Mostashari, Sara McComb, Abhijit Deshmukh, Jon Wade, Deanna Kennedy, and Peter Korfiatis, Investigation of a Graphical CONOPS (Concept of Operations) Development for Agile Systems Engineering, Technical Report SERC-2009-TR-003, October 31, 2009

[9] Linebarger, John M., Mark De Spain, Robert Cloutier, Floyd Spencer, and Michael McDonald, The Design for Tractable Analysis (DTA) Framework: A Methodology for the Analysis and Simulation of Complex Systems, SAND2008-6030, Sandia National Laboratories, Albuquerque, New Mexico 87185 and Livermore, California 94550, Printed September 2008

[10] Cloutier, Robert, Applicability of Patterns to Architecting Complex Systems, Doctoral Dissertation, Stevens Institute of Technology, Hoboken, NJ June 2006

Other Published Works

[1] Cloutier, R. (2011). Introduction to JET Special Issue "Enterprise Modeling". Journal of Enterprise Transformation, 1(03), pp. 175 - 178. DOI: 10.1080/19488289.2011.606015

[2] Cloutier, R. (2009) Model Based Systems Engineering: The New Paradigm. Introduction to this Special Edition on Model-based Systems Engineering (MBSE), INSIGHT - Publication of the International Council on Systems Engineering, 12 (4)

[3] Crowe, P., & Cloutier, R. (2009). Case History: The U.S. Army updates its readiness reporting systems using Agile approach in a challenging environment. PDMA VISIONS: Insights into Innovation, XXXIII (3), 13-15. Product Development and Management Association

Books in Process

[1] Cloutier, R., Baldwin, C., and Bone, M. Systems Engineering Simplified. This is a monograph targeted to undergraduate non-systems engineers. Originally written for the NSF Center on Compact and Efficient Fluid Power. Now in talks with CRC to publish.

[2] Cloutier, R., Baldwin, C. and Korfiatis, P. Systems Architecting with SysML. This manuscript will contain 8-10 of the best practicums submitted to my Advanced architecting and modeling 700 level course. Students were all mid-grade system architects from industry

[3] Muller, G., Cloutier, R., and Korfiatis, P. Systems Architecting: Notes from the Field. This book captures the notes from 3 years of bi-annual System Architect Forums (SAF). The SAF representatives included senior system architects from companies such as Mercedes Benz, Raytheon, Otis Elevator, etc.

Presentations of Papers, Seminars, Lectures

Invited Seminars and Lectures

[1] Invited Talk: Heinz Nixdorf Institute forum on Systems Engineering. "Can Patterns be Applied when Architecting Complex Systems?". Presented 9 April 2013. https://www.youtube.com/watch?v=IoYIwIfPgEE

[2] Invited Professor: The International Spring School on Systems Engineering (IS3E) 2012. IS3E is organized jointly by the Technical University of Munich (Institute of Product Development) and Fraunhofer Institute for Production Technology IPT – Project Group Mechatronic Systems Design supported by University of Paderborn (Heinz Nixdorf Institute), the Stevens Institute of Technology (Hoboken, NJ), École Centrale Paris and the INCOSE (German Chapter). It is intended for internationally diverse PhD students whose research interest is focused on Systems Engineering. http://www.is3e.eu/

[3] Invited Talk: Cloutier, R. (2012, October 17). Using Patterns in Systems Engineering. The Southern Jersey Professional Societies (AIAA, IEE, ITEA). Mays Landing, NJ.

