



Curriculum Vitae

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## **BIOGRAPHY**

Dr. Mathaisel is Professor of Management Science in the Department of Mathematics and Science at Babson College, Wellesley, Massachusetts. He was a Research Scientist at MIT, and he was also the founder and President of a computer software firm that developed systems for airline scheduling and resource allocation.

He has undertaken assignments for NASA, the U.S. Air Force, U.S. Department of Transportation (Office of the Secretary), Federal Aviation Administration, Pratt & Whitney Aircraft, Flying Tiger Line, Pan American World Airways, Hughes Air West, Olympic Airways, Federal Express, Iberia Airlines, Northwest Airlines, USAir, Continental, Garuda Indonesia, Trans World Airlines, and other institutions. This experience includes enterprise sustainment, the application of Lean manufacturing to sustainability, decision support systems, maintenance and logistics, scheduling, fleet and route planning, and transport systems analysis and engineering.

Dr. Mathaisel received his Bachelor of Science degree in Mechanical Engineering from Northeastern University and his Master of Science degree in Systems Engineering and Operations Research from the University of California, Irvine. He holds the Doctor of Philosophy degree in Aeronautics & Astronautics from the Massachusetts Institute of Technology.

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# 1 TEACHING RECORD

## 1.1 BABSON COLLEGE

### 1.1.1 UNDERGRADUATE COURSES

MIS1000	Introduction to Information Systems	1984-1995
QTM1101	Honors Calculus	1992-1993
QTM1300	Calculus (Quantitative Methods with Calculus)	1984-Present
QTM1301	Applications of Calculus and Discrete Mathematics	2005-Present
QTM1310	Probability & Statistics	1984-Present
QTM2420	Applied Quantitative Modeling	1997-Present
QTM2421	Honors Applied Quantitative Modeling	2005-Present
QTM2620	Quantitative Methods (Introduction to OR)	1995
MIS2630	Problem Solving & Software Design	1989-1995
QTM3520	Management Science	1991
SCN2110	Physics	1996 - 1997

### 1.1.2 GRADUATE COURSES

QTM7010	Quantitative Foundations of Decision Support Systems	1984-1985
QTM7520	Operations Research	1991
MBA Mod III	Decision Support Systems (Shadow Professor)	1998
MBA Mod III	Decision Support Systems (Lead Professor)	1999-2001
QTM8400	Data and Decision Modeling	2005-2006

## 1.2 MIT - GRADUATE COURSES

16.711	Probability & Statistics	1980-1981
16.602	Architecture & Programming a Microcomputer	1980-1984
16.73	Air Transport Management	1981-1984
16.74	Air Transport Economics	1981
16.77	Flight Transportation Operations Analysis	1981-1984
6.271	Operations Research I	1983-1984
6.272	Operations Research II	1983-1984
16.71	Computer Algorithms & Data Structures	1983-1984

## 1.3 UNIVERSITY OF INDONESIA (Visiting Lecturer)

Air Transport Economics	1994-1995
Flight Transportation Operations Analysis	1994-1995

## **2 EDUCATION**

### **2.1 DEGREES**

Bachelor of Science	Mechanical Engineering Northeastern University Boston, Massachusetts Thesis: "Construction of a Laminar Flow Table"	1969
Master of Science	Systems Engineering & Operations Research University of California Irvine, California Thesis: "An Airline Schedule Construction Model"	1975
Doctor of Philosophy	Aeronautics & Astronautics Massachusetts Institute of Technology Cambridge, Massachusetts Thesis: "Fleet Planning for the Air Transport Industry: Network Aggregation and Cell Theory Models"	1981

### **2.2 EDUCATION SINCE THE PhD DEGREE**

Artificial Intelligence Lecture Series Lexington, Massachusetts	Spring 1985
Impact of Microcomputers on Operations Research Denver, Colorado	March 1985
Operations Research Cambridge, Massachusetts	July 1985

### 3 SCHOLARLY ACTIVITIES

#### 3.1 BOOKS

1. Sustaining the Military Enterprise: An Architecture for a Lean Transformation, Auerbach Publications, Taylor & Francis Group, ISBN-13: 978-1-4200-6224-3, December. 2007
2. Sustaining the Military Enterprise: Enhancing its Ability to Perform the Mission, Manuscript in production, with J. Manary and C. Comm, Publisher: Auerbach Publications, Taylor & Francis Group. Publication Date: 2009

#### 3.2 REFEREED JOURNAL PUBLICATIONS

1. "Directions for Developing an Air Cargo System Planning Model" with P.A. Kivestu and N.K. Taneja, Society of Automotive Engineers (SAE) Paper No. 78-0556. 1978
2. "A Long Term System Planning Model for the U.S. Air Transport Industry," American Institute of Aeronautics & Astronautics (AIAA) Paper No. 78-1555. 1978
3. "Manufacturer Views on New Order Outlook," Air Finance Journal, No. 29, pp. 3-6. 1983
4. "Optimal Gate Assignment at Airport Terminals," with R. Mangoubi, Transportation Science, Vol. 19, No. 2. 1985
5. "Airline Scheduling: An Overview," with M. Etschmaier, Transportation Science, Vol. 19, No. 2. 1985
6. "Perceptions of the M.I.S. Major: Marketing the M.I.S. Major to Undergraduate Business Students," with C. Comm, Interface: The Computer Education Quarterly, Vol. 10, Issue 2, Summer. 1988
7. "College Course Scheduling: A Market for Computer Software Support," with C. Comm, Journal of Research on Computing in Education, Volume 21, Issue 2, December. 1988
8. "Course and Classroom Scheduling with Interactive Computer Graphics," with C. Comm, Journal of Systems and Software, Vol. 15, pp. 149-157. 1991

