

ERIC S. REBENTISCH PH.D. CURRICULUM VITAE

MIT CENTER FOR SOCIOTECHNICAL SYSTEMS RESEARCH
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ACADEMIC EDUCATION

Ph.D., Management of Technological Innovation, 1995, Sloan School of Management, Massachusetts Institute of Technology, Cambridge, Massachusetts.

Master of Organizational Behavior, 1990, Brigham Young University, Provo, UT.

B.S., Aerospace Engineering, 1986, California State Polytechnic University, Pomona, CA.

PROFESSIONAL CAREER AND EXPERIENCE

MIT, Sociotechnical Systems Research Center, Research Associate, (2012 to present)

MIT Lean Advancement Initiative, Research Associate, (1996 to 2012), Cambridge, MA.

- Lead Researcher Enterprise Product Development research team (2002 to 2012)
- Lead Researcher Organizations and People research team (2000 to 2002)
- Lead Researcher Policy and External Environment research team (1995 to 2000)

Metis Design Corporation, Senior Projects Engineer (2003 to 2008), Cambridge, MA.

MIT, Center for Technology, Policy and Industrial Development, Postdoctoral Associate, Lean Aerospace Initiative (1995 to 1996), Cambridge, MA.

Lockheed Aeronautical Systems Company, Propulsion Engineer (1986 to 1988), Burbank, CA.

MAJOR AREAS OF RESEARCH AND PUBLICATIONS

- Design and Evolution of high performance Enterprise Product Development Systems
- Lean Product Development
- Lean Program Management
- Enterprise Change Management
- Evolutionary System Architecting and Development Strategies
- Platform Architectures and Commonality
- Global Product Development

- Development and Management of Intellectual Capital in Product Development

PUBLICATIONS/PRESENTATIONS

PUBLICATIONS: PEER-REVIEWED JOURNAL PUBLICATIONS

- Makumbe, P., Seering, W., & Rebentisch, E: "Beyond Cost: Complexity and Global Product Development Location Advantage". (Submitted to *Research Policy*)
- Makumbe, P., Seering, W., & Rebentisch, E: "Beyond Outsourcing: Global Product Development and Mode Choice in Complex Product Development". (Revise and resubmit at the *POM Journal*)
- Hoppmann, J., Rebentisch, E., Dombrowski, U., and Zahn, T., "A Framework for Organizing Lean Product Development", *Engineering Management Journal*, Volume 22, Issue 4 (December), 2010.
- Cameron, Bruce G., Crawley, Edward F., Loureiro, Geilson, and Rebentisch, Eric, "Value Flow Mapping: Linking Stakeholder Analysis to Requirements Derivation", *Acta Astronautica*, Volume 62, Issues 4-5 (February 15), 2008.
- Rebentisch, Eric and Ronald Jobo, "Lean Now: Using a Research Community to Understand Change in the Acquisition Enterprise", *Acquisition Review Quarterly*, Aug-Nov, 2004.
- Carlile, Paul, and Eric Rebentisch, "Into the Black Box: The Knowledge Transformation Cycle", pp. 1180-1995, Vol 49, No. 9 (September) 2003, *Management Science*.
- Murman, Earll M., Walton, Myles, Rebentisch, Eric, "Challenges in the Better, Faster, Cheaper Era of Aeronautical Design, *Engineering and Manufacturing*", *Aeronautical Journal*, 104 (1040): 481-489 Oct 2000. Awarded best paper prize (2000) for product development.
- Katz, Ralph, Eric Rebentisch, and Tom Allen, "A Study of Technology Transfer in a Multinational Cooperative Joint Venture," *IEEE Transactions on Engineering Management*, February, 1996
- Rebentisch, E. and Ferretti, M., "An Asset-Based View of Technology Transfer in International Joint Ventures," *The Journal of Engineering and Technology Management*, July, 1995.

