Dr. Robert J Cloutier

Professor
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Director of Graduate Studies and Program
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Dr. Cloutier is a Professor, Systems Engineering Program Chair, and Director of Graduate Studies in the College of Engineering at the University of South Alabama (USA). He holds a concurrent appointment at University of South-Eastern Norway at the Kongsberg Campus. His research interests include system architecting, concept of operations, model-based systems engineering, and complex patterns for systems engineering. His record of scholarship includes 22 peer reviewed journal articles and a monograph: "Systems Engineering Simplified" with CRC Press, Taylor & Francis Group. He is editor in chief for the Systems Engineering Body of Knowledge (https://www.sebokwiki.org) which receives >25k unique visitors and >68k page views per month. Before joining USA, Dr. Cloutier was an Associate Professor and Deputy Director, Systems and Software Division and Director of Systems Engineering Programs at Stevens Institute of Technology in Hoboken NJ. At Stevens he executed over $4.0M in research grants, and

ACADEMIC AWARDS by STUDENT

x   Graduated 9 Doctoral degrees and 3 Thesis based D•š degrees
x   One doctoral student received 2013 SSE Best Dissertation Award
x   Kv u•š Œ[• •šµ v0š1 GSSE]À î Excellence in Research Award
x   Kv u•š Œ[• •šµ vš Œ]À îìíí ^^ Excellence in Research Award; one awarded an Innovation and Entrepreneurship Graduate Fellowship (2 yrs.)
x   Two undergraduate students awarded an Innovation and Entrepreneurship Summer Scholarship

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Curriculum Vitae -

[11] 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

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

[13] }v U DXU ˜ o}µš] ŒU ZX ~îìíì•X šš o[]vP v] Œ] u} o• Z•µoš š• [µv v‹µ!š o[KD'¡ •µ Œ ^Ç•D>X ' v] 95(December), 3-88

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

[15] Sommer, K., & Cloutier, R. (2009). Clockspeeds in Architecture Evolution, Dead Ends, and Discontinuities. Systems Research Forum, 3(1), 59-79

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

[17] 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

[18] 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

[19] DiMario, M., Cloutier, R., and Verma, D. (2008). Applying Frameworks to Manage SoS Architecture. Engineering Management Journal, 20(4)

[20] Jain, R., Chandrasekaran, A., Elias, G., & Cloutier, R. (2008). Exploring the Impact of

OTHER REFEREED PUBLICATIONS AND PROCEEDINGS

[1] Pennison, G., Cloutier, R., Webb, B. (2018). Local Coastal Roads Next Generation. 2018 IISE Annual Conference, Orlando, FL, May 20, 2018

[2] K. Goevert, K., Cloutier, R., Roth, M., Lindemann, U. (2016). Concept of System Architecture Database Analysis. Bali, Indonesia 2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) Pages: 410 - 414, DOI: 10.1109/IEEM.2016.7797907. 7 Dec. 2016.

[3] Willett, K., Dove, R., Cloutier, R., and Blackburn, M. (2016) On System Dynamics Modeling of Human-Intensive Workflow Improvement Case Study in Cybersecurity Adaptive Knowledge Encoding. INCOSE International Symposium, Edinburgh, Scotland, 18-21 Jul

[4] Cloutier, R. (2015). Current Modeling Trends in Systems Engineering. INCOSE Insight, 18(2)

[5] Cloutier, R., Jones, R., and Lester, H. (2015). Large Scale Interactive Modeling and Visualization of Cities: Can it be done? Industrial and Systems Engineering Research Conference, Proceedings of the IIE Annual Conference and Expo 2015. Nashville, TN, May 30-June 2, 2015

[6] Cloutier, R. and Bone, M. (2015). The Ongoing Adoption of Model Based Systems Engineering. Industrial and Systems Engineering Research Conference, Proceedings

Workshop: Sensing for Control and Augmentation, 2013 IEEE (AIPR, vol., no., pp.1,6, 23-25 Oct. 2013 DOI:10.1109/AIPR.2013.6749319

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

[14] 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

[15] 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

[16] 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

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

[18] 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

[19] 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

[20] Squires, A., Cloutier, R. (2011). Comparing Perceptions of Competency Knowledge Development in Systems Engineering Curriculum: A Case Study, Proceedings from the 118th 1 1e(En)-6(gin)6403342 0-

[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] Conference Presentation: Salter, R., Cloutier, R. (2018). "Towards Early Lifecycle Prediction of System Reliability". Military Operations Research Society Emerging Techniques Forum 2018.