9. "The Marketing of a Hospital Scheduling System," with C. Comm, 1995  
Journal of Hospital Marketing, Volume 9, Number 2, Spring.
10. "Evaluating Teaching Effectiveness in America's Business Schools: 1996  
Implications for Service Marketers," with C. Comm, Journal of  
Professional Services Marketing, Volume 16.
11. "Decision Support for Airline Systems Operations Control and 1997  
Irregular Operations," Computers & Operations Research, Vol. 23,  
No. 11, pp. 1083-1098.
12. "Decision Support for Airline Schedule Planning," Journal of 1997  
Combinatorial Optimization, 1, 251-275
13. "The Processes of Airline System Operations Control," published in 1998  
Operations Research in the Airline Industry, Kluwer Academic  
Publishers, a book of refereed papers on airline operations research,  
edited by the University of Texas at Austin, with S. Grandeau and M.  
Clarke.
14. "Aircraft Ground Movement Simulation," published in Operations 1998  
Research in the Airline Industry, Kluwer Academic Publishers, with  
H. Idris.
15. "A Paradigm for Benchmarking Lean Initiatives for Quality 2000  
Improvement," Benchmarking: An International Journal, with C.  
Comm, Vol.7, Issue 2.
16. "Assessing Employee Satisfaction in Service Firms: An Example in 2000  
Higher Education," Journal of Business and Economic Studies, with  
C. Comm, Vol. 6, No. 1.
17. "Developing, Implementing and Transferring Lean Quality Initiatives 2000  
from the Aerospace Industry to All Industries," Managing Service  
Quality, with C. Comm, Vol. 10, No. 4.
18. "Employing "Gap Analysis" to Measure Classroom Outcomes," 2002  
Journal of the Academy of Business Education, with C. Comm, Vol.  
3, Fall.
19. "A Lean Sustainment Enterprise Model for Military Systems," 2002  
Acquisition Review Quarterly, with M. Agripino and T. Cathcart,  
Vol. 9, No. 4, Fall.

20. "Less is More: A Framework for a Sustainable University," 2003  
International Journal of Sustainability in Higher Education, with C. Comm, Vol. 4, No. 4.
21. "A Case Study of the Implications of Faculty Workload and 2003  
Compensation for Improving Academic Quality," International Journal of Educational Management, with C. Comm, Vol. 17, No. 5.
22. "A Framework for Benchmarking, Classifying, and Implementing 2004  
Best Sustainment Practices," Benchmarking: An International Journal, with T. Cathcart and C. Comm, Vol. 11, No. 4, pp 403-417.
23. "A Case Study in Applying Lean Sustainability Concepts to 2005  
Universities," with C. Comm, International Journal of Sustainability in Higher Education, Vol. 6, No. 2.
24. "Meeting the Competitive Challenge," with T. P. Cathcart, Dennis J. 2005  
Stamm, and Mario F. Agripino, Industrial Engineer, Institute of Industrial Engineers, Vol. 37, No. 1, January.
25. "Sustaining the Military Enterprise: Architecture for a Lean 2005  
Transformation," First of two Articles, with T. Cathcart and M. Agripino," Defense Procurement Analysis, Logistics Special Focus, Spring.
26. "A Lean Architecture for Transforming the Aerospace Maintenance, 2005  
Repair and Overhaul Enterprise," International Journal of Productivity and Performance Management, Summer.
27. "An Exploratory Study of Best Lean Sustainability Practices in 2005  
Higher Education," with C. Comm, Quality Assurance in Education, Volume 13, Issue 3.
28. "An Exploratory Analysis in Applying Lean Manufacturing to a 2005  
Labor-Intensive Industry in China, with Clare Comm, Asia Pacific Journal of Marketing and Logistics, Volume 17, No. 4.
29. "Adding Value to Service Providers: Benchmarking Wal-Mart," 2008  
Benchmarking: An International Journal, Volume 15, Issue 2.

30. "Sustaining Higher Education Using Wal-Mart's Best Supply Chain Management Practices," International Journal of Sustainability in Higher Education, Volume 9, Issue 2. 2008
31. "Transforming Urban Public Transportation: A Lean Enterprise Approach," with Scott A. Hirsch, Journal of Business & Economics Research, August. 2008
32. "Implementing a Lean Enterprise Approach to Achieve Business Excellence," with C. Comm, International Journal of Business Excellence, Accepted for publication in Fall 2008. 2008

### **3.3 JOURNAL ARTICLES UNDER REVIEW**

- 1.

### **3.4 OTHER PUBLICATIONS ( PROCEEDINGS, PAPERS, REPORTS, CASES)**

1. "Airline Schedule Planning and Evaluation Model," McDonnell Douglas Corporation Paper No. 6096, 1972 1972
2. "A Long Range Fleet Planning Model for the Air Transport Industry," Flight Transportation Laboratory Paper No. 77-6, MIT, 1977. 1977
3. "A Robust, Policy-Oriented Econometric Model of the Demand for Air Transportation," Flight Transportation Laboratory Report No. 79-4, MIT, 1978. 1978
4. "Massachusetts State Airport System Plan Forecasts, A Review of Available Methodologies," Flight Transportation Laboratory Report No. 78-3, MIT, 1978. 1978
5. "Optimal Assignment of Cargo Flows to an Airline Network," with M. Muller, paper presented at the Operations Research Society of America (ORSA) national meeting, Los Angeles, 1978. 1978
6. "Fleet Assignment with Variable Demand: A Goal Programming Approach," Unpublished Paper, MIT, 1983. 1983
7. "Optimization of Air Transport Capacity and Yields," Flight Transportation Laboratory Memorandum M83-1, MIT, 1983. 1983

8. "Cell Theory-Linear Programming Fleet Planning Model," Synergy Report, 1983. 1983
9. "A Library of Computer Algorithms for Operations Research and Management Science," Operations Research Center, Unpublished Paper, MIT, 1984. 1984
10. "Aircraft Scheduling: The State of the Art," International Federation of Operational Research Societies, Airline Group, Annual Proceedings of AGIFORS, Strassbourg, France, September 1984. 1984
11. "Automation of Airlift Scheduling for the Upgraded Command and Control System of Military Airlift Command," with R.W. Simpson, MIT Flight Transportation Laboratory Report, R84-6, 1984. 1984
12. "Classroom Scheduling," with M. Ludwig, Report on Research, Babson College, 1985. 1985
13. "Dijkstra: A Software Package for Aid in Teaching Dijkstra's Shortest Path Algorithm," Unpublished Paper, MIT, Operations Research Center, 1986. 1986
14. "Hungarian: A Software Package for Aid in Teaching the Hungarian Algorithm for Solving the Assignment Problem," Unpublished Paper, MIT, Operations Research Center, 1986. 1986
15. "Cell Theory: A Cluster Approach to the Airline Fleet Planning Problem," Proceedings of the Decision Sciences Institute, Honolulu, November 1986. 1986
16. "Airlift System Analysis Program: Investigation of the Potential for Adding Alternative Forms of Ownership to the Airlift System Analysis Program Model," Unpublished Paper, written for the U.S. Air Force and SYNERGY, 1986. 1986
17. "Airlift Loading Model (ALM): Model Improvements and Operating System Enhancements," Unpublished Paper, written for the U.S. Air Force, 1986. 1986
18. "Course and Classroom Scheduling: Assessing a Market for Computer Software Support," with C. Comm, Proceedings of the Decision Sciences Institute, November 1988. 1988
19. "Course and Classroom Scheduling using Interactive Computer Graphics," Proceedings of the Decision Sciences Institute, November 1989. 1989