[4] Invited Talk: Cloutier, R. (2012, September). What are the Obstacles to MBSA/MBSE: Perspectives on moving to an MBSA/MBSE Environment? INCOSE Liberty Chapter Meeting. Clifton, NJ

[5] Invited Talk: Cloutier, R. (2011, October 5-6). 3rd Annual Systems Research Review (ASRR). Early Systems Engineering: Rapid and Graphical Concepts of Operation. University of Maryland. College Park, MD

[6] Invited Contributor: Cloutier, R. (2011, August 22-24). Lockheed Martin Digital Tapestry Strategy Workshop. State of Model Based Systems Engineering. Lockheed Martin's Center for Leadership Excellence. Bethesda, MD

[7] Invited Panelist: Cloutier, R. (2011, April 6.) NCOIC Panel Discussion on Patterns. Denver, CO

[8] Invited Talk: Cloutier, R. (2010, August). Potential of Modeling and Simulation to support Architecting. Nokia Research Center. Helsinki, Finland

[9] Keynote Speaker: Cloutier, R. (2010, April). SSCI System & Software Technology Conference (SSTC). Salt Lake City, UT

[10] Invited Talk: Cloutier, R. (2010, February). Patterns and Systems Architecture. Hogskolen i Buskerud University College. Kongsberg, Norway

[11] Invited Talk: Cloutier, R. (2009, February). Patterns in Systems Architecting. INCOSE Orlando Chapter. Orlando, FL

[12] Invited Talk: Cloutier, R. (2008, October). Patterns in Systems Architecting. INCOSE Sweden Chapter. Stockholm, Sweden

[13] Invited Panelist: Cloutier, R. (2008, June). High-tech Systems embedded in their environment. INCOSE IS Panel. Utrecht, The Netherlands

[14] Invited Talk: Cloutier, R. (2008, May). Service Oriented Architectures for Systems Engineers. FAA Technical Center. Atlantic City, NJ

[15] Invited Talk: Cloutier, R. (2008, May). Patterns in Systems Architecting. INCOSE New Mexico Chapter. Albuquerque, NM

[16] Invited Talk: Cloutier, R. (2008, April). Is There a Role for Patterns in Enterprise Architecture? Architecture & Process Transformation Conference. Washington, DC

[17] Keynote Panelist: Cloutier, R. (2008, April). Complexity has become a "tipping point." SSCI System & Software Technology Conference (SSTC). Las Vegas, NV

[18] Invited Talk: Cloutier, R. (2008, February). Patterns for NCOIC. Network Centric Operations Interoperability Consortium Plenary. Denver, CO

[19] Invited Talk: Cloutier, R. (2008, February). Patterns for Systems Engineering. IBM Watson Research Center. New York City, NY

[20] Invited Talk: Cloutier, R. (2007, December). Model Driven Architecture for Systems Engineering. Object Management Group, Systems Engineering Working Group. Washington, DC

[21] Invited Talk: Cloutier, R. (2007, July). Applying Patterns to Systems Architecting. NASA Guest Speaker Series. Johnson Space Center. Houston, TX

[22] Invited Talk: Cloutier, R. (2007, March). Introduction to Systems Engineering, Villanova University Doctoral Program Invited Speaker series. Villanova, PA

[23] Invited Talk: Cloutier, R. (2006, April). Patterns for Systems Engineering. Embedded Systems Institute. Eindhoven, Netherlands

[24] Invited Talk: Cloutier, R. (2007, October). Service Oriented Architecture for Systems Engineering. Federal Aviation Administration Tech Center. Atlantic City, NJ

Conference Presentations and Special Seminars

[1] Poster Session: Bone, M. and Cloutier, R. (2014). System Architecture Index. 4th Annual Council of Engineering Systems Universities (CESUN), Stevens Institute of Technology, Hoboken, NJ, June 9th, 2014

[2] Poster Session: Sonani, V. and Cloutier, R. (2014). Graphical CONOPS for the Delivery of Healthcare. 4th Annual Council of Engineering Systems Universities (CESUN), Stevens Institute of Technology, Hoboken, NJ, June 9th, 2014

[1] Invited Judge: General Donald R. Keith Memorial Capstone Conference, May 1, 2014. United States Military Academy, West Point, NY

[2] Invited Judge: 2013 ESE Senior Design Demo Day, April 18, 2013. University of Pennsylvania, Philadelphia, PA

[3] Poster Session: Sols, A. and Cloutier, R. (2012). Designing for technological refreshability over the system operational life. Complex Systems Design & Management (CSD&M). Cité Internationale Universitaire de Paris, Paris, December 12-14, 2012