[2]

DOCTORATE, MASTERS, UNDERGRADUATE STUDENTS DIRECTED

CURRENT DOCTORAL STUDENTS

Robert Delles, University of South Alabama
Ifezue Obiako, University of South Alabama

DOCTORAL GRADUATES

[1] Salter, Cody, D.Sc. Systems Engineering, Summer î ì í ô U ^ / u ‰ Œ } À] v P ^ Ç • š u • Z o]] U v] À Ç •] š Ç of South Alabama, Mobile, AL

[2] Kari Lippert U X ^ X ^ Ç • š u • v P] v Œ] v P U ^ Z } o o of Information Z À } o µ] P] š o } • Ç • š u • _U University of South Alabama, Mobile, AL

[3] Barbara Turrens U X ^ X ^ Ç • š u • v P] v Œ] v P U ^ d } Á Œ ^ Ç • š u • D } Œ v ^ Z] ‰ µ] o] v P _ Ursity of South Alabama, Mobile, AL

[4] Matthew V. Cilli U W Z X X ^ Ç • š u • v P] v Œ] v P U ^ / u ‰ Œ } À] v P

DOCTORAL COMMITTEE MEMBERSHIP GRADUATED

[1] Scott Warren, Doctor of Philosophy (Ph.D.) t µ•] v ••X ^methodology study of the historic impact of soft systems methodology and its associated data À]•µ o]Ì š}}v %%Œ} Z]všZ }vš Æš }(}%Œ š]}v• v University of North Texas, Denton, TX

[2] Jacob Deal, } š}Œ }(^] v ~ X^ X• ^Ç•š u• vP]v Œ]vP U ^ Cycle Assessment of-Pt K Æ I oîKï š oÇ•š•W dZ ((š }(WŒ}µ s 2018. University of South Alabama, Mobile, AL

[3] Meagan Bunge, Doctor of Science (D.Sc.) System vP]v Œ]vP U ^dZ %%o] ^Ç•š u• vP]v Œ]vP š} &µv š]}v o]Ì & Œ• š šZ E v}• South Alabama, Mobile, AL

[4] Sam Mayes, } š}Œ }(^] v ~ X^ X• ^Ç•š u• vP]v Œ]vP U ^ Hyperspectral Imaging Technology Through Ç•š u• vP]v Œ]vP_U îìíôX hv v of South Alabama, Mobile, AL

[5] ,}}vP z v ^ d }U WZX X ^Ç•š u• vP]v Œ]vP U ^D} o]vP ^µ•š]v o v ŒPÇ ^Ç•š u]v hv]À ŒPÇ Stevens Institute u Œš]š of Technology, Hoboken, NJ

[6] James R. Armstrong, WZX X ^Ç•š u• Development of Systems vP]v Œ]vP Æ%Stevens Institute of Technology, Hoboken, NJ

[7] Keith D. Willett, Ph.D. Systems Engineering WZX X ^Ç•š u• vP]v Œ]vP U

D ^d Z[^ d, ^/^

[1] Katrine Gilhav. "Including Mechanical Engineers in System Modeling", June 2019. University of Soutest Norway. Kongsberg, Norway

[2] Gövert U < Œ] • š] v X ^ D š Z } š } ( ] v •] u o Œ] š] • v] ((Œ v š } o • •] (Ç Œ Z š Ç ‰ • v ‰ š š Œ-140. Œ January 2016. d Z •] • E } Done in partnership with Dipl-Ing. M.Sc. Michael Roth. Institute of Product Development, Technische Universitat Munchen.