20. "Airline Safety: Public Policy and Marketing Issues", with C. Comm and E. Foster-Curtis, Proceedings of the Decision Sciences Institute, November 1990. 1990
21. "An Expert System for the Classroom Scheduling Problem," with L.R. Hazelton, Proceedings of the Decision Sciences Institute, November 1991. 1991
22. "A Command and Control System for Airline Flight Operations," Proceedings of the Decision Sciences Institute, November 1992. 1992
23. "Analysis and Implications of Student Course Evaluation Instruments Used by AACSB Schools." Proceedings of the Decision Sciences Institute, November. 1992
24. "Aircraft Ground Motion Simulation," Proceedings of the Decision Sciences Institute, November 1993. 1993
25. "A Simulation of Aircraft Motion on the Airport Surface," Flight Transportation Laboratory, Report R94-10, 1994. 1994
26. "EXPRESS White Paper," Lean Sustainment Initiative, MIT, 1998. 1998
27. "White Paper on Best Sustainment Practices," Lean Sustainment Initiative, MIT, 1999. 1999
28. "Industry Benchmarking Survey of Lean Initiatives," Lean Sustainment Initiative, MIT, 1999. 1999
29. "Analysis of the Industry Benchmarking Survey of Lean Initiatives," Lean Sustainment Initiative, MIT, 1999. 1999
30. "On the relationship between the EXPRESS model and Goals, Objectives and Metrics: A Case Study," Lean Sustainment Initiative, MIT, 1999. 1999
31. "A Framework for Identifying and Classifying Best Sustainment Practices," with C. Comm and T. Cathcart, August 2001. 2001
32. "Less is More: The Concept of a 'Lean' Airline," with C. Comm, September 2001. 2001
33. "How are Automatic Test Systems (ATS) Contributing to the US Air Force Parts and Materials Problem?" with T. Cathcart, October 2001. 2001

34. "Best Sustainment Practices for the Parts and Materials Problem in the Military", White Paper, with W. Patrick, October 2001. 2001
35. "High Level Value Stream Mapping," with A. Davis and K. Chase, October 2001. 2001
36. "C-141 Panel Case Study," with K. Chase, October 2001. 2001
37. "F-15 Heads Up Display Case Study, with K. Chase, October 2001. 2001
38. "Configuration Management Practices Contribute to Parts and Materials Shortages for U.S. Air Force MRO Operations," with M. Agripino, October 2001. 2001
39. "Draft Program Concept (Strategic Plan)," for the U.S. Air Force, Oklahoma City Air Logistics Center (OC-ALC) Maintenance, Repair and Overhaul (MRO) Transformation Program, June 2003. 2003
40. "Statement of Objectives (SOO) for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program, July 2003. 2003
41. "Performance Work Statement (PWS) for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program," August 2003. 2003
42. "Single Acquisition Management Plan (SAMP) for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program, September 2003. 2003
43. "White Paper on Lean," October 2003. 2003
44. "White Paper on Cellular," October 2003. 2003
45. "Source Selection Plan (SSP) for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program," November 2003. 2003
46. "Market Research for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program," November 2003. 2003
47. "Treatise on Process Improvement Programs," November 2003. 2003
48. "Communications Plan for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program," December 2003. 2003
49. "Risk Management Plan (RMP) for the Oklahoma City Air Logistics Center (OC-ALC) MRO Transformation Program," December 2003. 2003

50. "Oklahoma City Air Logistics Center (OC-ALC) Maintenance, Repair and Overhaul (MRO) Transformation Program, An Architecture for a Lean Transformation," December 2003. 2003
51. "Best Sustainment Practices Case Study: Pratt & Whitney," January 2003. 2003
52. "Best Sustainment Practices Case Study: Sandia National Laboratories and Los Alamos National Laboratories," May 2003. 2003
53. "Best Sustainment Practices Case Study: Airbus Industries and the European Aeronautic Defense and Space Companies," June 2003. 2003
54. "Best Sustainment Practices Case Study: Lockheed Martin," December 2004. 2004
55. "Best Sustainment Practices Case Study: Rockwell Collins," December 2004. 2004
56. "Business Case Analysis," written for the Oklahoma City Air Logistics Center, US Air Force, Oklahoma City, OK, January 2005. 2005
57. "Lean Enterprise Architecting for Military Sustainability," written for the Oklahoma City Air Logistics Center, US Air Force, Oklahoma City, OK, May 2005. 2005
58. "Continuous Process Improvement (CPI) Initiatives for Military Sustainability," written for the Oklahoma City Air Logistics Center, US Air Force, Oklahoma City, OK, June 2005. 2005
59. "A Plan for Benchmarking, Classifying, and Implementing Best Sustainment Practices," written for the Oklahoma City Air Logistics Center, US Air Force, Oklahoma City, OK, June 2005. 2005
60. "Best Sustainment Practices Case Study: Naval Air (NAVAIR) U.S. Navy, Jacksonville, FL," March 2005. 2005
61. "Privatization", A Case Study in privatizing government enterprises and privatizing Olympic Airways, Athens, Greece, June 2005. 2005
62. "V-22 Osprey: Naval Aviation (NAVAIR) Depot, U.S. Navy, North Island, San Diego, CA," July 2005. 2005

