##### Massachusetts Institute of Technology

##

FACULTY PERSONNEL RECORD

CURRICULUM VITAE

# **Olivier L. de Weck**

deweck@mit.edu

Associate Professor of Aeronautics and Astronautics and Engineering Systems

Department of Aeronautics and Astronautics

Engineering Systems Division

 **Updated: July 1, 2012**

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Summary Sheet

Department of: Name:

Engineering Systems Division (ESD) Olivier L. de Weck

Aeronautics and Astronautics (AA)

Date: July 1, 2012 Date of Birth: October 19, 1968

Education:

Diplom Ingenieur, Industrial Engineering, ETH Zurich, Switzerland, May 1993

Master of Science in Aeronautics and Astronautics, MIT, June 1999

Doctor of Philosophy in Aerospace Systems, MIT, September 2001

Academic Appointments:

Assistant Professor MIT Sept. 2001 – June 2006

Robert N. Noyce Career Development Professor MIT Sept. 2002- August 2005

Associate Professor without Tenure MIT July 2006 – June 2008

Associate Professor with Tenure MIT July 2008 - present

Other Relevant Experience:

Officer, Swiss Air Force July 1987 – Mar. 2000

Research Engineer, Swiss Aircraft and Systems Co. Nov. 1993 – Dec.1996

Liaison Engineer F/A-18 Program, McDonnell Douglas Jan. 1994 – Dec. 1996

Eng. Project Manager F/A-18, McDonnell Douglas Jun. 1996 – Dec. 1996

Co-Founder, Intelligent Action Inc. Mar 2007 - present

Prof. de Weck is a leader in *Systems Engineering* research. He focuses on how complex man-made systems such as aircraft, spacecraft, automobiles, printers and critical infrastructures are designed and how they evolve over time. His main emphasis is on strategic properties that have the potential to *maximize lifecycle value* (a.k.a the ‘*Ilities*’). Since 2001 his group has developed novel quantitative methods and tools that explicitly consider manufacturability, flexibility, robustness, and sustainability among other characteristics. Significant results include the *Adaptive Weighted Sum* (AWS) method for resolving tradeoffs amongst multiple objectives, the *Delta-Design Structure Matrix* (DDSM) for technology infusion analysis and the *SpaceNet* simulation environment. These methods have impacted complex systems in space exploration (NASA, JPL), oil and gas exploration (BP) as well as in sophisticated electro-mechanical products (e.g. Xerox, Pratt & Whitney, DARPA). Prof. de Weck’s teaching emphasizes excellence, innovation and bridging of theory and practice. He is a Fellow of INCOSE and an Associate Fellow of AIAA. He serves as Associate Editor for the *Journal of Spacecraft and Rockets* and the *Journal of Mechanical Design*. He won 6 best paper awards since 2004, including the 2008 and 2011 best paper awards from the journal *Systems Engineering.* He won the 2006 Frank E. Perkins Award for Excellence in Graduate Advising and the 2010 Marion MacDonald Award for Excellence in Mentoring and Advising and a 2012 AIAA Teaching Award. From 2008-2011 he served as Associate Director of the Engineering Systems Division (ESD) at MIT. Since early 2011 he serves as Executive Director of the new MIT Production in the Innovation Economy (PIE) initiative. He has authored two books and about 200 papers.

 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

School of Engineering Faculty Personnel Record

Date: July 1, 2012 Name: Olivier L. de Weck

 Department:

 Engineering Systems Division

 Aeronautics and Astronautics

1. Date of Birth: October 19, 1968

2. Citizenship: United States of America, Switzerland

3. Education:

 School Degree Date

 Collège St. Croix Baccalaureate – Matura C (Switzerland) June 1987

 ETH Zurich Dipl. Ing. IIIE (Industrial Engineering) May 1993

 MIT S.M. (Aeronautics & Astronautics) June 1999

 MIT Ph.D. (Aerospace Systems) Sept. 2001

1. Title of Thesis for Most Advanced Degree:

###  Multivariable Isoperformance Methodology for Precision Opto-Mechanical Systems

5. Principal Fields of Interest:

 Systems Engineering with emphasis on Lifecycle Properties (‘Ilities’),

 Management of Complex Industrial Projects, Space Logistics, Manufacturing

6. Name and Rank of Other Department Faculty in the Same Field:

 Edward Crawley, Professor (AA and ESD), President SkTech

 Daniel Frey, Associate Professor (Mechanical Engineering and ESD)

 Daniel Hastings, Professor (AA and ESD), Dean for Undergraduate Education

 Jeffrey Hoffman, Professor of the Practice (AA), former NASA Astronaut

 Nancy Leveson, Professor (AA and ESD)

 Christopher Magee, Professor of the Practice (ME and ESD)

 David W. Miller, Professor (AA)

 Richard de Neufville, Professor (ESD)

7. Name and Rank of Faculty in Other Departments in the Same Field

 Steven Eppinger, Professor (Sloan School of Management)

 Donald R. Lessard, Professor (Sloan School of Management)

8. Non-MIT Experience (including military service):

 Employer Position Beginning Ending

 Swiss Air Force Officer July 1987 Mar. 2000

 ETH Zurich, Switzerland Research Assistant Oct. 1987 Mar. 1992

 McDonnell Aircraft Co. Engineering Intern Aug. 1991 Dec. 1991

 Metallfabrik Naegeli A.G. Engineering Intern Jan. 1992 Mar. 1992

 ABB Process Automation Ltd. Engineering Intern Mar. 1992 Apr. 1992

 Swiss Aircraft & Systems Co. Research Engineer Nov. 1993 Dec. 1996

 McDonnell Douglas Liaison Engineer Jan 1994 Jun. 1996

 McDonnell Douglas Project Manager Jul. 1996 Dec. 1996

 NASA Goddard Space Flt Ctr Visiting Scientist Jun. 1998 Aug. 1998

 Intelligent Action Inc. Co-Founder Mar. 2007 present

 Keio University, Japan Visiting Lecturer Dec. 2007 present

9. History of MIT Appointments:

 Rank Beginning Ending

 Assistant Professor (dual) Sept. 2001 June 2006

 Robert N. Noyce Career Development Professor Sept. 2002 Aug. 2005

 Associate Professor (without tenure, dual) July 2006 June 2008

 Associate Professor (with tenure, dual) July 2008 present

10. Consulting Record:

 Firm Beginning Ending

 Institute for Virtual Production, ETH Zurich Jan.1994 Aug.1999

 Midé Technology Corporation, Medford, MA Mar. 2002 Aug. 2004

 Raytheon Company, Waltham, MA Jun. 2002 Aug. 2003 LG Electronics, LG-PRC, South Korea Feb. 2004 Nov. 2004

 Inficon AG, Balzers, Liechtenstein Jan. 2005 Jun. 2006

 Zühlke Engineering AG, Switzerland Jan. 2005 Jan. 2007

 Xerox Corporation, Webster, NY Mar. 2007 Aug. 2008

 Intelligent Action Inc., Cambridge MA Mar. 2007 present

 Aurora Flight Sciences Inc., Manassas, VA Mar. 2007 present

 Keio University, Japan Dec. 2007 present

 National Institute for Aerospace, Hampton VA Mar. 2008 Feb. 2009

 University of Southern Switzerland, Lugano Nov. 2008 present

 United Technologies Research Center, CT Aug. 2009 present

 Vanderbilt University/DARPA Jan. 2012 present

11. Department and Institute Committees, Other Assigned Duties:

Activity Beginning Ending

 ESD Undergraduate Committee (Div.) Sept. 2001 June 2011

 AA Doctoral Qualifying Exam Committee (Dept.) Sept. 2003 May 2004

 AA/CEE/ESD Search Committee (Dept.) Sept. 2004 May 2005

 MIT Faculty Newsletter Editorial Board (Inst.) Sept. 2004 present

 AA Graduate Program Committee (Dept.) May 2006 May 2008

 AA Strategic Planning Committee (Dept.) June 2007 May 2008

 Member, ESD Council (Div.) Mar 2008 present

 Associate Head, Engineering Systems Division Jul 2008 June 2011

 Chair, AA Graduate Admissions Committee (Dept.) Sept. 2008 Aug. 2010

 Co-Chair, ESD Faculty Search Committee (Dept.) Sept. 2008 Jun. 2009

 Term Director, BP Projects & Eng. Academy Sept. 2009 March 2012

 Chair, ESD Education Committee (Div.) Jul 2011 present

 Dean of Engineering Search Committee (Inst.) Sept. 2010 Jan. 2011

 Executive Director, MIT Production in the

 Innovation Economy (PIE) Study Nov. 2010 present

 MIT Press, Editorial Board Member (Inst.) July 2012 Aug 2015

12. Professional Service:

 Activity Beginning Ending

Reviewer:

Journal of Spacecraft and Rockets 1999 present

Journal of Mechanical Design 2001 present

Research in Engineering Design 2003 present

Optimization and Engineering 2002 2005

Optical Engineering 1998 2002

Journal of Aerospace, Computing, Information 2004 2007

and Communications

Structural and Multidisciplinary Optimization 2001 present

 Systems Engineering 2002 present

 Review Panels and Advisor:

 NSF Design Manufacture & Industrial Innovation Mar. 2003 Apr. 2003

 NASA, Mission Science and Measurement Tech. Oct. 2003 Dec. 2003

 Keio University, Graduate School of System Jun. 2006 Mar. 2011

 Design and Management, Advisor

 NSF Engineering Design Review Panel Dec. 2007 Dec. 2007

 National Academy of Sciences, National Research

 Council (NRC), Space Sciences Board Committee Sep. 2009 July 2010

 on Cost Growth in NASA Earth and Space Science

 Missions

 Professional Committees:

 AIAA MDO Technical Committee Apr. 2002 Sep. 2008

 INCOSE Space Systems Working Group Jun. 2007 present

 INCOSE New England Chapter, Officer Jan. 2008 present

 AIAA Space Logistics Technical Committee, Chair Jan. 2007 Sep. 2010

 INCOSE, Academic Council Jun. 2011 present

 Conference Organization:

 AFOSR System Architecture Workshop Oct. 2001 Jan. 2002

Co-Chair, 10th AIAA/ISSMO Multidisciplinary Jul. 2003 Sept. 2004

 Analysis and Optimization Conference, Albany, NY

Technical Chair: 1st AIAA Multidisciplinary Design Mar. 2004 Apr. 2005

 Optimization Specialist Conference, Austin, TX

Chair: MIT Innovations in Product Development April 2005 Nov. 2005

 Conference: From Strategic Innovation to

 Implementation

General Chair: 2nd AIAA Multidisciplinary Design May. 2005 May. 2006

 Optimization Specialist Conference, Newport, RI

Chair: 1st NASA Space Exploration Logistics Oct. 2005 Jan 2006

 Workshop, Washington, D.C.