[4] Conference Presentation: Cloutier, R. (2012, June 14-15). Graphical CONOPS – A Strategy to Improve Stakeholder/Designer Shared Understanding. Kongsberg Systems Engineering Event. Kongsberg, Norway

[5] Studio Recording: zur Muehlen, M. and Cloutier, R. (2010, December). Introduction to Enterprise Architecture Parts 1 and 2. Lockheed Martin Corporation Studio Produced Lectures (1 hour each)

[6] Conference Presentation: Cloutier, R. (2008, April). Is There a Role for Patterns in Enterprise Architecture? AP Transformation. Washington, DC

[7] Conference Presentation: Cloutier, R. (2007, January). Some thoughts on System Architectures. BODERC Symposium, Keynote Presentation. Eindhoven, Netherlands

Doctorate, Masters, Undergraduate Students Directed

Doctoral Graduates

[1] Portial Crowe, Ph.D. Systems Engineering " Toward an Agile Systems Engineering Decision Making Process Model with Key Principles", May 2014
[2] Peter Korfiatis. Ph.D. Systems Engineering "Development of a Virtual Concept Engineering Process to Extend Model-Based Systems Engineering, May 2013
[3] Larry Earnest. Ph.D. Systems Engineering “Systems Engineering Process Tailoring Patterns”, May 2011
[4] Alice Squires. Ph.D. Systems Engineering “Measuring the Value of Remote Online Systems Engineering Education”, May 2011

Master’s Thesis

[1] Christopher Reilly. March 2009). “Application of Patterns in the Operational Evaluation of an Air Traffic Control System Display System”, Systems Engineering

Undergraduate Special Projects

[1] Lindsay Stone, "Current Literature on Model Based Systems Engineering", April 2014
[2] Ellen Griggs, “Applications of Service Oriented Architecture in Today’s Systems”, April 2009

Graduate Special Projects

[1] Jorgen Hier, Modeling System Test Cases using SysML, Master's Project, Hogskolen i Buskerud og Vestfold, May 2014
[2] Loscheider, John V., Systems Engineering for Structural Engineers and Undercover Practitioners in Complex Civil Construction Projects, Master's Project, May 2014
[3] Sandra Dawson, Data Analytics for the Defense Industry: A Framework for Application, Master's Project, December 2013
[4] Kevin Lee, US Army, “Common Operating Environment in the Army”, April 2012
[5] Ronald Rivera, Booz Allen Hamilton, “Model-Based Approach to Cloud Architecture”, May 2012
[6] Joseph Hanosh, Sandia National Laboratories, “System Engineering Architecture Design for a Library System”, February 2012

[7] Tamara Gabryluk, Lockheed Martin Corporation, “The Evolution and Assessment of Sonar System Architectures”, January 2012
[8] Doug Boggie, Northrup Grumman, Applying Systems Engineering principles and tools to the US Healthcare Delivery Enterprise, October 2011
[9] Ron Denny, Semi-Autonomous Agents in the Modern Battlespace Concept of Operations, Spring 2011
[10] Carol Saab, Sandia National Labs, The Systems Engineering Experience Accelerator, August 2010
[11] Doug Maldanado, Mitre, Various Techniques for Architecture Analysis, Master’s Project, May 2010
[12] Georgia Artery, Sandia National Labs, - Using Systems Engineering To Define Enterprise Domain, April 2010
[13] Heather Kramer, Sandia National Labs, “A Justification and Methodology for Collection and Integration of Multiviewpoint Solution Patterns as Elements of Enterprise Solution Architectures at Sandia National Laboratories”, April 2010
[14] Mark DeSpain, Sandia National Labs, Toward “free” enterprise, Master’s Project, April 2010
[15] Courtney Coulter, US Army, Applying System Engineering Processes to Service Oriented Computing, April 2010
[16] Anthony Sheller, A Systems Engineering Framework for the Analysis of Systems Modeling Language (SYSML) XMI, Master’s Project, December 2009
[17] Carol Saab, Sandia National Labs, System of Systems Requirements for an Electric Automobile Enterprise, December 2009
[18] Tri Do, US Army, Systems Engineering in the Future Combat System, Mater’s Project, December 2009
[19] Kim Sommer, Case Study: Clockspeeds in Architecture: Evolution, Dead-ends, and Discontinuities – SAF 2009 Journal, Master’s Project, May 2009
[20] Ellyn Griggs, Applications of Service Oriented Architecture in Today’s Systems, Undergrad Res Project, May 2009
[21] Norm Eng, Applying Object Oriented Modeling to Hardware and Software Architecture on a Satellite Based System via SysML, Master’s Project, May 2009
[22] Angshuman Bappa Saha, Introduction to Object-Oriented Systems Design Using SysML, Master’s Project, Dec 2008
[23] Mark Wright, Application of Design Patterns to the Joint Tactical Radio System (JTRS), Dec 2007
[24] Larry Zdanis, The Use of Behavioral Diagrams in SysML – CSER2007 Conference, Systems Engineering, Master’s Project, May 2007