PUBLICATIONS: PEER-REVIEWED CONFERENCE PRESENTATIONS

- Knoblinger, C., Oehmen, J., Rebentisch, E., Seering, W., and Helten, K., "Requirements for Product Development Self-Assessment Tools", presented at the International Conference on Engineering Design, ICED11, 15-18 August 2011, Copenhagen Denmark.
- Makumbe, P., Gupta, N., Rebentisch, E., Seering, W., Barrett, C., Gordon, M., Musso, C., Link, J.: "Product Development Practices to Meet Both Financial and Non-financial Objectives", presentation at the 33rd International PDMA Conference, Anaheim CA, Oct 2009.
- Long, D., Seering, W., Rebentisch, E., (2009). "Finding Opportunities For Commonality in Complex Systems", International Conference On Engineering Design 09, August 2009 at Stanford, CA.
- Pedzi Makumbe, Warren Seering and Eric Rebentisch, "Beyond Cost: Product Complexity and the Global Product Development Location Advantage", International Conference On Engineering Design 09, August 2009 at Stanford, CA.
- Pedzi Makumbe, Warren Seering and Eric Rebentisch, "Beyond Outsourcing: Global Product Development and Mode Choice In Complex Product Development", Production and Operations Management Meeting, May 2009 in Orlando FL.
- Eric Rebentisch, "Lean Product Development" International Council on Aeronautical Systems conference, 17 September 2008, Anchorage AK.
- Hugh McManus and Eric Rebentisch, "Experiences in Simulation-Based Education in Engineering Processes", 38th ASEE/IEEE Frontiers in Education Conference, October 22 – 25, 2008, Saratoga Springs, NY.
- Wirthlin, Joseph R., Seering, Warren, and Rebentisch, Eric, "Understanding Enterprise Risk Across An Acquisition Portfolio: A Grounded Theory Approach", Systems Engineering and Risk Management Symposium, February 2008, Los Angeles, CA.
- Bador, Damien P.M.D., Warren J. Seering, and Eric S. Rebentisch. "Measuring The Efficiency Of Commonality Implementation: Application To Commercial Aircraft Cockpits", International Conference On Engineering Design (ICED'07), Cite Des Sciences Et De L'industrie, Paris, France, August 28-31, 2007. Awarded the Lean Enterprise Value Foundation annual prize for best paper, 2007.
- McManus, Hugh, Murman, Earll, Rebentisch, Eric, and Stanke, Alexis, "Teaching Lean Thinking Principles Through Hands-on Simulations", 3rd International CDIO Conference, MIT, Cambridge, Massachusetts, June 11-14, 2007.
- Loureiro, Geilson, Crawley, Edward F., Catanzaro, Sandro, and Rebentisch, Eric, "From Value to Architecture—Ranking the Objectives of Space Exploration", International Astronautical Congress, Valencia Spain, Oct 2006,
- Rebentisch, Eric S., Crawley, Edward F., Loureiro, Geilson, Dickmann, John Q., and Catanzaro, Sandro N., "Using Stakeholder Value Analysis to Build Exploration

Sustainability", 1st Space Exploration Conference, Orlando, Florida, January 30, 2005

Cutcher-Gershenfeld, Joel and Eric Rebentisch, "The Impact of Instability on Complex Social and Technical Systems," MIT Engineering Systems Division Internal Symposium (2002) and revised for MIT Engineering Systems External Symposium (2004).

Rebentisch Eric, Donna Rhodes, and Earll Murman, "Lean Systems Engineering Research Initiatives", Conference on Systems Engineering Research, April 2004.

Dare, Robert, Eric Rebentisch, Earll Murman, "Adaptive Design Using System Representations" Fourteenth Annual International Symposium of the International Council On Systems Engineering (INCOSE), June 2004.

Wirthlin, Joseph R. and Eric Rebentisch, "Idealized Front End Process and Maturity Matrix: A Tool for Self-Assessment and Process Maturity Leading Up to Product Launch Decisions", INCOSE 13th Annual International Symposium, Washington, D.C., July 2003.

PUBLICATIONS: BOOKS AND BOOK CHAPTERS

Oehmen, J., (Ed.), "The Guide to Lean Enablers for Managing Engineering Programs", version 1.0, Joint MIT-PMI-INCOSE Community of Practice on Lean Program Management, URI: <http://hdl.handle.net/1721.1/70495>, June 2012.

