

Thomas W.M. Vossen

Leeds School of Business
University of Colorado
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EDUCATION

University of Maryland at College Park, College Park, MD December 2002
Doctor of Philosophy, Business and Management

Eindhoven University of Technology, Eindhoven, The Netherlands January 1995
Master of Science, Computer Science; *Graduated Cum Laude*

EMPLOYMENT

Chair, Strategy, Entrepreneurship, and Operations Division July 2017 - June 2020
Leeds School of Business, University of Colorado at Boulder

Associate Professor, Operations Management August 2010 - Present
Leeds School of Business, University of Colorado at Boulder

Assistant Professor, Operations Management January 2003 - July 2010
Leeds School of Business, University of Colorado at Boulder

Instructor, Operations Management August 2002 - January 2003
Leeds School of Business, University of Colorado at Boulder

Graduate Research Assistant, August 1996 - August 2002
Department of Decision and Information Technologies
R.H. Smith School of Business, University of Maryland at College Park

Systems Analyst, Naval Intelligence Department January 1995-August 1996
Royal Dutch Navy, Amsterdam, The Netherlands

HONORS

MBA Educator of Distinction Award 2008, 2009, 2010, 2012
Leeds School of Business, University of Colorado

MBA Teaching Excellence Award 2008, 2010, 2012, 2014, 2016, 2018
Leeds School of Business, University of Colorado

Theodore von Kármán Fellowship Fall 2014
RWTH Aachen, Germany

Kolb Teaching Award 2008
Leeds School of Business, University of Colorado

Honorable Mention 2006
Best Paper Competition, INFORMS Section on Transportation Science and Logistics

First Place Dissertation Prize Competition, INFORMS Section on Transportation Science and Logistics	2003
Honorable Mention Dissertation Prize Competition, INFORMS Section on Aviation Applications	2003
Best Paper Award, Traffic Flow Optimization 5th EUROCONTROL/FAA ATM R&D SEMINAR, Budapest, Hungary	2003
Frank T. Paine Doctoral Award for Academic Achievement R.H. Smith School of Business, University of Maryland at College Park	2002
University of Maryland Graduate School Fellowship Graduate School, University of Maryland at College Park	1996-1998

PUBLICATIONS

Refereed Journal Articles

Vossen, T.W.M., F. You and D. Zhang, 2021, "Finite-Horizon Approximate Linear Programs for Capacity Allocation over a Rolling Horizon," *Production and Operations Management*, Vol. 31, No. 5, pp. 2127–2142.

Vossen, T.W.M., R.K. Wood, and A. Newman, 2016, "Hierarchical Benders Decomposition for Open-pit Mine Block Sequencing," *Operations Research*, Vol. 64, No. 4, pp. 771–793.

Vossen, T.W.M. and D. Zhang, 2015, "Reductions of Approximate Linear Programs for Network Revenue Management," *Operations Research*, Vol. 63, No. 6, pp. 1352–1371.

Vossen, T.W.M. and D. Zhang, 2015, "A Dynamic Disaggregation Approach to Approximate Linear Programs for Network Revenue Management," *Production and Operations Management*, Vol. 24, No. 3, pp. 469–487.

Dewil, R., P. Vansteenwegen, D. Cattrysse, M. Laguna, and T.W.M. Vossen, 2015, "An Improvement Heuristic Framework for the Laser Cutting Tool Path Problem," *International Journal of Production Research*, Vol. 53, No. 6, pp. 701-711.

Chang, S., D. Klabjan and T.W.M. Vossen, 2010, "Optimal Radio Frequency Identification Deployment in a Supply Chain Network," *International Journal of Production Economics*, Vol. 125, pp. 71-83.

Reinertsen, H., and T.W.M. Vossen, 2010, "The One-Dimensional Cutting Stock Problem with Due Dates," *European Journal of Operational Research*, Vol. 201, No. 3, pp. 701-711.

Ball, M.O., G. Dahl and T.W.M. Vossen, 2009, "Matchings in Connection with Ground Delay Program Planning," *Networks*, Vol. 53, No. 3, pp. 293-306.

Fu, M.C., S. Lele and T.W.M. Vossen, 2009, "Conditional Monte Carlo Gradient Estimation in Economic Design of Control Charts," *Production and Operations Management*, Vol. 18, No. 1, pp. 60-77.