### 3.5 PRESENTATIONS AT SCHOLARLY MEETINGS

1. An Airline Schedule Planning and Evaluation Model - invited presentation before the Airline Group International Federation of Operational Research Societies (AGIFORS), San Francisco, December 1972. 1972
2. Long Range Fleet Planning Model for the Air Transport Industry, an LP Application - presentation before the Air Transportation Research International Forum (ATRIF), Atlanta, November 1977. 1977
3. A Long Term System Planning Model for the U.S. Air Transportation Industry - presentation before the American Institute of Aeronautics & Astronautics (AIAA), Los Angeles, August 1978. 1978
4. Optimal Assignment of Cargo Flows to an Airline Network - presentation with M. Muller at the National Meeting of the Operations Research Society of America (ORSA), Los Angeles, November 1978. 1978
5. Economic Equilibrium in Air Transportation Systems Planning - presentation at the National Meeting of the Operations Research Society of America (ORSA), Los Angeles, November 1978. 1978
6. An Interactive, Policy-Oriented Forecasting System for State Airport Activity - speech before the New England Aviation Data and Model Workshop, Department of Transportation, Cambridge, Massachusetts, April 1979. 1979
7. A Mathematical Programming Solution to the Gate Assignment Problem at Airport Terminals - presentation with R. Mangoubi at the National Meeting of the Operations Research Society of America (ORSA), Colorado Springs, November 1980. 1980
8. Cell Theory: Cluster Analysis for Aggregate Transport Networks - presentation at the National Meeting of the Operations Research Society of America (ORSA), Colorado Springs, November 1980. 1980
9. Airline Corporate Planning - speech before the Transportation Research Board (TRB), Menlo Park, California, November 1980. 1980
10. Aircraft Selection and Acquisition - seminar at the Centre of Transport Research, University of Montreal, Canada, March 1981. 1981
11. Proposed Domestic Air Carrier Policy for Canada: The Case of U.S. Airline Deregulation - witness before the Standing Committee on 1982

Transport, House of Commons, Canadian Parliament, Ottawa,  
February 1982.

12. Cell Theory - invited presentation before the Airline Group 1983  
International Federation of Operational Research Society, Memphis,  
October 1983.
13. Fleet Assignment with Variable Demand: A Goal Programming 1983  
Approach - invited presentation before the Airline Group  
International Federation of Operational Research Society, Memphis,  
October 1983.
14. Aircraft Scheduling: The State of the Art, Invited Keynote Speaker, 1984  
Airline Group of IFORS (International Federation of Operational  
Research Societies), This paper won the Award for Originality in the  
paper competition, Strassbourg, France, September 1984.
15. Optimizing Gate Assignments at Airport Terminals, Invited Keynote 1984  
Speaker, Airline Group of IFORS (International Federation of  
Operational Research Societies), with R. Mangoubi, Strassbourg,  
France, September 1984.
16. Automation of Airlift Scheduling for the USAF MAC - presentation 1985  
before the ORSA/TIMS annual meeting, Boston, April 1985.
17. Airline Scheduling - Presentation at the Transportation and Logistics 1985  
Conference, Babson College, June 1985.
18. Operations Research in the Airline Industry - presentation at MIT's 1985  
Operations Research Seminar - July 1985.
19. New Technologies for Classroom Scheduling, National Conference, 1986  
American Association of Collegiate Registrars and Admissions  
Officers, with Marilyn Bachelder and Marsha Ludwig, Baltimore,  
MD, April 15, 1986.
20. Interactive Graphics on Advanced Microcomputer Workstations for 1986  
Aircraft Scheduling, Presentation at the annual meeting of the  
AGIFORS (Airline Group International Federation of Operational  
Research Societies) Study Group, Cambridge, MA, September 1986.
21. Cell Theory: A Cluster Approach to the Airline Fleet Planning 1986  
Problem, a refereed paper accepted for the National Meeting of  
Decision Sciences Institute, Honolulu, November 1986.
22. The Market for Computer Software in Academic Course and 1987

- Classroom Scheduling, with C. Comm, presentation before the ORSA/TIMS annual meeting, New Orleans, May 1987.
23. Course and Classroom Scheduling: Assessing a Market for Computer Software Support, National Meeting of the Decision Sciences Institute, Las Vegas, November 1988. 1988
  24. Interactive Computer Graphics for Execution Rescheduling, IBM Airline Operations Conference, Brussels, Belgium, June 1989. 1989
  25. Interactive Computer Graphics for Execution Rescheduling, Airline Group, International Federation of Operational Research Societies, Hong Kong, November 1989. 1989
  26. Course and Classroom Scheduling with Interactive Computer Graphics, National Meeting of the Decision Sciences Institute, New Orleans, November 1989. 1989
  27. Airline Safety: Public Policy and Marketing Issues, National Meeting of the Decision Sciences Institute, San Diego, November 1990. 1990
  28. An Expert System for the Classroom Scheduling Problem, National Meeting of the Decision Sciences Institute, Miami, November 1991. 1991
  29. A Command and Control System for Airline Flight Operations, National Meeting of the Decision Sciences Institute, San Francisco, November 1992. 1992
  30. Analysis and Implications of Student Course Evaluation Instruments Used by AACSB Schools, National Meeting of the Decision Sciences Institute, San Francisco, November 1992. 1992
  31. Aircraft Ground Motion Simulation, National Meeting of the Decision Sciences Institute, Washington, DC November 1993. 1993
  32. New Technologies for Air Transportation, Invited Speaker at the Asian Airline Marketing Conference, sponsored by McDonnell Douglas, Jakarta, Indonesia, June 1995. 1995
  33. Airline Planning and Operations Control: Technologies for Surviving Competition, ATRIF National Meeting, Hartford, October 1995. 1995
  34. Aircraft Routing and Maintenance Planning for Irregular Operations Control, INFORMS National Meeting, New Orleans, October 1995. 1995