Murman, Earll, Thomas Allen, Kirkor Bozdogan, Joel Cutcher-Gershenfeld, Hugh McManus, Deborah Nightingale, Eric Rebentisch, Tom Shields, Fred Stahl, Myles Walton, Joyce Warmkessel, Stanley Weiss, and Sheila Widnall, "Lean Enterprise Value", 2001, Palgrave.

PUBLICATIONS: WHITEPAPERS, PROFESSIONAL PERIODICALS AND OTHER NON-PEER REVIEWED PUBLICATIONS

Mayrl, P., Oehmen, J., Rebentisch, E., "Customer Value in Lean Product Development", LAI Paper Series: "Lean Product Development for Practitioners", May 2012.

Oehmen, J., Rebentisch, E., Kinscher, K., "Program Management for Large Scale Engineering Programs", LAI Paper Series: "Lean Product Development for Practitioners", December 2011.

- Oehmen, J. and Rebentisch, E.: "Der Informationsfluss muss effizient sein" (in German; The information flow must be efficient). *IO Management*, Switzerland, July/ August 2011, Nr. 7/8, pp. 58-62
- Oehmen, J., Rebentisch, E., "Lean Program Management", LAI Paper Series: "Lean Product Development for Practitioners", October 2010.
- Oehmen, J., Rebentisch, E.: "Compilation of Lean Now! Project Reports", LAI White Paper, Cambridge, MA, October 2010.
- Oehmen, J., Rebentisch, E., "Waste in Lean Product Development", LAI Paper Series: "Lean Product Development for Practitioners", July 2010.
- Oehmen, J., Rebentisch, E., "Risk Management in Lean PD", LAI Paper Series: "Lean Product Development for Practitioners", March 2010.
- Gordon, M., Musso, C., Rebentisch, E., and Gupta, N., "The Path to Developing Successful New Products", *Operations Practice, McKinsey Quarterly*, Jan 2010.
- Hoppmann, J., Rebentisch, E., Dombrowski, U., and Zahn, T., "Toward a Theory of Lean Product Development", LAI White Paper WP09-01, 30 November 2009.
- Hoppmann, J., Rebentisch, E., Dombrowski, U., and Zahn, T., "Implementation of Lean Product Development – An Empirical Analysis", LAI White Paper WP09-02, 30 November 2009.
- Hoppmann, J., Rebentisch, E., Dombrowski, U., and Zahn, T., "A Roadmap for Implementing Lean Product Development", LAI White Paper WP09-03, 30 November 2009.
- Gordon, M., Musso, C., and Rebentisch, E. (2009). "The Path to Developing Successful New Products", *Wall Street Journal and Sloan Management Review Business Insight*, 30 November 2009.
- Hoppmann, J., Rebentisch, E., Dombrowski, U., and Zahn, T. "Efficient Introduction of Lean in Product Development: Results of the Survey", Lean Advancement Initiative (Massachusetts Institute of Technology) and Institute for Manufacturing and Operations Research (Technical University of Braunschweig) Report, July 2009.
- Marcus Vinicius P. Pessôa, Warren Seering, and Eric Rebentisch, "Understanding The Waste Net: A Method For Waste Elimination Prioritization In Product Development", working paper January 2008.
- West, John, et al, "Concept Exploration & Refinement Study: Final Report" Prepared for NASA Exploration Systems Mission Directorate, The Charles Stark Draper Laboratory, Inc, September 15, 2005.
- Cutcher-Gershenfeld, Joel, Betty Barrett, Eric Rebentisch, Thomas Kochan and Rob Scott, "Developing a 21st Century Aerospace Workforce" Policy White Paper for submission to the Human Capital Task Force, The U.S. Commission on the Future of the Aerospace Industry, November 2001