He, C., J. Marklund and T.W.M. Vossen, 2008, "Vertical Information Sharing in a Volatile Market," *Marketing Science*, Vol. 27, No. 3, pp. 513-530.

van den Briel, M., S. Kambhampati and T.W.M. Vossen, 2008, “Loosely Coupled Formulations for Automated Planning: An Integer Programming Perspective,” *Journal of Artificial Intelligence Research*, Vol. 31, pp. 217-257.

Vossen, T.W.M. and M.O. Ball, 2006, “Slot Trading Opportunities in Collaborative Ground Delay Programs,” *Transportation Science*, Vol. 40, No. 1, pp. 29-43.

Vossen, T.W.M. and M.O. Ball, 2006, “Optimization and Mediated Bartering Models for Ground Delay Programs,” *Naval Research Logistics*, Vol. 53, No. 1, pp. 75-90.

Vossen, T.W.M., M.O. Ball, and R. Hoffman, and M. Wambsganss, 2003, “A General Approach to Equity in Traffic Flow Management and its Application to Mitigating Exemption Bias in Ground Delay Programs,” *Air Traffic Control Quarterly*, Vol. 11, No. 4, pp. 1-11.

Vossen, T.W.M., M.O. Ball, D.S. Nau and A. Lotem, 2000, “Applying integer programming to AI Planning,” *The Knowledge Engineering Review*, Vol. 15, No. 1, pp. 1-16.

Refereed Book Chapters

Vossen, T.W.M., R. Hoffman, R., and A. Mukherjee, 2012, “Air Traffic Flow Management,” in *Quantitative Problem Solving Methods in The Airline Industry: A Modeling Methodology Handbook*, C. Barnhart and B. Smith, eds., Springer Science+Business Media, New York, p387-455.

Hoffman, R., A. Mukherjee, and T.W.M. Vossen, 2011, “Air Traffic Management,” in *Wiley Encyclopedia of Operations Research and Management Science*, J.J. Cochran, ed., John Wiley & Sons.

Ball, M.O., C.Y. Chen, R. Hoffman and T.W.M. Vossen, 2001, “Collaborative Decision Making in Air Traffic Management: Current and Future Research Directions,” in *New Concepts and Methods in Air Traffic Management*, L. Bianco, P. Dell’Olmo and A. Odoni, eds., Springer-Verlag, Berlin, p17-30.

Golden, B., J. Pepper and T.W.M. Vossen, 1998, “Using Genetic Algorithms for Setting Parameter Values in Heuristic Search,” in *Intelligent Engineering Systems Through Artificial Neural Networks: Volume 8*, C. Dagli, M. Akay, A. Buczak, O. Ersoy, and B. Fernandez, eds., ASME Press, pp. 239-245.

Ten Eikelder, H.M.M., M.G.A. Verhoeven, T.W.M. Vossen, and E.H.L. Aarts, 1995, “A Probabilistic Analysis of Local Search,” in *Metaheuristics: Theory and Applications*, I.H. Osman and J.P. Kelly, eds., Kluwer Academic Publishers, pp. 605-618.

Refereed Conference Proceedings

Hill, A., J. Tickton, T.W.M. Vossen, 2021, “A Computational Study of Constraint Programming Approaches for Resource-Constrained Project Scheduling with Autonomous Learning Effects,” in *Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR21)*, P. Stuckey, ed., Springer International Publishing, pp. 26-44.

Vossen, T.W.M., and D. Zhang, 2012, “A Dynamic Disaggregation Approach to Approximate Linear Programs for Network Revenue Management,” in *Proceedings of the 2012 MSOM Annual Conference, NYC, NY*.

Reinertsen, H., and T.W.M. Vossen, 2009, “The Dynamic Multi-Period Cutting Stock Problem,” in *Proceedings of the 2009 MSOM Annual Conference, Cambridge, MA*.

Van Den Briel, M., J. Benton and S. Kambhampati, and T.W.M. Vossen, 2007, “An LP-Based

Heuristic for Optimal Planning,” in *Proceedings of the Thirteenth International Conference on Principles and Practice of Constraint Programming (CP-2007)*, LNCS 4741, pp. 651-665.