35. Simulating the Use of Scheduling, Quality of Service and Price as Competitive Tools in Asian Airlines, with C. Comm, INFORMS National Meeting, New Orleans, October 1995. 1995
36. Modeling Consumer Behavior in the Airline Industry, with C. Comm, INFORMS National Meeting, Atlanta, November 1996. 1996
37. Scheduling Facilities and Events, INFORMS National Meeting, Atlanta, November 1996. 1996
38. A Paradigm for Benchmarking Lean Operations in the U.S. Aerospace Industry, with C. Comm, INFORMS National Meeting, Dallas, October 1997. 1997
39. In Search of Intelligent Maintenance Practices: Part I, with C. Comm, INFORMS National Meeting, Montreal, April 1998. 1998
40. In Search of Intelligent Maintenance Practices: Part II, with C. Comm, INFORMS National Meeting, Seattle, October 1998. 1998
41. "Assessing Employee Satisfaction in Service Firms: An Example in Higher Education," INFORMS National Meeting, Cincinnati, April 1999. 1999
42. "Outcome Assessment in the Classroom: Employing the SERVQUAL Model," INFORMS National Meeting, Philadelphia, November 1999. 1999
43. "Results of Employing the SERVQUAL Model to Measure Classroom Outcomes," Decision Sciences Institute (DSI) National Meeting, Orlando, November 2000. 2000
44. "Less is More: The Concept of a 'Lean' Airline," presentation to the Airline Group International Federation of Operational Research Societies (AGIFORS) Annual Symposium, with C. Comm, Sydney Australia, September 2001. 2001
46. "A Framework for Identifying and Classifying Best Sustainment Practices," Institute for Operations Research and Management Sciences (INFORMS) National Meeting, Miami Florida, with C. Comm and T. Cathcart, August 2001. 2001
47. "Lean University," Northeast Decision Sciences Institute (NEDSI) Meeting, Puerto Rico, with C. Comm, March 2002. 2002
48. "A Lean Sustainment Model for Military Systems," American 2002

- Society of Naval Engineers (ASNE) conference, Washington, D.C., April 2002.
49. “Value Stream Mapping for Sustainment,” International Federation of Operational Research Societies (IFORS) Triennial Conference, Edinburgh Scotland, July 2002. 2002
  50. “A Model for Corporate Sustainability,” 2003 International Applied Business Research (ABR) Conference, with C. Comm, Acapulco, Mexico, March 2003. 2003
  51. “A Preliminary Assessment of Best Sustainability Practices in Higher Education,” Decision Sciences Institute (DSI) National Conference, with C. Comm, Washington, DC, November 2003. 2003
  52. “Lessons Learned From a Comparison of Two Integrated Business Curriculums,” 2004 College Teaching and Learning Conference, Lake Buena Vista / St. Petersburg, FL, January 2004, **Best Paper Award**. 2004
  53. “A Case Study on the Impact of a University Community on a Mid-Sized City’s Economic and Cultural Environment,” Southeast Decision Sciences Institute Conference, Charleston, SC, February 2004. 2004
  54. “Applying Lean Thinking to the Service Industry: A Study of Three Successful Airlines”, International Applied Business Research (ABR) Conference, San Juan, Puerto Rico, March 2004, **Best Paper Award**. 2004
  55. “Sustaining Public Sector Enterprises: Educating A Lean Transformation”, 2004 International Conference on Business, Honolulu, Hawaii, June 2004. 2004
  56. “A Case Study in Applying Lean Manufacturing to a Labor Intensive Operation in China,” 31<sup>st</sup> Annual Conference of the Northeast Business & Economics Association, New York, September 2004. 2004
  57. “The Implications of Applying Lean Sustainability Theory to Teaching and Learning,” 2005 College Teaching and Learning Conference, Orlando, FL, January 2005, **Best Paper Award**. 2005
  58. “Transforming the Public Sector Supply Chain with Private Sector Best Practices,” Production and Operations Management Society (POMS) Annual Conference, Chicago, IL, May 2005. 2005

59. "A Process for Benchmarking, Classifying, and Implementing Best Sustainment Practices", European Applied Business Research (EABR) Conference, Athens, Greece, June 13-17, 2005, **Best Paper Award.** 2005
60. "Benchmarking Best Practices for the U.S. Military Sustainment Community," European Applied Business Research (EABR) Conference, Santorini, Greece, June 20-22, 2005. 2005
61. "The Future of Work in Higher Education: A Case Study in Massachusetts," Northeast Business & Economics Association Conference, Newport, RI, October 2005. 2005
62. "Lessons Learned from Wal-Mart's Expertise in Supply Chain Management," Decision Sciences Institute Annual Conference, San Francisco, CA, November 2005. 2005
63. "Applying a Lean Enterprise Approach to Urban Mass Transit Agencies," 2006 Applied Business Research Conference, Orlando, FL, January 2006. 2006
64. "Marketing Sustainable Building Programs: A Case Study in Lowell, MA," European Applied Business Research (EABR) Conference, Siena, Italy, June 21-23, 2006. 2006
65. "Lessons Learned from Group Class Projects in a "Real" Sustainable Environment," College Teaching and Learning Conference (CTLIC), Florence, Italy, June 25-28, 2006. 2006
66. "Applying Wal-Mart's Best Practices in Supply Chain Management to the Health Care Industry," Decision Sciences Institute Conference, San Antonio, TX, November 2006. 2006
67. "Applying Wal-Mart's Best Supply Chain Management Practices to the Airline Industry," International Academy of Business and Public Administration Disciplines (IABPAD) Conference, Contemporary Business Issues Track, Orlando, FL, January 2007. 2007
68. "Military Depot Requirements Forecasting: A Reliability-Based Approach," Joint Statistical Meeting (JSM), Salt Lake City, UT, August 2007. 2007
69. "Sustaining Higher Education Using Wal-Mart's Best Supply Chain Management Practices," Decision Sciences Institute Conference, Phoenix, AZ, November 2007. 2007

70. “Exceeding the Competition by Implementing a Lean Enterprise Approach for Change, 2008 Applied Business Research Conference, Orlando, FL, January 2008. **Best Paper Award.** 2008
71. “Sustaining Service in the Very Light Jet Air Taxi Market,” Western Decision Sciences Institute Conference, San Diego, CA, March 2008. 2008

## 3.6 RESEARCH

### 3.6.1 BOOK MANUSCRIPT IN PROGRESS

Sustaining the Military Enterprise: Enhancing its Ability to Perform the Mission is the second in the series of books on military sustainability. The second volume will prescribe a treatment of concepts and tools for enhancing the “ability” of the military to perform the mission of maintaining, repairing, and overhauling its weapon systems. The treatment will focus on five abilities: Availability, Dependability, Capability, Affordability, and Marketability. The manuscript is targeted toward an engineering and management audience in the U.S. military interested in the principles, strategies and tools of sustainability. Similarly, academicians wishing to develop courses, or centers of knowledge, in enterprise sustainment could be interested in the book for educational purposes.