Other Scholarly Activities

Journal Reviewer

[1]	Systems Engineering Journal	2008 - Present
[2]	IEEE Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans	2009 - Present
[3]	INCOSE SE Journal	2009 - Present
[4]	Journal of Naval Architecture	2010

Journal Editorship

Guest Editor, July 2010
INCOSE Insight – Model Based Systems Engineering

This special issue of INCOSE Insight was a 10-year follow-up to explore the advances in model based systems engineering. INSIGHT is the newsletter of International Council on Systems Engineering. It is published four times per year (January, April, July, October) and features status and information about INCOSE's technical work, local chapters, and committees and boards. Additionally, related events, editorials, book reviews, trends, and how-to-do articles that are pertinent to the many aspects of a systems engineer's job are also included, as space permits.

Associate Editor, 2010 - Present
Journal of Enterprise Transformation, Taylor & Francis

This journal is a quarterly publication designed to provide a forum for original articles on trends, new findings, and ongoing research (both theory and application) related to enterprise transformation. JET brings together interdisciplinary research in management, industrial and systems engineering, information systems, organizational behavior, political science, economics, etc. JET provides a window to the future by publishing advanced thinking around enterprise transformation.

Senior Associate Editor, North America, 2009 - Present
International Journal of Information Technology and Systems Approach

This journal presents applied and theoretical research, aimed at providing coverage of the foundations, challenges, opportunities, problems, trends, and solutions encountered by both scholars and practitioners in the field of information systems when applying systems approach. IJITSA emphasizes the systemic worldview of managerial, organizational and engineering

interaction facets provided by modern complex information systems and information technologies. The articles published focus on information systems (IS) and their interactions with software engineering, systems engineering, complex systems, and philosophy of systems science issues for a better understanding and development of the information systems discipline.

Research, Scholarship, or Design Activities

Grants and Contracts Received

The following are competitively acquired research grants and contracts.

Government and Foundations

$100,000, Co-PI with Discovery Machine (Williamsport, PA), SBIR/STTR, Missile Defense Agency, Software System for adaptive Needs characterization for M&S Systems Engineering, 2012

$25,000, PI, Sandia National Labs, Multi-Scale Behavioral Analyses of Integrated Surety Designs, 2007. This funding was part of the competitive Sandia Laboratory Directed Research and Development (LDRD) program. The LDRD program invests in high-risk, potentially high-payoff activities that enable national security missions and advance the frontiers of science and engineering. As Sandia's sole source of discretionary R&D funding, the LDRD program provides the flexibility to anticipate and respond quickly to future mission needs and to explore potentially revolutionary advances in science and technology

$25,000, PI, Sandia National Labs, Architectural and Process Modeling for Sandia National Labs, 2007

Federally Funded Research Centers

$160,000, Co-PI with Dr. B. Sauser, US Army RDECOM (SERC), Systems Engineering Assessment and Workforce Development Plan, Research Task 29, 2012