Program Committee: 25th International Symposium Feb. 2005 June 2006

 on Space Technology and Science (ISTS), Japan,

 Committee on Systems Engineering

Cambridge-MIT Workshops on Engineering Change Nov. 2007 Oct. 2008

Advisor: 2nd Engineering Systems Symposium Jan. 2009 Jun. 2009

Program Committee: Complex Systems Design & Sept. 2009 Oct. 2010

Management 2010 Conference, Paris, France

1st Masdar Institute – MIT Workshop on Sustain-

ability in Complex Systems Mar 2010 Oct 2010

3rd Intl Engineering Systems Symposium, TU Delft June 2011 June 2012

Program Committee

 Editorships:

Review Editor, *Structural and Multidisciplinary* June 2006 Aug. 2008

 *Optimization*

Associate Editor, *Journal of Spacecraft and Rockets* Jan. 2007 present

Associate Editor, *Journal of Mechanical Design* Jun. 2010 present

13. Awards Received:

 Award Date

Industrial Engineering (honors), ranked 1st out of 67 (ETH Zurich) May 1993

Carroll L. Wilson Award (MIT) June 1998

Robert N. Noyce Career Development Professorship (MIT) Sept. 2002

Best Paper Awards at INCOSE 2004 Conference, Toulouse (INCOSE) Aug. 2004

* Overall Best Paper, Modeling & Tools Category [3.35]
* Education and Research Category [3.36]

Frank E. Perkins Award for Excellence in Graduate Advising (MIT) May 2006

Election as Associate Fellow (AIAA) Sept. 2006

MDO TC Outstanding Service Award (AIAA) Apr. 2007

Logistics Spectrum Prize Paper Award - Honorable Mention (SOLE) Aug. 2007

*Systems Engineering* Journal Best Paper of the Year Award (INCOSE) June 2008

Technical Working Group Collaboration Award (INCOSE) Jan. 2009

Best Technical Committee Award in Space & Missiles Group (AIAA) Mar. 2010

Capers (1976) and Marion McDonald Award for Excellence Apr. 2010

in Mentoring and Advising

*Systems Engineering* Journal Best Paper of the Year Award (INCOSE) June 2011

*Reviewer’s Favorite* Choice Award at ICED’11 Conference Aug. 2011

*Excellent Paper Award* at ICTC 2012 Conference (IEEE) Sept. 2011

Honorable Mention - *2011 American Publishers Award* for Professional

and Scholarly Excellence (PROSE Award) in Engineering & Technology Feb. 2012

Election as Fellow (INCOSE) Feb. 2012

AIAA 2012 Teaching Award (AIAA) May 2012

14. Current Organization Membership:

 Organization Offices Held

 International Council on Systems Engineering (INCOSE) Fellow

 American Institute of Aeronautics and Astronautics (AIAA) Associate Fellow

 American Society for Engineering Education (ASEE) Member

 American Society of Mechanical Engineers (ASME) Member

 Design Society Member

 Council of Engineering Systems Universities (CESUN) Secretary/Treasurer

15. Patents and Patent Applications Pending:

United States of America, Serial No. 11/969617, provisional patent filed

"Method And Apparatus For Determining And Utilizing A Time-Expanded Decision Network"

16. Professional Registration:

17. Major New Products, Processes, Designs, or Systems:

DOCS:Toolbox for integrated modeling and simulation of precision opto-mechanical systems co-developed with Prof. David Miller and Midé Technology Corp. from 1999-2004. DOCS is now a commercial software package distributed by Nightsky Systems Inc.

Fastlsim: Fast time domain simulation algorithm for large order linear time-invariant systems; algorithm implemented and benchmarked (factor 30 improvement in time-domain simulation efficiency demonstrated for LTI systems), see paper [2.9], 2001-2002

HMP Arctic Expedition 2005: Led MIT expedition to the high Arctic to investigate exploration logistics analogies of the Haughton-Mars Project (HMP) research station on Devon Island (75N 90W). Established MIT presence at the base for future research (NASA/TP-2006-214196)

SpaceNet: Simulation and optimization software for space exploration logistics based on time-expanded transportation networks, v1.3, v1.4 (Matlab-based), v2.5 (JAVA-based), Report NASA/TP-2007-214725. This tool has been accredited for lunar campaign logistics analysis by JPL and NASA and in 2007 was ranked 1st out of over 20 models and simulations in terms of relevance to the NASA Constellation Program. More information at: <http://spacenet.mit.edu> Latest GNU public release 2.5r2 in May 2011.

TDN: Time-Expanded Decision Network software package. Software toolbox to model system evolution, lifecycle cost and configurational decisions over time, see paper [2.16], led to spinoff company Intelligent Action Inc., 2007 – present

CLONE: Work process tool developed by BP with MIT to allow evaluation of the economic value of standardized solutions in oil & gas exploration systems either as clones of existing designs or copies versus bespoke (optimized) designs. The tool is based on the sensitivity-DSM/Invariant Design Rules method, see paper [3.75], 2006 – 2008

ISM: Integrated Screening Model. Matlab-based simulation environment to evaluate multi-level flexibility strategies in offshore petroleum projects under uncertainty. Multi-domain uncertainty modeling (reservoir, facility and market), production simulation and decision rules for exercising of real options. Application to BP projects in Azerbaijan, Alaska North Slope and Angola, 2007 – present, led to the hiring of Dr. Jijun Lin at BP America in 2009

CityNet: Modeling and Simulation environment that allows to decompose and analyze the coupling of the various subsystems within a City (building system, transportation, water, energy and waste management). Implemented as a Matlab-prototype and demonstrated for Masdar City in Abu Dhabi, UAE, see paper [3.34], 2009-2011

# Teaching & Educational Contributions of Olivier L. de Weck

1. Teaching Experience

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Term | Subject Number | Title | Role | Course type | Course evaluation survey given  |
| FT00 | 16.241 | Advanced Structural Dynamics | Lab Sessions(with C. Cesnik) | Lab | No |
| FT00 | 16.851 | Satellite Engineering | Asst. Lecturer(with D. Miller) | Lecture | No |
| ST01 | 16.684 | Space Systems Product Development | Asst. Lecturer(with D. Miller) | Design | No |
| FT01 | 16.882ESD.34 | System Architecture | Lecturer(with E. Crawley) | Lecture | Yes |
| ST02 | 16.888ESD.77 | Multidisciplinary System Design Optimization \* | Lecturer(with K. Willcox) | Lecture | Yes |
| FT02 | 16.01016.020 | Unified Engineering I & II | Lecturer | Lecture, Lab | Yes |
| ST03 | 16.03016.040 | Unified Engineering III & IV | Lecturer | Lecture, Lab | Yes |
| ST03 | 16.888ESD.77 | Multidisciplinary System Design Optimization | Lecturer(with K. Willcox) | Lecture | Yes |
| FT03 | ESD.36 | System Project Management | Lecturerin-charge | Lecture | Yes |
| IAP04 | 16.810 | Engineering Design and Rapid Prototyping\*\* | Lecturerin-charge | Design | Yes |
| ST04 | 16.888/ ESD.77 | Multidisciplinary System Design Optimization | Lecturer(with K. Willcox) | Lecture | Yes |
| ST04 | 16.89ESD.352 | Space Systems Engineering | Co-Lecturer(with J. Hoffman) | Lecture | Yes |
| FT04 |  | Junior Faculty Leave |  |  | N/A |
| IAP05 | 16.810 | Engineering Design and Rapid Prototyping | Lecturer In-charge | Design | Yes |
| ST05 | 16.888/ ESD.77 | Multidisciplinary System Design Optimization | Lecturer | Lecture | Yes |
| FT05 | ESD.36 | System Project Management | Lecturerin-charge | Lecture | Yes |
| ST06 | 16.888/ ESD.77 | Multidisciplinary System Design Optimization | Lecturer | Lecture | Yes |
| ST06 | 16.89ESD.352 | Space Systems Engineering | Co-Lecturer(with J. Hoffman) | Lecture | Yes |
| FT06 | ESD.36 | System Project Management | Lecturerin-charge | Lecture | Yes |
| IAP07 | 16.810 | Engineering Design and Rapid Prototyping | LecturerIn-charge | Design | Yes |
| ST07 | 16.89ESD.352 | Space Systems Engineering | Co-Lecturer(with E. Crawley) | Lecture | Yes |
| SU07 | ESD.39s | Product Families and Platforms (PI course) | Lecturer in-charge | Lecture | Yes |
| FT07 | 16.851 | Satellite Engineering | Co-Lecturer (with J. Keesee) | Lecture | Yes |
| FT07 | ESD.36 | System Project Management | Lecturer in-charge | Lecture | Yes |
| ST08 | 16.888/ ESD.77 | Multidisciplinary System Design Optimization | Lecturer | Lecture | Yes |
| SU08 | ESD.39s | Product Families and Platforms (PI course) | Lecturer in-charge | Lecture | Yes |
| FT08 | ESD.36 | System Project Management | Lecturer in-charge | Lecture | Yes |
| ST09 | 16.886 | Air Transportation Systems Architecting | Co-Lecturer (John Hansman) | Lecture | Yes |
| FT09 | ESD.36 | System Project Management | Lecturer in-charge | Lecture | Yes |
| FT09 | 16.842 | Fundamentals of Systems Engineering\*\*\* | Lecturer in-Charge | Lecture | Yes |
| FT09 | ESD.944 | Engineering Systems Scholarship Seminar | Lecturer in-Charge | Seminar | Yes |
| IAP10 | ESD.052 | Project Engineering ^ | Co-Lecturer | Workshop | Yes |
| ST10 | 16.888/ ESD.77 | Multidisciplinary System Design Optimization | Lecturer | Lecture | Yes |
| SU10 | ESD.39s | Product Families and Platforms (PI course) | Lecturer in-charge | Lecture | Yes |
| FT10 | 16.842 | Fundamentals of Systems Engineering | Lecturer in-Charge | Lecture | Yes |
| FT10 | ESD.36 | System Project Management | Lecturer in-charge | Lecture | Yes |
| IAP11 | ESD.052 | Project Engineering ^ | Lecturer | Workshop | Yes |
| ST11 |  | Sabbatical |  |  |  |
| SU11 | ESD.39s | Product Families and Platforms (PI course) | Lecturer in-charge | Lecture | Yes |
| FT11 |  | Sabbatical |  |  |  |
| IAP12 | 16.810 | Engineering Design and Rapid Prototyping | LecturerIn-charge | Design | Yes |
| ST12 | 16.888/ ESD.77 | Multidisciplinary System Design Optimization | Co-Lecturer | Lecture | Yes |
| ST12 | ESD.052 | Project Engineering | Lecturer | Workshop | Yes |
| SU12 | ESD.39s | Product Families and Platforms (PI course) | Lecturer in-charge | Lecture | TBD |