### 3.6.2 RESEARCH IN PROGRESS

#### 1 Very Light Jets (VLJs)

VLJs are radically new concept jets costing around \$1.5 million. They have spawned a series of entrepreneurial start-up airlines flying 1-4 passengers on-demand point-to-point from small airports for about the cost of a full-fare coach or first class ticket. The problem is to find an optimal routing and scheduling of aircraft to satisfy the customer demands (as defined by a desired departure and arrival time window). This problem has never specifically been solved, except for the ground transportation “dial-a-ride” problem. I have developed a minimum cost optimization algorithm and coded it on a computer. It is under test and evaluation by two airlines.

#### 2 Lean Sustainment

This research project entails the development of strategies, principles, approaches, and technologies necessary to effectively and efficiently sustain an enterprise and its products. Sustainment is defined here as the means by which an enterprise is enduring. It also is defined as the maintenance, repair and/or overhaul practices that keep systems (the products of the enterprise) operating and up-to-date (new technology upgrades) throughout their entire life cycles. The research focuses on the tools that management, product development, and operational support teams should consider in the design, development, operation, and improvement of their products that are cost-effective in all phases of the product’s life cycle: from cradle to grave. The goal is to minimize non-value-added activities throughout the entire sustainment enterprise.

### 3 Supply Chain Management

This research demonstrates how retailers, as well as other companies in the private or public sector, can benefit from better supply chain management practices. Wal-Mart's practices were used as a benchmark.

### 4 Lean University

This research provides a paradigm of how a lean initiative could be developed and implemented. Applications are targeted toward academic institutions. The research is based upon a review of lean principles and practices and site visits to 18 area colleges and universities.

## 3.7 AWARDS

### 3.7.1 SCHOLARLY AWARDS

1. First Prize in Paper Competition: Most Original Paper, "Aircraft Scheduling: The State of the Art," International Federation of Operational Research Societies, Airline Group, Strassbourg, France. 1984
2. Nominated and Promoted to Full Member of the Operations Research Society of America (ORSA) 1995
3. Tenure, Babson College 1987
4. Promotion to rank of Associate Professor, Babson College 1987
5. Promotion to rank of Professor, Babson College 2003
6. Best Paper Award: "Lessons Learned from a Comparison of Two Integrated Business Curriculums," College Teaching and Learning Conference, Orlando, Florida, January 5-9, 2004 2004
7. Best Paper Award: "Applying Lean Thinking to the Service Industry: A Study of Three Successful Airlines," International Applied Business Research (ABR) Conference, San Juan, Puerto Rico, March 2004 2004
8. Best Paper Award: "The Implications of Applying Lean Sustainability Theory to Teaching and Learning," College Teaching and Learning Conference, January 2005. 2005

9. Best Paper Award: “A Process for Benchmarking, Classifying, and Implementing Best Sustainment Practices”, European Applied Business Research (EABR) Conference, Athens, Greece, June 2005. 2005
10. Best Paper Award: “Exceeding the Competition by Implementing A Lean Enterprise Approach for Change”, Applied Business Research (ABR) Conference, January 2008. 2008

### 3.7.2 GRANTS

1. Massachusetts Aeronautics Commission, Aviation activity forecasts, MIT 1978-1979
2. Department of Transportation, Office of the Secretary for International Policy, Transportation systems modeling, MIT 1979
3. Federal Aviation Administration, Manpower and equipment forecast modeling, MIT 1980
4. Pratt & Whitney Aircraft Group, Development of fleet planning models, MIT 1980-1981
5. Cooperative Research Program in Air Transportation, Computer models for air transport planning, MIT 1980-1984
6. U.S. Air Force, Equipment planning, logistics, dynamic (real-time) Aircraft and crew deployment, MIT 1983-1984
7. Babson College Board of Research, Classroom scheduling research 1985
8. Babson College Board of Research, Expert system software for academic course and classroom scheduling 1987
9. Babson College Board of Research, Classroom scheduling survey 1987
10. Babson College, Event Scheduling System Development 1994
11. Babson College Board of Research, A Paradigm for Benchmarking Lean Initiatives for Quality Improvement in the Aerospace Industry 1998
12. Babson College Board of Research, Assessing Employee Satisfaction in Service Firms 1999
13. Fallon McElligott, United Airlines 2010 Case Study 1999

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|-----|---|-----------|
| 14. | Babson College Technology Advisory Board<br>Modelbase of Decision Support Systems on the Web  | 1999      |
| 15. | Babson College Board of Research, A Framework for Identifying and<br>Classifying Best Sustainment Practices   | 2001      |
| 16. | Babson College Board of Research, Development of a Framework for a<br>Lean University   | 2002      |
| 17. | Babson College Board of Research, A Lean Sustainment Enterprise<br>Model for Military Systems   | 2002      |
| 18. | Babson College Technology Advisory Board, "Modelbase" A Database<br>of Models on BlackBoard   | 2002      |
| 19. | Babson College Board of Research, Best Sustainment Practices Case<br>Studies  | 2003      |
| 20. | Boston Consortium for Higher Education, Lean Sustainable University   | 2003      |
| 21. | Babson College: Faculty Research Facility (FRF) Course Releases for a<br>book manuscript "Sustaining the Military Enterprise  | 2003-2005 |
| 22. | Babson College Board of Research Grant, Best Sustainment Practices<br>Case Studies  | 2004      |
| 23. | Babson College Board of Research Grant, Best Sustainment Practices<br>Case Studies, continuation of the 2004 award  | 2005      |
| 24. | Babson College Board of Research Course Release "An Architecture for<br>Transforming the Military Industrial Enterprise," Spring  | 2006      |
| 25. | Babson Faculty Research Fund, Major Course Release Award for the<br>second book <u>Sustaining the Military Enterprise: Enhancing its Ability to<br/>Perform the Mission</u> | 2007      |