$433,650, PI, DoD (SERC), Investigation of a Graphical CONOPS (Concept of Operations) Development Environment for Agile Systems Engineering – Research Task 30a, 2012

$125,000, Co-PI with Dr. B. Sauser, US Army RDECOM (SERC), Contingency Basing Projects (Research Task 33), 2011

$145,000, PI, US Army RDECOM (SERC), CONOPS Navigator (Research Task 33), 2011

$295,000, PI, DoD (SERC), Investigation of a Graphical CONOPS (Concept of Operations) Development Environment for Agile Systems Engineering – Research Task 30, Purdue University Co-PI, 2010

$160,000, PI, US Army CERDEC (SERC), Communications Effects Server (CES) Model for Systems Engineering Research (Research Task 23), 2010

$190,000, PI, DoD (SERC), Investigation of a Graphical CONOPS (Concept of Operations) Development Environment for Agile Systems Engineering – Research Task 3 Phase 2, Dr. A. Mostashari and Texas A&M Co-PI, 2009

$173,939, PI, DoD (SERC), Investigation of a Graphical CONOPS (Concept of Operations) Development Environment for Agile Systems Engineering – Research Task 3 Phase 1, Dr. A. Mostashari and Texas A&M Co-PI, 2009

Industry and Private Companies

$100,000, PI, Lockheed Martin Corporation, Composable Architecture and Design – Phase 2, 2012

$50,000, PI, Lockheed Martin Corporation, Composable Architecture and Design – Phase 1, 2011

$167,000, PI, Lockheed Martin Corporation, Using Systems Architecture Patterns to Drive Efficiency, 2010

$80,000, PI, BAE Systems, MDA for Systems Engineering, 2007

Congressional Apportionments

$95,500, Co-PI with Drs. B. Sauser, D. Verma, and J. Wade, Systems Engineering Research Development and Architecting, Armament Research & Development Center, 2010

$93,500, Co-PI with Drs. B. Sauser, A. Mostashari, D. Verma, andR. Nilchiani, Systems Engineering Research Development and Architecting, Armament Research & Development Center, 2009

$91,500, Co-PI with Drs. B. Sauser, A. Mostashari, D. Verma, andR. Nilchiani, Systems Engineering Research Development and Architecting, Armament Research & Development Center, 2008

Honors and Awards

Professional Honors and Awards

[1] Provost Award in Recognition of Outstanding Achievements in Research and Scholarship, 2010-2011
[2] Product Development Management Association, Best of Visions Award, 2010
[3] Alexander Crombie Humphreys Distinguished Teaching Associate Professor Award, September 9th, 2009, Stevens Institute of Technology

Awards and Honors for Students Advised

[1] Kim Sommer, 2009, Excellence in Graduate Research Award (Best Master's Thesis or Master's project)
[2] Product Development Management Association, Best of Visions Award, Portia Crowe, 2010

Professional Society Membership and Activities

[1] Member, International Council on Systems Engineering (INCOSE)
[2] Communications Director, Delaware Valley Chapter – INCOSE, 2007
[3] Member at Large, Delaware Valley Chapter – INCOSE, 2008, 2009
[4] Member IIE, 2012
[5] Member, IEEE 2007, 2008
[6] Reviewer, IEEE Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans
[7] Member, ACM 2007
[8] Member, SDPS, 2009
[9] Chairman, Electrical and Computer Engineering Department Industry Advisory Committee, Rowan University, 2005-2006
[10] Lockheed Martin Technical Advisor, Rowan University Grant, Real Time Java Computing, Sept. 2004-May 2000

SERVICE

University Committees and Administrative Activities

Stevens Institute of Technology

[1] Graduate Curriculum Committee, SSE Representative, 2012 - present
This Committee is concerned with maintaining the strength of graduate education at Stevens. The Committee reviews academic standards, graduate curriculum, financial aid and the academic status of graduate students. The Committee will approve specific courses and programs, formulate policy and the

details of its implementation subject to existing faculty rules, and recommend policies governing the awarding of financial aid to graduate students.