\* Newly created graduate course 16.888/ESD.77J, first offered ST02

\*\* Newly created undergraduate course 16.810 (16.682), first offered IAP 2004

\*\*\* Newly created graduate course 16.842, first offered as 16.898 in FT09

^ New undergraduate course ESD.052 for the Gordon Engineering Leadership Program

3. Other Educational Contributions

1. Teaching materials developed that illustrate teaching effectiveness or innovativeness (e.g., course syllabi, lecture or recitation content, course handouts, student assignments, educational technology modules):
	1. 16.010-040 Unified Engineering – Developed materials for systems problems and laboratory sessions, emphasizing CDIO (conceive-design-implement-operate) learning objectives:
		1. Integrated syllabus with F/A-18 system analogies
		2. Water rocket laboratory –simulation code and master solution
		3. New helium balloon laboratory –balloon release and trajectory simulation
		4. Balsa glider laboratory – CAD drawings, photo record and database
		5. New lecture on three principles of flight (see paper [3.21] ASEE)
		6. Co-organized new design-build-fly competition (see paper [3.22] ASEE)
	2. 16.888/ESD.77 Multidisciplinary System Design Optimization – Developed new graduate course with K. Willcox:
		1. Course syllabus, rationale and pedagogy
		2. 24 lectures on design, system optimization and approximation methods
		3. In-class active learning games, e.g. Genetic Algorithm game, see CDIO conference paper [3.57]
		4. Course published on OpenCourseWare (OCW): <http://ocw.mit.edu/courses/engineering-systems-division/esd-77-multidisciplinary-system-design-optimization-spring-2010/>
	3. 16.810 Engineering Design and Rapid Prototyping – Developed new IAP integrated end-to-end design course for undergraduates:
		1. Course syllabus and pedagogy (Paper [3.34] ASEE)
		2. 11 integrated lectures on design theory, CAD, CAE, CAM manufacturing, optimization and structural testing
		3. Created CAD/CAM/CAE user manual and connected the end-to-end design chain in the Dept. of Aeronautics and Astronautics (Bldg. 33) – incl. Design Studio, Complex Systems Laboratory, Machine Shop (waterjet cutter)
		4. Design competition in “business” setting among teams
		5. Course published on OpenCourseWare (OCW): <http://ocw.mit.edu/courses/aeronautics-and-astronautics/16-810-engineering-design-and-rapid-prototyping-january-iap-2007/>
2. Education contributions, apart from classroom performance and supervision, such as new educational programs and curricula developed by the candidate:
	1. Sloan Foundation Engineering Systems Study: Low Earth Orbit Satellite Communication Constellations and Real Options Analysis – in-depth study at the intersection of the aerospace and telecommunications industries, containing lectures, readings, homework, databases and computer simulations in integrated units of study. Complex system industry study based on the history of Iridium and Globalstar.
		1. Unit 1: Technical Success and Economic Failure
		2. Unit 2: Architectural Design Space Exploration
		3. Unit 3: Impact of Technology Infusion and Policy Decisions
		4. Unit 4: Real Options and Staged Deployment
	2. ESD.39s: Product Platform and Product Family Design: From Strategy to Implementation
		1. Summer course taught through MIT Professional Institute (w/ Tim Simpson)
		2. Explore the strategic and implementation aspects of using product architecture and platforms to manage a product family in a competitive manner. Learn the latest theory and tools through case studies, interactive discussion and hands-on exercises.
		3. Leverages industrial connections through SDM and LFM (LGO) programs
		4. Online: <http://web.mit.edu/mitpep/pi/courses/product_family_design.html>
3. Contributions to the educational commons, such as freshman advising and reading admissions folders:
	* 1. Faculty advisor to MIT Space Elevator (MITSET) student team. This team designed and built a robotic climber using microwave beaming technology. The team was composed of freshman, sophomores and upperclassmen.
		2. Assistant Faculty Marshall, MIT Commencement Exercises (2006-2008)
		3. Faculty Member and Instructor in the School of Engineering Bernard Gordon Engineering Leadership (GEL) Program. Assisted with program development and teaching a new class ESD.052 focused on Project Engineering. (<http://web.mit.edu/gordonelp/>)
		4. Started reading freshman admissions folders in 2012

Publications of Olivier L. de Weck

# 1. Books

1. de Weck O., Roos D., Magee C., “*Engineering Systems: Meeting Human Needs in a Complex Technological World*”, MIT Press, ISBN-13:978-0-262-01670-4, November 2011 (220 pages)
2. Haberfellner R., de Weck O., Fricke E., Vössner S., “*Systems Engineering – Grundlagen und Anwendungen*”, 12th ed., Orell Füssli Verlag, Zurich, ISBN-13:978-3-280-04068-3, February 2012 (440 pages)