### **3.8 JOURNALS RECEIVED THROUGH SOCIETY MEMBERSHIPS**

Operations Research  
Management Science  
Transportation Science  
Interfaces  
Decision Sciences

## **4 PROFESSIONAL COMPETENCE**

### **4.1 ACADEMIC EXPERIENCE**

MIT, Flight Transportation Laboratory, Department of Aeronautics & Astronautics: Post Doctoral Research Engineer	1981-1984
MIT, Flight Transportation Laboratory, Department of Aeronautics & Astronautics: Research Associate	1984-1998
MIT, Center for Technology, Policy and Industrial Development: Research Associate	1998-2001
Babson College, Department of Mathematics & Science: Assistant Professor	1984-1987
Babson College, Department of Mathematics & Science: Associate Professor	1987-2003
Babson College, Department of Mathematics & Science: Professor	2003-Present

### **4.2 INDUSTRIAL EXPERIENCE**

Berkeley Enterprises, Newtonville, Massachusetts, Assistant Editor, Computers and People (formerly Computers & Automation); System Programmer for a DEC PDP-9 computer.	1964-1965
Douglas Aircraft Company, Engineering, Long Beach, California, Aerodynamics performance and systems engineer. Computer modeling of engineering systems.	1965-1969
McDonnell Douglas Corporation, Market Development, Long Beach, California, Branch Manager, Operations Research. The position required formulation of the design and development of computer-aided O.R. models for production, operations, maintenance, engineering, and product market research. Managed a group of 12 operations research analysts.	1969-1975

### **4.3 CONSULTING RECORD**

#### **4.3.1 INDUSTRY**

1. Pratt & Whitney - fleet planning 1978-1979
2. The Flying Tiger Line - logistics, cargo allocation 1978
3. Hughes Air West - network rationalization 1980

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|--|-----------|
| 4. Pan American World Airways - B-727-100 aircraft replacement                               | 1981      |
| 5. Federal Express - maintenance and engineering simulation                                  | 1982      |
| 6. Olympic Airways - fuel optimization and burn, fleet planning, schedule planning           | 1983      |
| 7. British Caledonian Airways - scheduling   | 1984-1985 |
| 8. KLM - scheduling  | 1985      |
| 9. Air New Zealand - scheduling  | 1986      |
| 10. Cathay Pacific - scheduling  | 1985-1986 |
| 11. Northwest Orient - merger with Republic  | 1986-1987 |
| 12. Continental Airlines/Texas Air Corporation - effect of aircraft noise rules on schedules | 1987      |
| 13. Iberia - Spain - scheduling  | 1990      |
| 14. Canadian Airlines - scheduling   | 1990      |
| 15. Saudia - Airline of Saudi Arabia - scheduling  | 1990      |
| 16. Aeromexico - Mexico - Strategic Planning   | 1991-1992 |
| 17. Northwest Airlines - scheduling  | 1991-1992 |
| 18. Alitalia - Italy - scheduling  | 1992      |
| 19. USAir - scheduling   | 1992      |
| 20. Garuda Indonesia - Indonesia - corporate planning  | 1994-1995 |
| 21. Continental - scheduling   | 1994-1995 |
| 22. Federal Aviation Administration – scheduling (with Gull Electronics, Parker Hannifen)    | 1996      |
| 23. Trans World Airlines – schedule optimization   | 1998-2001 |

#### **4.3.2 GOVERNMENT AND MILITARY**

- |   |           |
|---|-----------|
| 1. National Aeronautics & Space Administration (NASA) - forecasting methods                         | 1977      |
| 2. Massachusetts Aeronautics Commission - aviation activity forecasts                               | 1978-1979 |
| 3. Department of Transportation, Office of the Secretary - transportation systems modeling          | 1979      |
| 4. Federal Aviation Administration - manpower & equipment production forecast modeling              | 1980-1982 |
| 5. U.S. Air Force - equipment planning, logistics, dynamic (real-time) aircraft and crew deployment | 1983-1987 |
| 6. U.S. Air Force Materiel Command, Manufacturing Technology () Lean Sustainment                    | 1997-2001 |
| 7. U.S Air Force, Oklahoma City Industrial Complex – Lean/Cellular Transformation                   | 2003-2005 |

#### **4.4 ENTREPRENEURIAL ACTIVITIES**

- |   |           |
|---|-----------|
| Founder, Director, and President of Scheduling Systems, Inc., computer software for airline scheduling and resource allocation. | 1990-1995 |
|---|-----------|

Founder and Director of Opus Technology, Inc., a Massachusetts Corporation for the development and support of resource allocation computer software. 1996

#### 4.5 ATTENDANCE AT PROFESSIONAL MEETINGS

##### Institute for Operations Research and Management Science (INFORMS)

-San Francisco	May 1977
-Atlanta	Nov 1977
-New York	May 1978
-Los Angeles	Nov 1978
-New Orleans	May 1979
-Washington DC	May 1980
-Colorado	Nov 1980
-Toronto	May 1981
-Houston	Oct 1981
-Detroit	Apr 1982
-San Diego	Oct 1982
-Chicago	Apr 1983
-San Francisco	May 1984
-Boston	Apr 1985
-New Orleans	May 1987
-New Orleans	Nov 1995
-Atlanta	Nov 1996
-Dallas	Oct 1997
-Montreal	Apr 1998
-Seattle	Oct 1998
-Cincinnati	Apr 1999
-Philadelphia	Nov 1999
-Miami	Nov 2001

##### International Federation of Operational Research Societies Airline Group (AGIFORS)

-San Francisco	Dec 1972
-Memphis	Oct 1983
-Strassbourg, France	Sept 1984
-Cambridge, MA	Sept 1986
-Hong Kong	Nov 1989
-Chicago	Oct 1993
-Atlanta	Nov 1996
-Sydney, Australia	Sep 2001