[2] SSE Liaison, Veteran Affairs, 2011 - present
A veteran of the Vietnam War, Dr. Cloutier serves as the SSE liaison for all students that have previously served in the military and are current enrolled in an SSE program. In this capacity, he provides a common understanding with students with military service to help them cope with the transition from military life to academic life.

School of Systems and Enterprises, Stevens Institute of Technology

[1] SSE Director for Systems Programs Search Committee, 2012-2013
Participate in the search and recommendation for a new Director for Systems Programs for SSE.

[2] SSE Excellence in Research Award chair, 2009-present
As the Chair, Dr. Cloutier manages the selection process for The School of Systems and Enterprises (SSE) Excellence in Research Award. This award is granted annually to a Master's degree student in the SSE at Stevens Institute of Technology, who has demonstrated exemplary research that has been published as a Master's Thesis or a Master's Project. This award serves to honor and recognize those students whose written work has been deemed noteworthy and exceptional by a committee of SSE Faculty.

[3] SSE Best Student Paper Award, 2009-present
Dr. Cloutier serves on the committee for the SSE Best Paper Award. This award goes to a graduate student in the School of Systems and Enterprises who has distinguished themselves in the development of scholarly work through the publication of a peer-reviewed conference or journal paper.

[4] SSE Best Dissertation selection committee member, 2009-present
Dr. Cloutier serves on the Outstanding Dissertation Award for Research in SSE award committee. This is awarded annually to the PhD candidate in the School of Systems and Enterprises who has distinguished him or herself in the conduct of research. This award is chosen by the faculty of the School of Systems and Enterprises and consists of a cash award and a plaque.

[5] SSE Research Days, Co-Chair, 2009, 2010
This is a mini-conference of SSE Ph.D. student research. Dr. Cloutier was responsible for organization of program and coordination of events.

[6] SSE Doctoral process, 2009-2010

Dr. Cloutier wrote the first draft of what is now the SSE Doctoral Handbook.

[7] SSE VMC Strategic Initiative, 2010-2011
As part of the 2010 SSE strategic initiatives, Dr. Cloutier chaired the development of the Visualization, Modeling, and Computational Lab. The impact of this work resulted in the establishment of the VMC Lab in the Altorfer building.

Professionally Related Service Activities

Committees and Working Groups

[1] NSF Compact and Efficient Fluid Power (CCEFP) Engineering Research Center (ERC) Science Advisory Board (SAB), 2010 - Present
The NSF recommended that the CCEFP add a systems engineer to the SAB. Dr. Cloutier was invited to join the SAB by their search committee. The Center for Compact and Efficient Fluid Power (CCEFP) is a network of researchers, educators, students and industry working together to transform the fluid power industry—how it is researched, applied and studied. Center research is creating hydraulic and pneumatic technology that is compact, efficient, and effective. The CCEFP's education and outreach program is designed to transfer this knowledge to diverse audiences—students of all ages, users of fluid power and the general public.

[2] INCOSE Delaware Valley Chapter President 2013
Dr. Cloutier has been very involved with the local chapter (Delaware Valley) of the International Council on Systems Engineering (INCOSE) which is the premier professional organization for systems engineering.

[3] INCOSE Delaware Valley Vice President/President Elect 2012
Dr. Cloutier has been very involved with the local chapter (Delaware Valley) of the International Council on Systems Engineering (INCOSE) which is the premier professional organization for systems engineering.

[4] INCOSE Delaware Valley Communications Director 2008 – 2011
Dr. Cloutier has been very involved with the local chapter (Delaware Valley) of the International Council on Systems Engineering (INCOSE) which is the premier professional organization for systems engineering.

[5] INCOSE Technical Committee – Communications Director 2006-2008
In this role, Dr. Cloutier was responsible for communicating the technical agenda for International Council on Systems Engineering (INCOSE) to all members of this professional organization. He also was involved with all decisions regarding the technical direction and execution of the organization.