# 2. Papers in Refereed Journals

1. Nägeli, T., Lang P., de Weck O. and Zingg A., “USD für Transparenz in der Ablauforganisation”, *io* *Management*, 62 (5), 69-74, 1993 (6 pages)
2. de Weck, O.L., de Neufville R. and Chaize M., “Staged Deployment of Communications Satellite Constellations in Low Earth Orbit”, *Journal of Aerospace Computing, Information, and Communication*, 1(3), 119-136, March 2004\*\* (18 pages)
3. Springmann P.N., and de Weck, O.L. ”Parametric Scaling Model for Nongeosynchronous Communications Satellites”, *Journal of Spacecraft and Rockets*, 41 (3), 472-477, May-June 2004\*\* (6 pages)
4. Cohanim B. E., Hewitt J. N., and de Weck O.L., “The Design of Radio Telescope Array Configurations using Multiobjective Optimization: Imaging Performance versus Cable Length”, *The Astrophysical Journal,* Supplement Series, 154, 705-719, October 2004\*\* (15 pages)
5. Chung S.J., Miller D.W., de Weck O.L., “ARGOS testbed: study of multidisciplinary challenges of future spaceborne interferometric arrays”, *Optical Engineering*, 43 (9), 2156-2167, September 2004\*\* (12 pages)
6. Kim I.Y. and de Weck O.L., “Adaptive weighted-sum method for bi-objective optimization: Pareto front generation”, *Structural and Multidisciplinary Optimization*, 29(2),149-158, February 2005 (10 pages)
7. Kim I. Y and de Weck O.L.., “Variable chromosome length genetic algorithm for progressive refinement in topology optimization”, *Structural and Multidisciplinary Optimization*, 29(6), 445-456, June 2005 (12 pages)
8. Chang, D.D. and de Weck, O.L., “Basic capacity calculation methods and benchmarking for MF-TDMA and MF-CDMA communication satellites”, *International Journal of Satellite Communications and Networking,* 23 (3), 153-171, May/June 2005\*\* (19 pages)
9. Sou K.C. and de Weck O., “Fast time-domain simulation for large-order linear time-invariant state space systems”, *International Journal for Numerical Methods in Engineering*, 63 (5), 681-708, June 2005\*\* (28 pages)
10. de Weck, O.L. and Jones M. B., “Isoperformance: Analysis and Design of Complex Systems with Desired Outcomes”, *Systems Engineering*, 9 (1), 45-61, January 2006 (17 pages)
11. Kim I.Y. and de Weck, O., “Adaptive weighted sum method for multi-objective optimization: a new method for Pareto front generation”, *Structural and Multidisciplinary Optimization*, 31(2), 105-116, February 2006 (12 pages)
12. Galabova K. K., de Weck, O.L., “Economic case for the retirement of geosynchronous communication satellites via space tugs”, *Acta Astronautica*, 58 (9): 485-498, May 2006\*\* (14 pages)
13. Siddiqi A., de Weck O., Iagnemma K., “Reconfigurability in Planetary Surface Vehicles: Modelling Approaches and Case Study”, *Journal of the British Interplanetary Society*, 59 (12), 450-460, December 2006\*\* (11 pages)
14. Smaling R., de Weck O., “Assessing Risks and Opportunities of Technology Infusion in System Design”, *Systems Engineering*, 10(1), 1-25, Spring 2007\*\* (25 pages)
15. Siddiqi A., de Weck O., “Spare Parts Requirements for Space Missions with Reconfigurability and Commonality”, *Journal of Spacecraft and Rockets*, 44 (1), 147-155, January-February 2007\*\* (9 pages)
16. Silver M., de Weck O. “Time-Expanded Decision Networks: A Framework for Designing Evolvable Complex Systems”, *Systems Engineering*, 10 (2), 167-186, 2007 (20 pages)
17. Suh, E.S., de Weck O.L., Kim I.Y. and Chang D., “Flexible platform component design under uncertainty”, *Journal of Intelligent Manufacturing*, Special Issue on Product Family Design and Development, 18(1), 115-126, February 2007\*\* (12 pages)
18. Hauser D., de Weck O.L., “Flexibility in component manufacturing systems: evaluation framework and case study”, *Journal of Intelligent Manufacturing*, 18(3), 421-432, June 2007\*\* (12 pages)
19. Holtta-Otto K., de Weck O.L., “Degree of Modularity in Engineering Systems and Products with Technical and Business Constraints”, *Concurrent Engineering,* Special Issue on Managing Modularity and Commonality in Product and Process Development, 15 (2), 113-126, 2007 (15 pages)
20. Gralla E. L., de Weck O. L, “Strategies for On-Orbit Assembly of Modular Spacecraft”, *Journal of the British Interplanetary Society*, 60 (6), 219-227, 2007\*\* (9 pages)
21. Taylor C., de Weck O., “Coupled Vehicle Design and Network Flow Optimization for Air Transportation Systems”, *Journal of Aircraft*, 44 (5), 1478-1486, September-October 2007\*\* (9 pages)
22. Suh E.S., de Weck O.L., and Chang D., “Flexible product platforms: framework and case study”, *Research in Engineering Design*, 18 (2), 67-89, 2007\*\* (23 pages)
23. Taylor C., Song M., Klabjan D., de Weck O.L., Simchi-Levi D., “A Mathematical Model for Interplanetary Logistics”, *Logistics Spectrum*, 41 (1), 23-33, 2007\*\*,## (11 pages)
24. de Weck, O.L., Scialom, U. and Siddiqi A., “Optimal reconfiguration of satellite constellations with the auction algorithm”, *Acta Astronautica*, 62 (2-3), 112-130, January/February 2008\*\* (19 pages)
25. Siddiqi A., de Weck O. L., “Modeling Methods and Conceptual Design Principles for Reconfigurable Systems”, *Journal of Mechanical Design*, 130, 101102, October 2008\*\*
26. Ahn J., de Weck O.L., Hoffman J., “An Optimization Framework for Global Planetary Surface Exploration Campaigns”, *Journal of the British Interplanetary Society*, 61 (12), 487-498, December 2008\*\* (11 pages)
27. Siddiqi A., de Weck O., “Reconfigurability in Planetary Surface Vehicles”, *Acta Astronautica*, 64 (5-6), 589-601, March/April 2009\*\* (13 pages)
28. Giffin M., de Weck O., Bounova G., Keller R., Eckert C., Clarkson P.J., “Change Propagation Analysis in Complex Technical Systems”, *Journal of Mechanical Design*, 131 (8), 081010, August 2009\*\* (14 pages)
29. Siddiqi A., de Weck O., Lee G., Shull S., “Matrix Modeling Methods for Spaceflight Campaign Logistics Analysis”, *Journal of Spacecraft and Rockets*, 46 (5), 1037-1048, September/October 2009 (12 pages)
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125. Agte J., Borer N., de Weck O. L , "A Simulation-based Design Model for Analysis and Optimization of Multi-State Aircraft Performance", AIAA-2010-2997, 6th AIAA Multidisciplinary Design Optimization Specialist Conference, Orlando, Florida, Apr. 12-15, 2010\*\* (13 pages)
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144. Lee C., Orszulak J, Myrick R., Coughlin J. F., de Weck O.L., Asai D., “Integration of Medication Monitoring and Communication Technologies in Designing a Usability-Enhanced Home Solution for Older Adults”, International Conference on ICT Convergence, ICTC 2011, Seoul, Korea, September 28-30, 2011##
145. Do S., de Weck O., “A Personal Airbag System for the Orion Crew Exploration Vehicle”, 62nd International Astronautical Congress (IAC), Paper IA C-11.D 2.3.7, Cape Town, South Africa, 3-7 October 2011
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148. Grogan P., de Weck O. L., “Federated Simulation and Gaming Framework for a Decentralized Space-based Resource Economy”, 13th ASCE Aerospace Division Conference on Engineering, Construction, and Operations in Challenging Environments “Engineering for Extreme Environments”, Pasadena, California, April 15-18, 2012
149. Green J., de Weck O., Suarez P., “Sustainable Urban Sanitation: Simulating a Desludging Service in Senegal”, 025-1473, POMS 23rd Annual Conference, Chicago, Illinois, U.S.A., April 20 -23, 2012
150. Do S., de Weck O., “HAB.NET – An Integrated Framework for Analyzing the Sustainability of Planetary Habitats”, GLEX-2012.10.2.6x12391, ”, Global Space Exploration (GLEX) Conference, L’Enfant Plaza Hotel, Washington, DC, May 22-24, 2012
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152. de Weck O.L., Ross A., Rhodes D., “Investigating Relationships and Semantic Sets amongst System Lifecycle Properties (Ilities)”, 3rd International Engineering Systems Symposium, CESUN 2012, TU Delft, The Netherlands, June 18-20, 2012
153. Haruyama S., Kim S., Beiter K., de Weck O., Dijkema G., “A New Project-Based Curriculum of Design Thinking with System Engineering Techniques”, 3rd International Engineering Systems Symposium, CESUN 2012, TU Delft, The Netherlands, June 18-20, 2012
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158. Ho K., Green J., de Weck O., “Co-Optimization of Crewed Space Stations and their Supporting Logistics System”, ”, AIAA SPACE 2012 Conference & Exposition, Pasadena, California, September 11-13, 2012 (accepted)
159. Sinha K., de Weck O., “Structural Complexity Metric for Engineered Complex Systems and its Application”, Paper ID 101, The 14th International DSM Conference, Kyoto, Japan, September 13-14, 2012 (accepted)
160. Sinha K., Denman J., de Weck O., “Interplay between Product Architecture and Organizational Structure”, Paper ID 105, The 14th International DSM Conference, Kyoto, Japan, September 13-14, 2012 (accepted)
161. Shougarian N., Agte J., de Weck O., “Multistate Analysis and Optimization of a Geared Turbofan Engine Lubrication System”, 12th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference and 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Indianapolis, Indiana, September 17-19, 2012 (accepted)
162. Feng W., Crawley E., de Weck O., Lessard D.,” Understanding the Impacts of Indirect Stakeholder Relationships: Stakeholder Value Network Analysis and Its Application to Large Engineering Projects”, AC-1344, Strategic Management Society SMS Annual Conference, Prague, Czech Republic, October 7-9, 2012 (accepted)

4. Other Major Publications

Books currently under development

1. de Weck O. and Shishko R. (eds.), “Space Logistics: Enabling New Frontiers”, Progress in Aeronautics and Astronautics Series, American Institute of Aeronautics & Astronautics, AIAA, to appear in Spring 2013 (50% complete) – contract signed.
2. de Weck O. and Lyneis J., “Successfully Designing and Managing Complex Projects”, MIT Press, to appear Summer 2013, (70% complete) – contract signed.

Book Chapters and Encyclopedia Articles

1. de Weck, O., "Determining Product Platform Extent", Chapter 12, *Product Platform and Product Family Design: Methods and Applications*, T. W. Simpson, Z. Siddique and J. Jiao, eds., Springer, New York, pp. 241-301, 2005
2. de Neufville, R., de Weck O., Lin J., Scholtes S., “Identifying Real Options to Improve the Design of Engineering Systems”, Chapter 8, *Real Options in Engineering Design, Operations, and Management,* H.B. Nembhard, CRC Press, pp. 75-98, 2009
3. Meyer, H.M., de Weck O.L., Tucker M., “*Product Platforms*”, Encyclopedia of Marketing, Wiley, ISBN 978-1405161787, December 2010
4. Boppana K., Chow S., de Weck O., et al., “Can Models Capture the Complexity of the Systems Engineering Process ?”, in *Unifying Themes in Complex Systems,* New England Complex Systems Institute Book Series, Chapter 20, ISBN 978-3-540-85080-9, Springer, Berlin Heidelberg, pp. 363-373, 2010
5. Suh E.S., de Weck O.L., “Xerox Digital Printing Technology Infusion”, in *Design Structure Matrix Methods and Applications* by Steven D. Eppinger and Tyson R. Browning, Example 3.9, MIT Press, Spring 2012
6. Feng W., Crawley E., de Weck O., Keller R., Lin J., Robinson B., “BP Stakeholder Value Network”, in *Design Structure Matrix Methods and Applications* by Steven D. Eppinger and Tyson R. Browning, Example 5.7, MIT Press, Spring 2012

Monographs and White Papers

1. de Weck O., “Dynamics and Controls Modeling and Analysis Toolbox (DOCS) for Space-Based Observatories”, Proceedings of the ESO/NOVA International Interferometry Summer School, Leiden, The Netherlands, September 18-22, 2000.
2. Crawley E., de Weck O., “System Architecture – An Overview and Agenda”, Air Force Office of Sponsored Research (AFOSR) Workshop on System Architecture, Arlington, VA, January 28, 2002.
3. de Weck, O.L., “Isoperformance - An Alternative Design Methodology for Engineering Systems”, 2002 M.I.T. ESD Internal Symposium, ESD-WP-2003-01.22,University Park Hotel, Cambridge, MA, May 29-31, 2002.
4. Magee C. L., de Weck O. L., “An Attempt at Complex System Classification”, 2002 M.I.T. ESD Symposium, ESD-WP-2003-01.02, University Park Hotel, Cambridge, MA, May 29-31, 2002.
5. Edward Crawley, Olivier de Weck, Steven Eppinger, Christopher Magee, Joel Moses, Warren Seering, Joel Schindall, David Wallace, Daniel Whitney (Chair)., “The Influence of Architecture in Engineering Systems”, Monograph, 1st **Engineering Systems Symposium, M.I.T., March 29-31, 2004.**
6. Richard de Neufville, Olivier de Weck, Daniel Frey, Daniel Hastings, Richard Larson, David Simchi-Levi, Kenneth Oye, Annalisa Weigel, Roy Welsch, et al, “Uncertainty Management for Engineering Systems Planning and Design”, Monograph, 1st **Engineering Systems Symposium, M.I.T., March 29-31, 2004.**