- Mandelbaum, Jay, William S. Kaplan, Wesley Harris, Michelle Kordell, Paul McMahon, and Eric Rebentisch, "Incentive Strategies for Defense Acquisitions", Office of the Deputy Under Secretary of Defense for Acquisition Reform, April 2001
- Rebentisch, E., "Creating Value Across The Enterprise: Pathways to a Robust and Prosperous US Aerospace Enterprise", February 2000 MIT Lean Aerospace Initiative white paper.
- Heberling, Michael, J. Ronald McDDonald, R. Michael Nanzer, Eric Rebentisch, and Kimberly Sterling, "Using Commercial Suppliers - Barriers and Opportunities", *Program Manager*, July-August, 1998.
- Anderson, Michael, and Eric Rebentisch, "Commercial Practices – Dilemma or Opportunity?", *Program Manager*, March-April 1998.
- Rebentisch, E., "A Study of Technology Transfer in a Multinational Cooperative Joint Venture", 1996 MIT ICRMOT working paper
- Rebentisch, E. "Knowledge in Flux: The Transfer of Technology and Practice in an International Joint Venture." (Doctoral Dissertation, MIT Sloan School of Management.) June 1995.

INVITED KEYNOTES, WORKSHOPS AND SEMINARS

- Rebentisch, E., and Hoppmann, J., "An Implementation Roadmap for Lean Product Development", presented at the Lean Product and Process Development Exchange (LPPDE) conference, 21 April 2010, Hilton Head, SC.

STUDENT THESES/RESEARCH ADVISED

- Kashyap, Pankaj, "Goal Setting for Improvement in Product Development Performance of Organizations", MIT SM Thesis, September 2012.
- Uspenskiy, Dmitry, "Change Management Approach for Enterprise Transformation and Improvement", MIT SM Thesis, September 2012.
- Eralp, Ziya Deniz, "Assessment of Business Performance in the Domain of Product Development", MIT SM Thesis, August 2012.
- Long, Lt Col David (USAF), "Systems Architecture-based Approach to Assess Candidate Upgrades to Complex Systems", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, August 2012.
- Rupani, Sidharth, "Enterprise Product Development Processes as 'Process Platforms'", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, January 2011.

- Castro, Joao, "The Role of Alignment in PD: The Influence of Compatibility, Continuity and Alignment", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, August 2010.
- Wirthlin, Lt Col Joseph R. (USAF), "Identifying Leverage Points in Defense System Acquisition", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, August 2009.
- Hoppmann, Joern, "The Lean Innovation Roadmap: A Systematic Approach to Introducing Lean in Product Development Processes and Establishing a Learning Organization". Master's Thesis, Technical University of Braunschweig, Germany, June, 2009.
- Gillespie, Lt Col Daniel (USAF), "Mission Emphasis and the Determination of Needs for New Weapon Systems." Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, June 2009.
- Boren, Michael, "Lean Principle Application in An Automotive Product Development Process With Special Emphasis On Peer Reviews". MIT SM Thesis, May 2009.
- Makumbe, Pedzisaya, "Globally Distributed Product Development", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, September 2008.
- Folgo, Elena, "Accelerating Time-to-Market in the Global Electronics Industry", MIT SM Thesis, May 2008
- Tomlin, Grace, "Enabling Manufacturing Flexibility Issue Resolution in Advanced Vehicle Development", MIT SM Thesis, May 2008
- Jordan, Brian, "Tailoring the Prototyping Process to Achieve Customer Value", MIT SM Thesis, May 2008
- Davis, Maj. Mark (USAF), "A Lean Engineering Change Process in an Air Force System Program Office", MIT SM Thesis, February, 2008
- Davidz, Heidi, "Enabling Systems Thinking to Accelerate the Development of Senior Systems Engineers", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, February 2006.
- Taylor, Aaron, "Demonstrating the Benefits of Knowledge Management Assets: Developing and Applying a Valuation Methodology", MIT SM Thesis, January 2006
- Bresnahan, Steve, "Uncertainty and Risk Reduction in the Development of Aircraft Systems", MIT SM Thesis, January, 2006.
- MacKenzie, Maj. Scott (USAF), "Utilizing Product Development Value Stream Mapping In U.S. Air Force Acquisition Program Offices", MIT SM Thesis, January 2006.
- Deitner, Maj. Dennis L. (USAF), "Implementing Enterprise Lean: A Look at Ogden Air Logistics Center", Research Report, August 2004.