##### American Institute of Aeronautics & Astronautics (AIAA)

-Los Angeles	1978
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Transportation Research Board (TRB)	
-Menlo Park, CA	1980
Air Transportation Research International Forum (ATRIF)	
-New York	Nov 1973
-Cambridge, MA	Apr 1974
-Northwestern University	Apr 1975
-University of Pennsylvania	Mar 1976
-MIT, Cambridge, MA	Oct 1976
-San Francisco	May 1977
-Georgia Institute of Technology, Atlanta	Nov 1977
-MIT	May 1978
-Washington, DC	Oct 1978
-New Orleans	May 1979
-Maryland	Oct 1979
-Cincinnati	May 1980
-Menlo Park, CA	Nov 1980
-Atlantic City	May 1981
-Northwestern University	Oct 1981
-San Francisco	May 1982
-Memphis	Nov 1982
-Montreal	Jun 1983
-Dallas	Nov 1983
-Virginia	Feb 1984
-St. Louis	Oct 1984
-Hartford, CT	Oct 1995
Transportation and Logistics Conference	
-Babson College	1985
Decision Sciences Institute (DSI)	
-Honolulu	1986
-Las Vegas	1988
-New Orleans	1989
-San Diego	1990
-Miami	1991
-San Francisco	1992
-Washington	1993
-Orlando	2000
-Pittsburgh (NEDSI)	2001
-Puerto Rico (NEDSI)	2002
-Washington, DC	2003
-Providence RI (NEDSI)	2003
-Charleston, SC	2004
-San Francisco	2005

-San Antonio	2006
-Phoenix	2007
International Federation of Operational Research Societies (IFORS)	
-Edinburgh	2002
American Society of Naval Engineers (ASNE)	
-Washington	2002
International Applied Business Research (ABR) Conference	
-Acapulco, Mexico	2003
-Puerto Rico	2004
European Applied Business Research (EABR) Conference	
-Athens, Greece	2005
-Santorini, Greece	2005
-Siena, Italy	2006
Applied Business Research & College Teaching and Learning Conference	
-Lake Buena Vista / Orlando, FL	2004
-Lake Buena Vista / Orlando, FL	2005
-Lake Buena Vista / Orlando, FL	2006
-Florence, Italy	2006
International Conference on Business	
-Honolulu, Hawaii	2004
Northeast Business & Economics Association	
-New York, NY	2004
-Newport, RI	2005
Production and Operations Management Society	
-Chicago, IL	2005
International Academy of Business and Public Administration Disciplines	
-Lake Buena Vista / Orlando, FL	2007

#### **4.6 PROFESSIONAL SOCIETY MEMBERSHIPS**

Institute for Operations Research and Management Science (INFORMS)  
Decision Sciences Institute (DSI)  
International Federation of Operational Research Societies (IFORS)  
Airline Group of IFORS (AGIFORS)

## **4.7 PROFESSIONAL SOCIETY ACTIVITIES**

President - Air Transportation Research International Forum	1982-1984
Referee for Journals:	
-Transportation Science	1984-Present
-Management Science	1984-Present
-Decision Sciences	1984-Present
-Journal of Air Transport Management	1984-2000
Paper reviewer for Decision Sciences Institute (DSI) and Northeast DSI conferences	1990-Present

## **4.8 PROGRAMMING LANGUAGES**

C  
BASIC  
FORTRAN  
PASCAL

## **5 CONTRIBUTIONS TO THE COLLEGE COMMUNITY**

### **5.1 COMMITTEES**

Faculty Computer Committee	1984-1985
Undergraduate Planning Review Board (PRB)	1988-1990
Undergraduate Strategic Planning Committee	1990
Undergraduate Foundation Program Coordinators Council	1990-1991
Board of Research (BoR)	1997, 2001-2004
Faculty Compensation Committee (Chair)	1999-2005
Employee Benefits Committee	2000
Babson Faculty Research Fund (BFRF)	2005-2007

### **5.2 COURSE COORDINATOR**

Introduction to Information Systems	1985-1990
Quantitative Methods	1992-1995
QTM2420/2421 Applied Quantitative Modeling	2002-2007

### **5.3 OTHER COLLEGIATE ACTIVITIES**

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|-----|--|--------------|
| 1.  | Management Consulting Field Experience (MCFE) Wang Labs                            | 1985         |
| 2.  | Plymouth-Provincetown Relay Race   | 1984-1988    |
| 3.  | Course and Classroom Scheduling  | 1984         |
| 4.  | Student Computer Fair, Faculty Advisor to a student, Chris Levy                    | 1985         |
| 5.  | Presentation at Babson's Transportation and Logistics Conference                   | 1985         |
| 6.  | Management Information Systems Student Survey                                      | 1987         |
| 7.  | International Internship Program - Faculty Advisor                                 | 1990         |
| 8.  | Faculty Advisor: Undergraduate Program   | 1992-1996    |
| 9.  | Undergraduate Mentor Program   | 1997-1998    |
| 10. | Module III, 2-year MBA, Lead for the DSS Stream                                    | 1999-Present |
| 11. | Babson Employee Survey   | 1999         |
| 12. | Outcome Assessment in the Classroom, Analysis of the Babson Student Opinion Survey | 1999         |
| 13. | Web-Based Model Database for the Babson Technology Advisory Board                  | 1999-2000    |
| 14. | Math/Science Sub-Committee to Evaluate DSS in the Graduate Program                 | 1999-2000    |
| 15. | Math/Science Sub-Committee, Course Software Task Force                             | 2002         |
| 16. | Math/Science Sub-Committee, Undergraduate Core Task Force, Chair in 2004           | 2002-2004    |
| 17. | Integrated Management Core (IMC) Redesign Team                                     | 2002-2003    |
| 18. | Independent Study  | 2003-2005    |
| 19. | Honors Thesis Advisor  | 2003-2007    |

#### **5.4 COURSE AND CURRICULUM DEVELOPMENT**

Development of QTM7520 (Operations Research)	1985
Development of MIS2630 (Problem Solving & Software Design)	1986-1991
Management Information Systems Curriculum Development	1986-1994
Development of QTM3520 (Management Science)	1992
Revision of QTM1301 (Honors Calculus)	2007
Revision of QTM2421 (Honors Applied Quantitative Modeling)	2007

#### **5.5 COMMUNITY AFFAIRS**

Public Expert Witness, Standing Committee on Transport, House of Commons, Canadian Parliament, Ottawa, Canada	1982
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#### **5.6 OTHER ACTIVITIES**

Private Pilot	Present
Aircraft Owner	Present
Member: Aircraft Owners and Pilots Association	Present