Technical Reports

1. Suh E.S., de Weck O. L., Chang D., “Market Driven Process for Flexible Vehicle Architectures”, General Motors Research & Development, Blue Cover Technical Report, CL-04/10/VDR, 2004
2. Suh E.S., de Weck O. L., Chang D., “Engineering and Market Data Analysis in Support of SUV Architecting”, General Motors Research & Development, Blue Cover Technical Report, CL-04/13/VDR, 2004
3. Suh E.S., de Weck O. L., Chang D., “Flexible Component Design: Case of Mid/Large Architecture Floor Pan”, General Motors Research & Development, Blue Cover Technical Report, CL-04/16/VDR, 2004
4. Suh E.S., de Weck O. L., Chang D., “The Product Platforming Process for Vehicle Architectures”, General Motors Research & Development, Blue Cover Technical Report, CL-05/05/VDR, 2005
5. de Weck O.L., Simchi-Levi D., “Haughton-Mars Project Expedition 2005”, Final Report, NASA/TP-2006-214196, January 2006
6. de Weck O.L., Evans W., Parrish J., James, S.R., NASA Space Exploration Logistics Workshop Proceedings, Washington D.C., January 17-18, 2006, NASA-CP-2006-214202, April 2006
7. Evans W., de Weck O., Laufer D., Shull S., “Logistics Lessons Learned in NASA Space Flight”, NASA/TP-2006-214203, May 2006
8. de Weck O.L., Simchi-Levi D., Shishko R., Ahn J., Gralla E., Klabjan D., Mellein J., Shull A., Siddiqi A., Bairstow B, Lee G., “SpaceNet v1.3 User’s Guide”, NASA/TP-2007-214725, January 2007
9. Suh E.S., de Weck O.L., Furst M., Mihalyov K., “Estimating the Impact of Technology Infusion”, Xerox Technical Report, Accession Number X200700206, Xerox Corporation, January 2008
10. Ariyo L., Caldwell N., Clarkson P.J., Bounova G., Siddiqi A., de Weck O., Keller R., Robinson B., “The Management of Change (MOC) in Major Oil and Gas Exploration Projects at BP”, Technical Report S-EPT-052-10, BP, April 2010
11. Sega R., de Weck O.L, et al. ,”Controlling Cost Growth of NASA Earth and Space Science Missions” By Committee on Cost Growth in NASA Earth and Space Science Missions, National Research Council (NRC) of the National Academy of Sciences, ISBN-13: 978-0-309-15737, Washington .D.C., July 2010

Submitted Articles under review or revision:

1. Ferguson S., Lewis K., de Weck O., Siddiqi A., “Survey of Flexible and Reconfigurable Systems”, *Journal of Mechanical Design*, MD-08-1408, (in revision)
2. Klabjan D., de Weck O., et al. “Interplanetary Supply Chain Management and Logistics at NASA”, (CJOL-2009-0060), *International Journal of Logistics*, (in revision)
3. Kim I.Y., Lalonde N., de Weck O., “Performance Evaluation and Comparison of Five Deterministic and Probabilistic Multiobjective Optimization Algorithms”, *Structural and Multidisciplinary Optimization*, SMO-10-0234, January 2011 (in revision)
4. Siddiqi A., de Weck O.,” Quantifying the Energy Intensity of the Urban Water Cycle”, *Journal of Infrastructure Systems*, Ms. No. ISENG-334, May 2012 (under review)
5. Yue H., de Weck O., Grogan P., “Logistical Analysis of a Flexible Human and Robotic Mars Exploration Campaign”, *Journal of Spacecraft and Rockets*, 2012-03-A32373, March 2012 (under review)

# 5. Internal Memoranda and Progress Reports

1. Hora P., Maisch R., de Weck O.L., “Querfliesspressen Kreuzstein”, 3. Phase, FB Nr. 90-5, Institut für Umformtechnik, Eidgenössische Technische Hochschule ETH Zürich, Switzerland, April 1990.
2. de Weck O. L., Zingg A., “Wirksame Darstellung von Betriebsabläufen und Produkten”, Projektarbeit, Project Report, Swiss Federal Institute of Technology, ETH Zürich,, Switzerland, March 1992.
3. de Weck O., E. Papoutsis, “Der Datenverbund ICT/TRACS/QUADRO”, Report from CIM-Project, ABB Process Automation Inc., Turgi, Switzerland, April 1992.
4. de Weck Olivier L., Hora P. , “Numerische Simulation des Innenhochdruckumformens”, Institut für Umformtechnik, ETH Zürich, Switzerland , August 1992.
5. de Weck, Olivier L., “Technologietransfer F/A-18 - Die Gestaltung eines Engineering Training Programmes für Forschung und Entwicklung”, Swiss Aircraft and Systems Company, McDonnell Douglas, Swiss Federal Institute of Technology, March 1993.
6. de Weck Olivier L., Hora P., “Numerical Simulation of Superplastic Forming for Industrial Application”, Masters Thesis (Diplomarbeit), Department of Industrial Engineering, Swiss Federal Institute of Technology, ETH Zurich, Switzerland, February 1993.
7. de Weck Olivier L. , “Integrated Dynamics Modeling and Simulation for the Next Generation Space Telescope (NGST)”, S.M. Thesis, SERC Report #5-1999, Space Systems Laboratory, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, June 1999.
8. de Weck Olivier L. , “Multivariable Isoperformance Methodology for Precision Opto-Mechanical Systems”, Ph.D. Thesis, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, SERC Report August 2001.

6. Invited Lectures

Keynote Lectures

June 2002, “Produktion und Management – Wissensvernetzung”, Swiss Federal Institute of Technology – ETH Zurich, graduation ceremony and 10-year anniversary of the Department of Industrial Engineering (D-BEPR), Keynote Lecture, Zurich Switzerland.

April 2004, “Extensible Space Transportation Architectures”, Plenary Speaker, Mars Week 2004 Conference

October 2004, “Multi-objective Optimization – Status and Promise”, The Third China-Japan-Korea Joint Symposium on Optimization of Structural and Mechanical Systems, CJK-OSM3, Kanazawa, Japan

June 2006, “Strategic Engineering – Designing Systems for an Uncertain Future”, Center of Excellence Workshop, Challenges for life-based systems development, Keio Advanced Design School, Keio University, Tokyo, Japan

September 2006, “Trends in Multidisciplinary Engineering Education: 2006 and Beyond”, Keynote Lecture together with Prof. Karen Willcox, 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Portsmouth, Virginia

February 2009, “Active Learning Project Sequence (ALPS)”, The 1st International Symposium on Symbiotic, Safe and Secure System Design: Perspective of the education of system design project, Keio University, Graduate School of System Design and Management, Yokohama, Japan

March 2009, “Strategic Engineering: Designing Complex Systems for an Uncertain Future”, MIT 2009 Europe Conference, Vienna, Austria

October 2009, “System Design and Management and Engineering Systems: Grappling with Intertwined Technological and Social Complexity”, 2009 MIT Conference on Systems Thinking for Contemporary Challenges, October 22-23, 2009

December 2009, “MIT Global Operations Conference”, New Visions for Global Operations: From Product Development Through Delivery and Recycling, December 2-3, 2009

October 2010, “The Price of Utopia: Driving Industrial Products towards States of Higher Performance through System Optimization”, Complex Systems Design & Management CSDM 2010, Paris, France, October 27-29, 2010

May 2012, “Production in the Innovation Economy (PIE): A new MIT study on the current state and future of U.S. manufacturing”, MIT Global Operations Conference

Lecture Series

March 2005, “Supersize me … or architecting the evolution of Engineering Systems”, MITRE Corporation, McLean, VA, Technology Speakers Series

May 2007, “SpaceNet: Enabling Exploration through Interplanetary Supply Chain Management”, National Institute for Aerospace (NIA), NASA Langley Research Center, Distinguished Lecture Series

September 2007, “Design for Changeability: Incorporating Exogenous Uncertainty Considerations in System and Product Design”, Design Science Seminars, University of Michigan

June 2009, “Change Propagation in Complex Technical Systems”, Pratt & Whitney Fellows Lecture Series, United Technologies Research Center (UTRC), Hartford, CT, June 3, 2009

July 2009, “SPACENET: Modeling Space Exploration from a Logistics Perspective”, Applications Seminar, The Mathworks Inc., Natick, MA, July 8, 2009

July 2009, “Technology Infusion: An Assessment Framework and Case Study”, Aurora Flight Sciences Inc., Cambridge MA, Manassas VA, July 17, 2009

April 2010,” L’ingénierie des systèmes complexes : les apports et enjeux d’une approche scientifique pluridisciplinaire”, Swissnex Boston, French-speaking scientists monthly speaker series in the Boston area, April 29, 2010

October 2010, “Turning Systems Engineering into a Science …Yes, but how?”, Advanced Systems Engineering Lecture Series, Charles S. Draper Laboratory, October 12, 2010

March 2011, “Strategic Engineering: Designing Systems for an Uncertain Future”, Strategic and Global Security Program, Penn State University, State College, Pennsylvania

June 2012, “Engineering Systems: Meeting Human Needs in a Complex Technological World”, CESUN 2012, TU Delft, The Netherlands

Invited Research Seminars

January 2002, “On the Relationship between System Architecture and Multidisciplinary Design Optimization”, General Motors Research Center, Warren, MI.

March 2002, “Exploring the Relationship between System Architecture and Multidisciplinary Design”, United Technologies Research Center, East Hartford, CT.

 July 2002, “System Architecture – Overview and Concept Selection”, Raytheon, Architecture and Architects Workshop, Architectural Strategies for Raytheon Business Pursuits, Plano, TX.

April 2003, “Multivariable Isoperformance Methodology for Precision Opto-Mechanical Systems”, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan.

April 2003, “Staged Deployment and Orbital Reconfiguration of Satellite Constellations”, National Institute for Aerospace, NASA Langley Research Center

April 2003, “Multiobjective Optimization”, Korea Advanced Institute of Science and Technology (KAIST**)**, Daejeon, South Korea.