Conference Activities

Program Committee

[1] Systems Engineering and Software Engineering Workshop – A workshop to Explore their Inter-relationship, June 2014, Technical Committee, Stevens Institute of Technology, Hoboken, NJ

[2] Industrial and Systems Engineering Research Conference, IIE Annual Conference/Expo May 18-22 2013
San Juan, Puerto Rico
2013 Program Committee/Systems Engineering Co-Track Chair

[3] Conference on Systems Engineering Research, March 17-19, 2010
Hoboken, NJ
Technical Program Chair
Dr. Cloutier served as the chair of the technical program for this conference. He was responsible for organizing the call for papers; the entire submission, review, and selection process; the peer reviewers, and the awards. This conference had the largest attendance since the conference began. The primary conference objective was to provide practitioners and researchers in academia, industry, and government a common platform to present, discuss and influence systems engineering research with the intent to enhance systems engineering practice and education. Finally, he was responsible for architecting the technical program and administering the review of papers.

[4] Conference on Systems Engineering Research, March April 20-23, 2009
Loughborough, UK
Program Committee
Dr. Cloutier provided peer reviews for 14 papers submitted by systems engineering researchers and practitioners in academia, industry, and government a common platform to present, discuss and influence systems engineering research with the intent to enhance systems engineering practice and education.

Session/Workshop Chair

IEE Industrial and Systems Engineering Research Conference, 2012, Systems Engineering Sessions (3)

Multiple Systems engineering sessions for INCOSE International Symposiums

Invited Panelist

[1] NCOIC Panel Discussion on Patterns. April 6, 2011

[2] Keynote Panel Member, Topic: Complexity has become a "tipping point."

[3] SSCI System & Software Technology Conference (SSTC), Las Vegas, NV, April 2008

[4] Patterns for NCOIC, Network Centric Operations Interoperability Consortium Plenary, Denver, CO, February, 2008

Consulting Activities

Calimar Consulting, LLC (Est. 1999)

Developed 1.5 day Architecture Thinking workshop
Developed 1.5 day Patterns and Reference Architectures workshop
Perform general systems engineering consulting services to keep current in systems engineering practices and directions.

Past Customers

Nokia, Helsinki, Finland - Telecommunications
Baker Hughes, Houston, TX – Oil and Gas Drilling
General Dynamics, Taunton, MA – C4 Systems
Harris Corporation, Melbourne, FL – Aviation Ground Systems
Syndetics, Fairfax, VA – Systems Engineering Consulting

Other Work Experience

2000 - 2007. Adjunct Professor, School of Business Administration, Eastern University, St. Davids, PA

Taught graduate and undergraduate level business courses in the FastTrack MBA and the Undergraduate Degree Completion programs. Other activities included course author and manager, Technical Applications to Business and Managing IS/IT Organizations.

Courses Taught

Research Design (MNGT520)
Quantitative Decision Making (MNGT650)
Technical Application to Business
Introduction to Computer Science
Managing IS/IT Organizations
Systems Analysis and Design

8/2004 - 4/2007. Principal Engineer, Systems Architect, Lockheed Martin, Moorestown NJ

Perform architecture definition, design and modeling (SysML, UML, IDEF0) as chief architect for system and system of systems projects (SoS). Participate in, or lead, the mission analysis and the development of the concept of operations for these projects. Support ongoing proposals and R&D efforts as the chief architect. Lead architect for the development and definition of a systems engineering process for architecting complex systems using industry and defense standards (MDA, UML, SysML, DoDAF, SOA, IDEF0, etc.). Modeling tool experience includes Rational Rose, Telelogic TAU, Sparx Systems Enterprise Architect, and Vitech Core.