[3] ^š] š • U D š š Z "Active Measurement of System Models Expressed in SysML through the Reuse of UML Model • D • µ Œ " December 2015. Stevens Institute of Technology, Hoboken, NJ

[4] Wing, Adam. ^ d l] v "Systemic Modeling approach to the Apron area at Major u š Œ } ‰ } o] š v] Œ ‰ } Œ š • _ X D Ç î ì í ñ X ^ š À v • / v • š] š µ š } (

[5] Benham Esfahbod, ^ d } Á Œ š Z ‰ ‰ o] š] } v } (ï ' Œ ‰ Z] • š } K ‰ } v • } µ May 2013. Stevens Institute of Technology, Hoboken, NJ

[6] Z Œ] • š } ‰ Z Œ Z] o o Ç X ^ ‰ ‰ o] š] } v } (W š š Œ v •] v š Z K Traffic } v š Œ } o ^ Ç • š u] • ‰ o Ç ^ Ç • š u • _ X D Œ Z î ì ì õ X ^ š À v Technology, Hoboken, NJ

UNDERGRADUATE SPECIAL PROJECTS

[1] Lindsay Stone, "Current Literature on Model-Based Systems Engineering", April 2014

[2] o o v ' Œ] P P • U ^ ‰ ‰ o] š] } v • } (^ Œ À] K Œ] v š Œ Z] š 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] < À] v > U h ^ Œ u Ç U ^ } u u } v K ‰ Œ š] v P v À] Œ } v u v š] v

[5] Z } v o Z À Œ U } } Ì o o v "Cloud-Based Approach To Cloud Œ Z] š š µ Œ _ U D Ç î ì í î

[6] Joseph Hanosh, Sandia National o } Œ š } Œ] • U ^ ^ Ç • š u v P] v Œ] v P Œ •] P v (} Œ >] Œ Œ Ç ^ Ç • š u _ U & Œ µ Œ Ç î ì í î

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[8] Doug Boggie, Northrup Grumman, Applying Syst 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] }µP D o v }U D]šŒ U s Œ]}µ• d Zv]‹µ • (}Œ Œ Z]š š Project, May 2010

[12] Georgia Artery, Sandia National Labs, Using Systems Engineering To Define Enterprise Domain, April 2010

[13] Heather Kramer, Sandia Nation on> • U ^ :µ•](š]}v v D šZ} }o}PÇ Collection and Integration of Multiviewpoint Solution Patterns as Elements of v š Œ ‰ Œ] • ^ } o µ š] } v Œ Z] š š µ Œ • š ^ v] E š] } v o >

[14] D Œ l ^‰]vU ^ v] E š]}v o > er‰µ Œ}] A UŒD ^(šŒŒ[• W šŒ}j 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[• W Œ }j š U u Œ îììõ

[17] Carol Saab, Sandia National Labs, System of Systems Requirements for an Electric Automobile Enterprise, December 2009

[18] d Œ] }U h^ Œ u ÇU ^Ç•š u• v P]v Œ]vP]v šZ & µ š µ Œ } Project, December 2009

[19] Kim Sommer Ça

high-risk, potentially high-payoff activities that enable national security missions and advance the frontiers of

INDUSTRY AND PRIVATE COMPANIES

$25,000, PI, USA Health Syst., Mobile, AL, Investigation into Emergency Room Diversion t Applying Systems Engineering in Health System, 2016

$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

$93,500, Co-PI with Drs. B. Sauser, A. Mostashari, D. Verma, and Nilchiani, Systems Engineering Resech Development and Architecting, Armament Research & Development Center, 2009m 0 g 0 G [($)] TJ ET Q q

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) 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 development of the initial system architecture. Provided technical support in the area of open architecture to the LCS proposal team. Lead engineer for an engineering grant intended to foster closer 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 Con12 Tf 1w5 12 Tc0 NJ

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