October 2004, “Staged Deployment and Reconfiguration of Satellite Constellations, Lessons Learned from Iridium and Globalstar”, Technical University Munich (TUM), Institute of Astronautics, Munich, Germany

October 2004, “Product Platform Portfolio & Strategy Optimization”, Technical University Graz (TUG), School of Engineering, Graz, Austria

November 2004, “Research and Teaching Program: Multidisciplinary Systems Engineering”, System Design Engineering Dept., Keio University, Yokohama, Japan

November 2004, “Product Architecture and Family Design – Strategy and Implementation”, Executive Workshop, LG Electronics, Production Engineering Research Center, Seoul, South Korea

July 2005, “Staged Deployment and Reconfiguration of Satellite Constellations: Lessons Learned from Iridium and Globalstar”, Stanford University, Stanford, California

January 2006, “Strategic Engineering”, Invited Seminar, Engineering Design Center (EDC), University of Cambridge, Cambridge, United Kingdom

February 2006 “Strategic Engineering”, Aerospace Seminar Series, Department of Aerospace Engineering, University of Michigan, Ann Arbor, Michigan

August 2006, “Strategic Engineering – Designing Systems for an Uncertain Future”, General Mills, Minneapolis, MN

December 2006, “Strategic Engineering – Designing Systems for an Uncertain Future”, Xerox Corporation, Distinguished Lecturer Series, Rochester, NY

April 2007, “Designing Evolvable Systems with Change Propagation Analysis and Time-Expanded Decision Networks”, University of Illinois, Urbana-Champaign, IL

April 2007, “Design for Changeability”, Georgia Institute of Technology, Atlanta, GA

April 2007, “SpaceNet: Interplanetary Supply Chain Management and Logistics”, Georgia Institute of Technology, Atlanta, GA

April 2007, “Changeability in System Design”, Engineering Design Center (EDC), University of Cambridge, Cambridge, United Kingdom

May 2007, “SpaceNet: Enabling Exploration through Interplanetary Supply Chain Management”, National Institute for Aerospace (NIA), NASA Langley Research Center

September 2007, “SpaceNet: Enabling Exploration through Interplanetary Supply Chains”, Department of Aerospace Engineering, University of Michigan, Ann Arbor, Michigan

October 2007, “Designing Complex Systems and Products for Changeability”, Information Laboratory, LIX Conference, Ecole Polytechnique, Paris, France

November 2007, Mechanical Engineering Seminar Series, Carnegie Mellon University (CMU), Pittsburgh, PA

December 2007, Invited Seminar, Graduate School of System Design and Management, Keio University, Tokyo, Japan

January 2008, Aerospace Engineering Seminar Series, University of Michigan, Ann Arbor, Michigan

November 2008, “Strategic Engineering: Designing Systems for an Uncertain Future”, Research Seminar, George Mason University, Fairfax, Virginia

January 2010, “Strategic Engineering: Designing Systems for an Uncertain Future”, Yossi Levine Systems Engineering Day, Gordon Center for Systems Engineering, Technion, Haifa, Israel

November 2010, “Strategic Engineering: Designing Systems for an Uncertain Future”, King Abdulaziz City for Science and Technology (KACST) , Riyadh, Saudi Arabia

January 2011, “Space Logistics: Enabling the Ultimate Exploration Frontier”, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland

July 2011, “Optimizing the Lifecycle Value of Complex Engineering Systems”, Chair for Product Development, Technical University of Munich (TUM), Garching, Germany

December 2011, “Engineering Systems: Meeting Human Needs in a Complex Technological World”, Séminaire Digiteo, Supélec, Paris, France

Research Contracts and Grants of Olivier L. de Weck

Year Sponsor Contract

 Expenditures

2001- 02 M.I.T. School of Engineering

 Startup Funds, Principal Investigator $75,000

 (2734076)

2001 – 03 Alfred P. Sloan Foundation

 “Low-Earth-Orbit Communication Constellations” Industry Systems Study, Principal Investigator $68,168

 (2733329)

2001 – 02 NASA Jet Propulsion Laboratory

 “Utility of Simulation in Design”

 Complex Systems Engineering Program

 Principal Investigator $36,550

 (6893404)

2002 – 05 General Motors Research Center

 “System Architecture and Design of Vehicle Families”

 Principal Investigator $362,994

 (6894615)

2002 Defense Advanced Research Projects Agency $50,083

 “Systems Architecting for Space Tugs – Phase A”

 Co-Investigator (PI: Prof. Daniel Hastings)

 (6564300)

2003 Defense Advanced Research Projects Agency $100,537

“Systems Architecting for Space Tug – Phase B”

 Principal Investigator

 (6894707)

2003-04 M.I.T. Class Funds for Innovation in Education $17,500

 (Class of ’51, ’55 and ’72)

 “Modern Engineering Design and Rapid Prototyping”

 Principal Investigator

 (2735917)

2003-04 Karl Chang (1965) Innovation Fund, M.I.T. $50,000

 “Development of an Integrated Design Framework

 Linking System Architecture and Design Optimization”

 Principal Investigator

 (2735861)

2003-04 General Motors Research Center - Supplemental Funding

 “System Architecture and Design of Vehicle Families”

 Principal Investigator $80,871

 (6894615)

* 1. NASA Headquarters – Space Architect’s Office

 “Comprehensive Analysis and Synthesis of Space

 Transportation Architectures” – PI Prof. Ed Crawley

 Co-Investigator – Proposal Writer $849,258

 (6895818)

2002-05 Robert N. Noyce Career Development Professorship $60,000

 (2736159)

2003-2005 National Optical Astronomy Observatory

“Development of Methods and Software Tools for

Analyzing Integrated Computer Models of Extremely

Large Ground Based Telescopes” $90,000

Co-Investigator – PI: Prof. David Miller

(6895265)

2004-05 Defense Advanced Research Projects Agency $97,000

“Systems Architecting for Space Tug – Phase C”

 Principal Investigator

 (6897564)

2004-2005 Charles Stark Draper Laboratory, Inc. “NASA Space $2,000,000

 Space Exploration – Concept Evaluation & Refinement

 Study”, Co-Investigator - PI: Prof. Ed Crawley

 (6896824)

* 1. BP – MIT Major Research Programs” Strategic Eng- $99,471

ineering of Large Infrastructure Systems: Real Options,

Staged Deployment and the Role of Flexibility”

Co-Investigator – PI: Prof. R. de Neufville

(6896700)

* 1. ArvinMeritor Inc., “Diesel Exhaust Emissions Controls $161,569

System Architecture Modeling and Multi-Objective

Optimization”

Principal Investigator

(6897070)

* 1. NASA Exploration Systems Mission Directorate $2,204,120

 “Interplanetary Supply Chain Management and

 Logistics Architectures”, Principal Investigator

 (6897715)

2006-2007 BP $113,275

 Strategic Engineering of Large Infrastructure Systems:
 Standardization and Real Options

 Principal Investigator

 (6896709)

2006-2007 NASA Small Business Technology Transfer (STTR) $40,000

 Integrated Life-Cycle Asset Mapping, Management,

 and Tracking: Rule-Based Analytic Asset Management for

 Space Exploration Systems (RAMSES)

 Principal Investigator

 (6899286)

2007-2008 BP $174,607

 Strategic Engineering of Large Infrastructure Systems:
 Standardization and Real Options – Phase 2

 Principal Investigator

 (6896709)

2007-2008 NASA Constellation University Institutes Program $106,616

 (CUIP) Lunar Campaign Logistics Analysis

 Principal Investigator

 (6915215)

2007-2009 NASA Small Business Technology Transfer (STTR) $600,000

 Rule-Based Analytic Asset Management for Space

 Exploration Systems (RAMSES), collaboration with

 Payload Systems Inc., Phase 2, Principal Investigator

 (6915737)

2007-2008 MIT-Portugal: Engineering Systems Anchor Program $84,948

 Critical Networked Infrastructure Systems Modeling

 Pilot Study – co-Principal Investigator

 (6915372)

2007-2010 NASA Constellation Universities Institute Program $373,088

 Lunar Campaign Logistics Analysis for Human and

 Robotic Exploration

 (6916691)

2008 System Modeling of In-Situ Resource Utilization

 NASA – Jet Propulsion Laboratory $35,000

 (6917131)

2008-2009 SpaceNet 2

 JPL Strategic University Research Program (SURP) $80,000

 Principal Investigator

 (6918002)

2008 Engineering Change Research Workshops $18,000

 Cambridge MIT Institute (CMI)

 Co-Principal Investigator

 (2734065)

2008-2011 Requirements Engineering for Sustainable Systems

 Masdar Initiative, Abu Dhabi

 Principal Investigator $750,000

 (6918743)

2008-2010 Landing Load – Airbag Attenuation System for Orion

 NASA NESC $100,000

 Principal Investigator

 (6916691)

2009-2011 Management of Change (MOC) in Complex Oil

 and Gas Projects

 BP $278,978

 Principal Investigator

 (6919067)

2009-2010 Integrated Socio-Technical Framework for Systems

 Architecting of Energy Projects at BP $274,204

 Co-Principal Investigator

2010-2011 Complexity and Emergent Behavior of Integrated $125,000

 Fan Drive Gear System

 Pratt & Whitney

 Principal Investigator

 (6921437)

2010-2011 F6 Value-Centric Design Methodology $325,000

 DARPA / Orbital Sciences Inc.

 Principal Investigator

 (6921450)

2010-2011 Living at Home Longer: eHomes for Seniors $200,000

 NTT Japan – Cybersolutions Laboratory

 Principal Investigator

 (6921660)

2011 Improved Forecasting of Operational Quality through $158,689

 System Modeling of Unplanned Production Losses

 BP

 Principal Investigator

 (6923175)

2011-2013 Production in the Innovation Economy (PIE) $500,000

 Study on transforming manufacturing in the U.S.

 Carnegie Corporation of New York

 Executive Director

 (6923763)

2011-2021 Center for Complex Engineering Systems (CCES) $20,448,856

 King Abdulaziz City for Science and Technology

 Principal Investigator

 (6924200)

2011-2013 Mapping the Pathways from Idea to Impact: How do $400,000

 entrepreneurial firms make strategic decisions as they

 move their innovations into early production?

 Production in the Innovation Economy (PIE)

 The Ewing Marion Kauffman Foundation

 Co-Principal Investigator

 (6924771)

2012-2013 NASA Innovative Mars Habitat Design Concepts $39,940

 NASA / Valador Inc.