4/2001 - 7/2004. Engineering Project Manager, Lockheed Martin, Moorestown NJ

Software project manager, lead software engineer and lead engineering process engineer for a large, object oriented, combat system software development effort (Aegis Open Architecture). Program included internally developed and contractor developed software. Responsibilities spanned the entire software development lifecycle - establishment of key metrics, requirements management, design, development plans, test plans and the delivery of software products using Rational Unified Process (RUP-SE) for development. Required continuous contact with civilian and Navy customers, software subcontractors, developers, systems engineers, and senior Lockheed-Martin management. Co-leader for model based development kaizen. During the project definition phase, participated in development of the initial system architecture. Technical consultant for Provided technical support in the area of open architecture to the LCS proposal team. Lead engineer for an engineering grant intended to foster long-term relationships between LM and Rowan University. One of six engineers selected to attain a masters or doctoral degree in systems engineering, in which Lockheed Martin MS2 paid both tuition and labor to attend classes.

5/1999 - 3/2001. Account Manager, Omicron Consulting, Philadelphia, PA
Managed an effort that required interfacing with the President, CFO, CTO, SVP of Sales and Marketing, and the VP of Planning of a 75-year-old company on a daily basis. The task was to develop the definition, necessary strategic plans, and financials (projecting revenue, expenses and cash flows for the next 5 years), for a major new service. The effort also includes strategic vision document, a high-level architecture document, a web site prototype, and an implementation plan.

11/1998 - 4/1999. Product Manager, Omicron Consulting, Philadelphia, PA
Responsibilities included managing the strategic visioning/e-Commerce projects, business development and product development of companies in my portfolio. This involves extensive interface with bricks and mortar, Fortune 1000 corporate executives to assist them in developing strategic directions, prototypes, and business plans for future products that are to be web enabled.

1997 - 1998. Application Process Architect (with distinction as Associate Technical Fellow), Boeing Company, Philadelphia, PA
Directed teams of 10 to 12 people implementing the application architecture and software standardization. Managed an internal application development budget in excess of $3M. Coordinated and scheduled all software developer training. Served on core team for Boeing Defense and Space IT strategic planning. Certified Boeing Process Improvement Specialist and Trainer. Participated in Boeing SEI/CMM Implementation.

1996 - 1997. Computing Infrastructure Architect, Boeing Company, Philadelphia, PA
Planned $10 million deployment of Microsoft NT on 3,000 workstations. Created and managed intranet web pages for internal organizations. Developed $2 million Intranet deployment plan. Devised a plan to place all internal servers (of which there were over 100) under change control, and authored the change control procedures. Implemented this same plan.

1994 – 1996. Project Manager/Business Process Architect, The Boeing Company, Philadelphia, PA
Managed a team of 40 IT professionals in the rescue effort of the failing CATIA upgrade. Project delivered on time and on budget ($13.5 million). Invented configuration management process still benefiting company today. Co-facilitated a cross-divisional team to reengineer IT business processes for Defense and Space Group.

1993 - 1994. Project Manager/Staff Engineer, Network Architecture, The Boeing Company, Philadelphia, PA
Represented Philadelphia organization on Boeing-wide team of 12 to set distributed computing strategies and policies for 130,000 employees. Co-authored the Systems Architecture Principles Handbook. Managed object-oriented development project.

1989 - 1993. Product Manager - DEC All-In-One, The Boeing Company, Philadelphia, PA
Managed $3.5 million annual budget for operations and staff to develop and operate Boeing Philadelphia's office automation system. This user community grew from 200 to 2,000 in 3 years due to creation of seven new applications. Founding member of the Boeing Philadelphia Mentor Steering Committee and named Boeing Computer Services – Philadelphia "Employee of the Year".

1986 - 1989. Lead Systems Engineer, V22 Avionics Design Laboratories, The Boeing Company, Philadelphia, PA
Transitioned three V22 Avionics Design Laboratory lines from their original location in Wichita to Philadelphia. Responsible for the day-to-day operations.

1983 - 1986. Senior Systems Engineer, RCA Missiles and Space, Moorestown, NJ
Aegis system specifications, Anti-submarine Warfare project engineer and Aegis Display System program management office.

1978 - 1986. United States Navy
Reserve Anti-submarine Warfare Officer, USS Clifton Sprague, FFG-16
Anti-submarine Warfare Officer, USS Chandler, DDG-996
Machinery Officer, USS Monticello, LSD-35