- Ferre, Gregoire "IT Management in the Aerospace Industry", MIT SM Thesis, May 2004.
- Siegel, Lawrence R., "Measuring and Managing Intellectual Capital in the U.S., Aerospace Industry", MIT SM Thesis, February 2004.
- Ferdowsi, Bobak "Product Development Strategies in Evolutionary Acquisition", MIT SM Thesis, September 2003.
- Kassin-Deardorff, Sandra Jo "Institutionalizing Change In Aerospace Process And Product Settings", MIT SM Thesis, September 2003.
- Jobo, Maj. Ronald S. (USAF), US Air Force "Applying the Lessons of "Lean Now" To Transform the US Aerospace Enterprise: A study guide for government lean transformation" Research Report, August 2003.
- Dare, Maj. Robert E. (USAF), "Stakeholder Collaboration in Air Force Acquisition: Adaptive Design Using System Representations", Ph.D. Thesis, Engineering Systems Division, Massachusetts Institute of Technology, June 2003.
- Spaulding, Capt. Timothy J. (USAF), "Tools for Evolutionary Acquisition: A Study of Multi-Attribute Tradespace Exploration (MATE) Applied to the Space-Based Radar (SBR)", MIT SM Thesis, June 2003.
- Derleth, Jason Edward "Multi-Attribute Tradespace Exploration and its Application to Evolutionary Acquisition", MIT SM Thesis, May 2003.
- Wright, Michael R. "Strategies for Dealing with Instabilities in a Complex, Multi-Project Product Development System Engineering Environment", MIT SM Thesis, February, 2003.
- Tondreault, Jeremy P. "Improving The Management Of System Development To Produce More Affordable Military Avionics Systems", MIT SM Thesis, February 2003.
- Forseth, Maj. Christopher E. (USAF), "The Pursuit of Acquisition Intrapreneurs", Research Report, August 2002.
- Stich Wozniak, Chandra Kay "Transforming A New Product Development Organization: A Systems Engineering Deployment Case Study", MIT SM Thesis, June 2002.
- Beckert Michelle T. "Organizational Characteristics for Successful Product Line Engineering", MIT SM Thesis, June 2001.
- Silva, Leon M. "A Partitioning Methodology for Helicopter Avionics System with a focus on Life Cycle Cost", MIT SM Thesis, January 2001.
- Herweg Gregory M. and Karl E. Pilon "System Dynamics Modeling for the Exploration of Manpower Project Staffing Decisions in the Context of a Multi-Project Enterprise", MIT SM Thesis, February 2001.

Andrew W. Geoffrey “Do Modern Tools Utilized in the Design and Development of Modern Aircraft Counteract the Impact of Lost Intellectual Capital within the Aerospace Industry?” MIT SM Thesis, May 2001.

Nuffort, Lt. Matthew R. (USAF), “Managing Subsystem Commonality”, MIT SM Thesis, February 2001.

Wirthlin, Lt. Joseph Robert (USAF), “Best Practices In User Needs/Requirements Generation”, MIT SM Thesis, February 2000.

Falco James A. “Offsets And The Aerospace Industry”, MIT SM Thesis, June 1998.

Anderson, CDR Michael H. (USCG), “A Study of the Federal Government’s Experiences with Commercial Procurement Practices in Major Defense Acquisitions” MIT SM Thesis, June 1997.

COURSES TAUGHT

ESD.960 Lean Six Sigma Processes Workshop—pilot test of a master’s-level class for the MIT Leaders for Global Operations program using a novel teaching simulation for hands-on skill development for value stream mapping and related lean improvement techniques. Students are exposed to principles of lean product development, with the application of lean tools to product development systems. Taught Summer 2008. Overall course rating: 4.25/5.

15.340J/ESD.340J Seminar in Social Science Research Methods—master’s level class teaching social science research methods to primarily engineering students to enable them to conduct thesis research in organizational and system-level settings. Taught 1997-2005. Latest overall course rating: 4.43/5.

PI.211s LAI Lean Academy Seminar: Engineering—MIT Professional Institute Summer short course covering principles of lean product development and skill development exercises. Primary attendees are mid-level of higher engineers and engineering managers from industry and government organizations. Taught 2008-2010.