 Principal Investigator

 (6925860)

2012-2013 NASA Innovative Mars Habitat Design $30,072

 Workshop @ MIT – Summer 2012

 Alumni Class Funds

 (TBD)

2012-2013 META II Design Flow and Implementation $239,729

 DARPA / Vanderbilt University

 Principal Investigator

 (6925543)

(M.I.T. cost object numbers given in parentheses where available)

Theses Supervised by Olivier de Weck

 Total Completed In Progress

Bachelor's 2 2 0

Master's 56 53 3

Engineer's 0 0 0

Doctoral

 As Supervisor 19 12 7

 As Reader 28 26 2

Total 105 93 12

Bachelor's Theses

McEnnis, Caroline and Bussey, George, “Optimizing Vibration Isolation in Space Interferometry”, May 2003

de Mierry, Timothée and Bounova, Gergana,”Control Algorithms for Space Tug Rendezvous”, May 2003

Master's Theses

Sou, Kin Cheong, “Fast Time Domain Simulation for Large Order Hybrid Systems”, Dept. of Aeronautics and Astronautics, June 2002.

Smith, Brian K., “Definition, Expansion and Screening of Architectures for Planetary Exploration Class Nuclear Electric Propulsion and Power Systems”, System Design and Management Program, February 2003.

Chaize, Mathieu, “Enhancing the Economics of Satellite Constellations via Staged Deployment and Orbital Reconfiguration”, Dept. of Aeronautics and Astronautics, June 2003. (co-supervised with Prof. R. de Neufville)

Scialom, Uriel, “Optimization of Satellite Constellation Reconfiguration”, Dept. of Aeronautics & Astronautics, September 2003.

Howell, Deborah J., “Multi-Configuration Model Tuning for Precision Opto-Mechanical Systems” Dept. of Aeronautics and Astronautics, February 2004.

Cohanim, Babak, “The Design of Radio Telescope Array Configurations using Multiobjective Optimization: Imaging Performance versus Cable Length”, Dept. of Aeronautics and Astronautics, February 2004. (co-supervised with Prof. J. Hewitt)

Galabova, Kalina, “Architecting a Family of Space Tugs based on Orbital Transfer Mission Scenarios”, Dept. of Aeronautics and Astronautics, February 2004.

Banerjee, Prithviraj, “Describing, Assessing and Embedding Flexibility in Product and System Architecture”, System Design and Management Program, February 2004.

Hauser, Dominic, “Flexibility in Aerospace and Automotive Component Manufacturing Systems: Practices, Strategy and Optimization”, M.I.T. visiting student, Department of Industrial Engineering, Swiss Federal Institute of Technology, ETH Zurich, March 2004.

Chang, Darren D., “Quantifying Technology Infusion and Policy Impact on Low Earth Orbit Communication Satellite Constellations“, Dept. of Aeronautics and Astronautics, Technology and Policy Program, June 2004.

Malaga Chocano, Eduardo, “A Comparative Study of Iterative Prototyping vs. Waterfall Process Applied to Small and Medium Sized Software Projects”, System Design and Management Program, June 2004.

Schuman, Todd, “Integration of System-Level Optimization with Concurrent Engineering Using Parametric Subsystem Modeling”, Dept. of Aeronautics and Astronautics, June 2004. (co-supervised with Dr. Jaroslaw Sobieski – NASA Langley Research Center)

Hofstetter, Wilfried, “Extensible Modular Landing Systems for Human Moon and Mars Exploration”, Visiting Student from Technical University Munich, (co-advised with Prof. Ed Crawley), December 2004

Bounova, Gergana, “Graph-theoretical Considerations in the Design of Complex Engineering Systems for Robustness and Scalability”, Dept. of Aeronautics and Astronautics, February 2005.

Nadir, William, “Multidisciplinary Structural Design and Optimization for Performance, Cost, and Flexibility”, Dept. of Aeronautics and Astronautics, February 2005.

Usan, Massimo, “Automotive Component Product Development Enhancement Through Multi-Attribute System Design Optimization in an Integrated Concurrent Engineering Framework”, System Design and Management Program, (co-advised with Dr. Dan Whitney), February 2005[[1]](#footnote-2)

Samuels, Ayanna, “Re-Engineering Satellite Communications Systems for the Developing World”, Dept. of Aeronautics and Astronautics, Technology and Policy Program, June 2005.

Underwood, Jennifer, “First-Order Interactions between System and Network Architectures in Distributed Satellite Communication System Design”, Dept. of Aeronautics & Astronautics, co-supervised with Dr. Dorothy Poppe, Charles Stark Draper Laboratory, June 2005.

Wolf, Robert A., “Multiobjective Collaborative Optimization of Systems of Systems”, Department of Ocean Engineering and the Engineering Systems Division, co-supervised with Prof. Timothy J. McCoy, June 2005

Nolan, Mike, “Optimizing the Design of Systems that Evolve Over Time Using Neural Networks”, Department of Mechanical Engineering, System Design and Management Program, co-supervised with Prof. David Wallace, June 2005

Graff, Christopher, “System Modeling, Analysis, and Optimization Methodology for Diesel Exhaust After-treatment Technologies”, Department of Aeronautics & Astronautics, June 2006

Bairstow, Brian, “Effectiveness of Integration of System-Level Optimization in Concurrent Engineering for Rocket Design”, Department of Aeronautics & Astronautics, May 2006

Mirza, Atif, “Data Fusion in Sensor Platforms: Lifecycle Models & Applications”, System Design and Management Program, June 2006

Gralla, Erica, “Strategies for Launch and Assembly of Modular Spacecraft”, Department of Aeronautics & Astronautics, August 2006

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Giffin, Monica, “Change Propagation in Large Technical Systems”, System Design and Management Program, February 2007

Lloyd, Jeffrey, “Error Propagation of Optimal System Design in a Hierarchical Enterprise”, System Design and Management Program, February 2007

Croce, Steven, “Risk Management Framework for Evaluating Suppliers”, Leaders for Manufacturing Program, June 2007

Shull, Sarah, “Integrated Modeling and Simulation of Lunar Exploration Campaign Logistics”, Department of Aeronautics & Astronautics, June 2007

Armar, Nii, ““Cargo Revenue Management for Space Logistics”, Department of Aeronautics & Astronautics, September 2008

Assad, Albert, “Model of Astronaut Health and Medical Supply Demand for long-duration Human Space Flight”, System Design and Management Program, Engineering Systems Division, January 2009

Diaz, Adrian, “Network Analysis of Technical and Organizational Configurations: Using an Alignment Approach to Enhance Product Development Performance”, System Design and Management, Engineering Systems Division, co-advised with Prof. Fiona Murray (Sloan), January 2009

Gaustad, Gabrielle, “Stochastic methods for improving secondary production decisions under compositional uncertainty”, Computation for Design and Optimization (CDO) Program, S.M. Thesis, January 2009

Chepko, Ariane, “Technology Selection and Architecture Optimization of In-Situ Resource Utilization Systems”, Department of Aeronautics & Astronautics, June 2009

Poppe, Clayton, “Using Critical Chain Project Management Methodologies to Build a Production Schedule”, Leaders for Manufacturing Program, co-advised with Prof. Steve Graves (Sloan), June 2009

Alfaris, Anas, “An Evolutionary Design Model for the Design of Complex Engineered Systems: MASDAR City as a Case Study”, Computation for Design and Optimization CDO, August 2009

Syed, Athar, “A Systems Approach to Mitigation of Project Failure Modes”, System Design and Management, ESD, August 2009

Deveraux, Jaime, “Obsolescence: A Systems Engineering and Management Approach for Complex Systems”, System Design and Management, ESD, January 2010

Grindle, Abraham, “A Technical, Financial, and Policy Analysis of the RAMSES RFID Inventory Management System for NASA’s International Space Station: Prospects for SBIR/STTR Technology Infusion”, Department of Aeronautics & Astronautics and Technology and Policy Program, January 2010

Pasqual, Michael, “Multilayer Network Modeling of Change Propagation for Engineering Change Management”, Technology and Policy Program, ESD, June 2010

Amador, Jorge, “Managing Configuration Options for Build-to-Order highly Customized Products with Application to Specialty Vehicles”, System Design and Management, ESD, June 2010

Grogan, Paul, “A Flexible, Modular Approach to Integrated Space Exploration Campaign Logistics Modeling, Simulation and Analysis”, Department of Aeronautics & Astronautics, September 2010

James, Denman, “Influence of System Architecture Changes on Organizational Work Flow and Application to Geared Turbofan Engines”, System Design and Management, ESD, February 2011

Do, Sydney, “An Airbag-Based Crew Impact Attenuation System for the Orion Crew Exploration Vehicle”, Department of Aeronautics & Astronautics, February 2011

Kraft, Justin, “A Flexible Design Framework for Autonomous Mowing”, System Design and Management, ESD, February 2011

Yue, Howard, “Propulsive and Logistical Feasibility of Alternative Future Human-Robotic Mars Exploration Architectures”, Department of Aeronautics & Astronautics, June 2011

Pinillos Montano, Raul, “Platform Project Management: Optimizing Product Development by Actively Managing Commonality”, System Design and Management Program, June 2011

Green, Jennifer, “Sustainable Urban Sanitation: Simulating a Desludging Service in Senegal”, Humanitarian Logistics and Management Program, Faculty of Economics, University of Svizzera Italiana (USI), Lugano, Switzerland, November 2011

Baker, Brittany, “Reconfigurable Wheels: Re-Inventing the Wheel for the Next Generation of Planetary Rovers”, Department of Aeronautics & Astronautics, February 2012

Nag, Sreeja, “Collaborative Competition for Crowdsourcing Spaceflight Software and STEM Education using SPHERES Zero Robotics”, co-supervised with Prof. Jeffrey Hoffman, Technology and Policy Program and Department of Aeronautics & Astronautics, June 2012

Paek, Soon Wook, “Reconfigurable Satellite Constellations for Geo-spatially Adaptive Earth Observation Missions”, Department of Aeronautics & Astronautics, June 2012

Flanagan, Genevieve, “Key Challenges to Model-Based Design: Distinguishing Model Confidence from Model Validation”, co-advised with Prof. Noelle Selin, System Design and Management Program, June 2012

Al Ahmed, Khalid, ”Aggregate Model and Analysis of the Energy Dynamics in the Kingdom of Saudi Arabia” System Design and Management Program, June 2012

Naeff, Daniel, “Portfolio Optimization of Globally Distributed Manufacturing Plants:

Corporate and Government Perspectives”, Visiting Masters Student from ETH Zurich, June 2012

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In Progress:

Wachtel, Amanda, Computation for Design and Optimization, expected June 2013

Ho, Koki, Department of Aeronautics & Astronautics, expected June 2013

Shougarian Narek, Department of Aeronautics & Astronautics, expected June 2013

Engineers Theses

Doctoral Theses, Supervisor

Smaling, Rudy, “System Architecture Selection under Uncertainty”, Engineering Systems Division, June 2005

Suh, Eun Suk, “Flexible Product Platforms”, Engineering Systems Division, September 2005

Siddiqi, Afreen, “Reconfigurability in Space Systems: Architecting Framework and Case Studies”, Department of Aeronautics and Astronautics, May 2006

Kalligeros, Konstantinos, “Flexibility and standardization in programs of large-scale projects”, Engineering Systems Division, co-supervised with Prof. Richard de Neufville, June 2006

Taylor, Christine, “Integrated Transportation System Design Optimization”, Department of Aeronautics and Astronautics, February 2007

Howell, Deborah J., “Spatial Nyquist Fidelity Method for Structural Models of Opto-Mechanical Systems”, Department of Aeronautics and Astronautics, co-supervised with Prof. David Miller, August 2007

Ahn, Jaemyung, “The Generalized Location Routing Problem with Profits for Planetary Surface Exploration and Terrestrial Applications”, Department of Aeronautics and Astronautics, December 2007

Jijun, Lin, “Exploring Flexible Strategies in Engineering Systems Using Screening Models:

 Applications to Offshore Petroleum Projects”, Engineering Systems Division, December 2008

Underwood-Manuse, Jennifer, “The Strategic Evolution of Systems: Principles and Framework with Applications to Space Communication Networks”, Dept. of Aeronautics & Astronautics, January 2009

Bounova, Gergana, “Topological Evolution of Networks: Case Studies in the US Airlines

and Language Wikipedias”, Department of Aeronautics and Astronautics, February 2009

Whiting, James, “Path Optimization Using sub-Riemannian Manifolds with

Applications to Astrodynamics”, Department of Aeronautics and Astronautics, December 2010

Agte, Jeremy, “Multistate Analysis and Design: Case Studies in Aerospace Design and Long Endurance Systems”, Department of Aeronautics and Astronautics, September 2011

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In Progress:

 Coffee, Thomas, Department of Aeronautics & Astronautics, expected 2012

 O’Neill Gregory Michael, Department of Aeronautics & Astronautics, expected 2012

Ishimatsu, Takuto, Department of Aeronautics and Astronautics, expected 2013

 Sinha, Kaushik, Engineering Systems Division, expected 2013

 Paul Grogan , Engineering Systems Division, expected 2013

 Chaiwoo Lee, Engineering Systems Division, expected 2013

 Sydney Do, Department of Aeronautics & Astronautics, expected 2014

Doctoral Theses, Reader

Kong, Mun-Choong (Edmund), “Spacecraft Formation Flight Exploiting Potential Fields”,

Dept. of Aeronautics and Astronautics, supervised by Prof. David Miller, February 2002.

Kenny, Sean P., “Optimal Rejection of Non-stationary Narrowband Disturbances for Flexible Systems”, Dept. of Aeronautics and Astronautics, supervised by Prof. David Miller, February 2002.

Jilla, Cyrus, “A Multiobjective, Multidisciplinary Design Optimization Methodology for the Conceptual Design of Distributed Satellite Systems”, Dept. of Aeronautics and Astronautics, supervised by Prof. David Miller, May 2002.

Walton, Myles, “Managing Uncertainty in Space Systems Conceptual Design Using Portfolio Theory”, Dept. of Aeronautics and Astronautics, supervised by Prof. Daniel Hastings, June 2002.

Liu, Kuo-Chia (Alice),”Stochastic Performance Analysis and Staged Control System Designs for Space Based Interferometers, Dept. of Aeronautics and Astronautics, supervised by Prof. David Miller, March 2003.

Spindler, Henry, “Online System Identification and Optimal Control for Mixed-Mode Cooling”, Dept. of Mechanical Engineering, supervised by Prof. L. Glicksman, August 2004.

Downen, Troy, “A Quantitative Method for Assessing the Relative Value of Complex Products, with Application to the Business Airplane Industry”, Engineering Systems Division, supervised by Prof. Debbie Nightingale, February 2005.

Koo, Benjamin, “A Meta-language for Systems Architecting”, Engineering Systems Division, supervised by Prof. Edward Crawley, February 2005.

Wang, Tao, “Real Options “in” Projects and Systems Design – Identification of Options and Solutions for Path Dependency”, Engineering Systems Division, supervised by Prof. Richard de Neufville, June 2005

Jourdan, Damien, “Wireless Sensor Network Planning with Application to UWB Localization in GPS-Denied Environments”, Dept. of Aeronautics and Astronautics, supervised by Prof. Moe Win, June 2006.

Ross, Adam, “Managing Unarticulated Value: Changeability in Multi-Attribute Tradespace Exploration”, Engineering Systems, supervised by Prof. Daniel Hastings, June 2006

Lamamy, Julien, “Methods and Tools for the Formulation, Evaluation and Optimization of Rover Mission Concepts”, Aeronautics & Astronautics, supervised by Prof. David Miller, June 2007

Simmons, Willard Lennox, “A Framework for Decision Support in Systems Architecting”, Aeronautics& Astronautics, supervised by Prof. Edward Crawley, February 2008

Boas, Ryan, “Commonality in Complex Product Families: Implications of Divergence and Lifecycle Offsets”, Engineering Systems Division, supervised by Edward Crawley, September 2008

Evans, John, “The Design of Systems with Desired Outcomes: an Isoparametric Approach Using Adaptive Search”, George Mason University, Systems Engineering and Operations Research (SEOR) Department, supervised by Andrew Loerch, November 2008

Gaustad, Gabrielle, “Towards sustainable material usage: time-dependent evaluation of upgrading technologies for recycling”, Material Science and Engineering, supervised by Randolph Kirchain, June 2009

Hofstetter, Wilfried, “A Framework for the Architecting of Aerospace Systems Portfolios with Commonality”, Aeronautics & Astronautics, supervised by Edward Crawley, June 2009

Yang, Yingxia, “A Screening Model to Explore Planning Decisions in Automotive

Manufacturing Systems under Demand Uncertainty”, Engineering Systems Division, supervised by Randolph Kirchain, June 2009

Alfaris, Anas, “The Evolutionary Design Model (EDM) For the Design of Complex Engineered Systems MASDAR City as a Case Study”, School of Architecture, supervised by William Mitchell, June 2009

Philipp Gneiting, “Supply Chain Design fuer modulare Fahrzeugarchitekturen”, Management Technology and Economics (MTEC) Department, ETH Zurich, supervised by Paul Schoensleben, August 2009

Silver, Matthew, “Open Collaborative System Design: A Strategic Framework with Application to Synthetic Biology”, Engineering Systems Division, supervised by Edward Crawley, January 2010

Mohan, Swati, “Quantitative Selection and Design of Model Generation Architectures for On-Orbit Autonomous Assembly”, Aeronautics & Astronautics, supervised by David Miller, March 2010

Cardin, Michel-Alexandre, “Quantitative Performance-Based Evaluation of a Procedure for Flexible Design Concept Generation”, Engineering Systems Division, supervised by Richard de Neufville, December 2010

Gorbea, Carlos, “Vehicle Architecture and Lifecycle Cost Analysis In a new Age of Architectural Competition”, TU Munich, Germany, supervised by Udo Lindemann, July 2011

Cunio, Phillip, “Tradespace Model for Planetary Surface Hopping Vehicles”, Dept. of Aeronautics and Astronautics, supervised by Jeffrey Hoffman, June 2012

Golkar, Alessandro, “A Framework for Space Systems Architecting under Stakeholder Objectives Ambiguity”, Dept. of Aeronautics and Astronautics, supervised by Edward Crawley, June 2012

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In Progress:

Feng, Wen, Engineering Systems Division, supervised by Edward Crawley

Ferreira, Ivo, MIT Portugal Program, supervised by Paulo Gil (Portugal)

Postdoctoral Associates and Fellows Supervised by Olivier L. de Weck

Current Postdocs

none

Previous Postdocs

Dr. Gergana Bounova, Postdoctoral Associate, April 2009 – December 2011, Research Area: Network and Graph Theory, System Evolution, Management of Change, Ph.D. from MIT in Aeronautics & Astronautics, Dr. Bounova is currently a research scientist at UC Berkeley

Dr. Il Yong Kim, Postdoctoral Associate, October 2002 – June 2004, Research Area: Design Space Optimization, Ph.D. from Korea Advanced Institute for Science and Technology (KAIST), Daejeon, South Korea. Dr. Kim is currently a tenured Associate Professor in the Department of Mechanical Engineering, Queen’s University, Kingston, Ontario, Canada

Dr. Rania Hassan, Postdoctoral Associate, September 2004 – September 2005, Research Area: Multidisciplinary Design Optimization, Genetic Algorithms, Satellite Design; Ph.D. from Purdue University, West Lafayette, IN

Dr. Salvador Perez Canto, Visiting Fellow, February- July 2005, Research Area: Power plant preventive maintenance scheduling via Benders' decomposition, PhD. from the University of Malaga. Dr. Perez Canto is currently a tenure track Assistant Professor at the Industrial Engineering School of the University of Malaga, Spain

Dr. Konstantinos Kalligeros, Postdoctoral Associate, June 2006-September 2006, Research Area: Flexibility and Real Options in Complex Systems, Standardization of Oil and Gas Exploration Systems. Currently: Vice President at Commerzbank, London

Dr. Yasushi Kojima, Visiting Fellow, August 2006-March 2007, Research Area: Dynamics and Control of Earth Observing Satellites, Troubleshooting of On-Orbit Anomalies using Integrated Modeling and Simulation, Ph.D. from Keio University. Currently: Senior Systems Engineer, Japan Aerospace Exploration Agency (JAXA)

Dr. Afreen Siddiqi, Postdoctoral Associate, September 2006 – August 2009, Research Area: System Reconfigurability, Commonality, Modularity, Spares Modeling for Space Logistics, Ph.D. from MIT in Aeronautics & Astronautics, currently research scientist at the MIT Engineering Systems Division



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1. SDM Best Thesis Award [↑](#footnote-ref-2)