Lean Enterprise Value Short Course—3 day professional education course intended primarily for members of the LAI consortium, including managers and change agents. Makes the primary messages of the book *Lean Enterprise Value* accessible through an interactive simulation that teaches concepts, change management skills, and social/managerial insights. Taught 2004, 2005, and 2006 (variants offered from 2003-2006 through consulting activities.)

Lean Enterprise Product Development Short Course—2 day professional education course intended primarily for members of the LAI consortium, including engineering managers and engineers. Introduces lean concepts for product development through an interactive simulation that teaches PD system concepts, process diagnosis and improvement skills, and social/managerial insights. Taught 2007 (several variants offered from 2006-2008 through consulting activities.)

NOTABLE TEACHING PRODUCTS

Rebentisch, Eric S., and McManus, Hugh L., "Lean Enterprise Value Simulation". A simulation-based suite of training tools and lectures that conveys advanced lean enterprise architecting and change concepts. Used in and adopted by Industry and Government organizations in the US aerospace industry for advanced lean training. 1993-present (official release versions 1.0, 1.4, 1.6, 1.7, 1.8, 2.0, and 2.1).

Rebentisch, Eric S., and McManus, Hugh L., "Lean Enterprise Product Development Simulation". A simulation-based suite of training tools and lectures that teaches principles of lean product development, including the design of lean product development systems. Used in and adopted by organizations in the US and UK aerospace industry for lean training for engineers. 2006-present (official release versions 1.0, 2.2, and 2.3).

NOTABLE ENTERPRISE ANALYSIS AND TRANSFORMATION STUDIES

The Concept Exploration & Refinement Study: Final Report was produced for the NASA Exploration Systems Mission Directorate and delivered by a team of MIT researchers and the Charles Stark Draper Laboratory (September 15, 2005.) This was one of several Constellation Exploration Studies commissioned by NASA to define the space system architecture for missions within the inner solar system. I led a team of postdoctoral and graduate student researchers to develop analysis of the enterprise stakeholders and value delivery to them. The analysis resulted in a report section and recommendations, but also conference presentations, journal publications, and follow-on student theses that developed an approach to assessing value delivery in complex multi-stakeholder systems.

US Army Materiel Enterprise (ME) Transformation Plan (May 2009) was the output of a series of Enterprise Strategic Analysis for Transformation (ESAT) workshops I lead during the winter of 2009. The plan was created by the team participating in the workshops, accepted by the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) and the

Commanding General of the US Army Materiel Command (CG/AMC). The effort was instigated by the US Army Chief of Staff to create an Enterprise management construct in the Army and the plan forms the basis for on-going improvement efforts in the form of enterprise-level lean six-sigma projects within the ME.

US Army System of Systems Engineering (SoSE) Strategy and Implementation Plan (September 2009) was the result of a modified Enterprise Strategic Analysis for Transformation (ESAT) process to help the Office of the United States Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) create a capability to perform engineering analysis of systems of systems to provide direction and guidance for senior leaders during weapon system acquisition reviews and resource allocation decisions. I heavily modified the ESAT process to address the specific challenges posed by an organizational entity that did not exist or have precedent. I lead the MIT and Army team of facilitators to conduct the workshops to gather data and conduct the analysis leading to the design and specification of the new organization construct. I was the lead author on the Strategy and Implementation Plan provided to the US Army, which included a summary of the goals, objectives, key initiatives, processes, and measures to be used by the new SoSE organization.

US Department of Defense (DoD) Strategic Management Plan (SMP) document drafts (2011 and 2012) were produced as a result of a study for the DoD Deputy Chief Management Officer (DCMO) to develop and evolve the Department's strategic planning and performance management constructs for its business systems, as well as identify areas for improvement. I led the team of MIT researchers who worked with the DCMO to perform an enterprise analysis and to help integrate and align strategic planning across the Offices of the Secretary and Undersecretaries of Defense, Defense Agencies, and Military Departments. The scope of this study included linkages to national military strategy, the DoD annual budget, and DoD performance management systems. In addition to the SMP drafts, our analysis included an assessment of the state of performance management in the DoD and recommendations to the DCMO for a number of DoD-level enterprise transformation initiatives.