Van Den Briel, M., T.W.M. Vossen, and S. Kambhampati, 2005, “Reviving Integer Programming Approaches for AI Planning: A Branch-and-Cut Framework,” in *Proceedings of the Fifteenth International Conference on Automated Planning and Scheduling (ICAPS-2005)*, pp. 310-319.

Vossen, T.W.M., M. Ball, R. Hoffman, and M. Wambsganss, 2003, “A General Approach to Equity in Traffic Flow Management and its Application to Mitigating Exemption Bias in Ground Delay Programs,” in *Proceedings of the ATM-2003 Conference, Budapest, Hungary*.

Ball, M.O., R. Hoffman and T.W.M. Vossen, 2002, “An Analysis of Resource Rationing Methods for Collaborative Decision Making,” in *Proceedings of the ATM-2002 conference, Capri, Italy*.

Ball, M.O., T.W.M. Vossen, and R. Hoffman, 2001, “Analysis of Demand Uncertainty Effects in Ground Delay Programs,” in *Proceedings of the ATM-2001 conference, Santa Fe, NM*.

Vossen, T.W.M., M. Ball, D. Nau and A. Lotem, 1999, “On the Use of Integer Programming in AI Planning,” *Proceedings of the Sixteenth International Joint Conference on Artificial Intelligence (IJCAI-2001)*, pp. 304-310.

Other Publications

Van Den Briel, M., S. Kambhampati, and T.W.M. Vossen, 2007, “Fluent Merging: A General Technique to Improve Reachability Heuristics and Factored Planning,” *Proceedings of the ICAPS-2007 Workshop on Heuristics for Domain Independent Planning: Progress, Ideas, Limitations and Challenges*.

Van Den Briel, M., S. Kambhampati, and T.W.M. Vossen, 2006, “Planning with Preferences and Trajectory Constraints through Integer Programming,” *Proceedings of the ICAPS-2006 Workshop on Planning, with Preferences and Soft Constraints*, pp. 19-22.

Vossen, T.W.M., M. Ball, D. Nau and A. Lotem, 1998, “Integer Programming in AI Planning: Preliminary Experimental Results,” *Proceedings of AIPS-1998 Workshop on Planning as Combinatorial Search*, pp. 111-113.

Work In Progress

F. You and T.W.M. Vossen, 2023, “An Approximate Dynamic Programming Approach to Dynamic Matching,” Accepted for publication in *INFORMS Journal On Computing*.

F. You, T.W.M. Vossen, and R. Zhang, 2023, “Assortment Optimization for Online Multiplayer Video Games,” Submitted for publication.

P. Heuser, Letmathe, P. and T.W.M. Vossen, 2023, “Skill Development in the Field of Scheduling - A Structured Literature Review,” Under revision.

Hill, A. and T.W.M. Vossen, 2023, “Efficient Project Scheduling with Autonomous Learning Opportunities,” Under revision.

P. Heuser, Letmathe, P. and T.W.M. Vossen, 2023, “Competence Management in Operational Research - A Structured Literature Review,” Work in Progress.

Lulli, G. and T.W.M. Vossen, 2023, “Fair Allocation in Air Traffic Flow Networks,” Work in Progress.

PRESENTATIONS

Invited Talks

“Finite-Horizon Approximate Linear Programs for an Infinite-Horizon Revenue Management Problem,” presented at International Conference on Intelligent Transportation and Logistics with Big Data in Jinan, China, July 2018.

“Last Lecture,” presented at MBA class of 2017 graduation event, Boulder, CO, May 2017.

“Approximate Dynamic Programming for Network Revenue Management,” presented at the department of Business and Economics, RWTH Aachen, November 2014.

“Reductions of Approximate Linear Programs for Network Revenue Management,” presented at the department of Production Management, Leibniz University of Hanover, October 2014.

“Reductions of Approximate Linear Programs for Network Revenue Management,” presented at the department of Logistics Management, Johannes Gutenberg University Mainz, July 2014.

“A Dynamic Disaggregation Approach to Approximate Linear Programs for Network Revenue Management,” presented at the Department of Informatics, Systems and Communications, University of Milan Bicocca, July 2012.

“From Collaborative Decision-Making to NextGen: Challenges and Opportunities for OR in Air Traffic Flow Management,” presented at the Jeppesen Operations Research Symposium, Denver, CO, March 2011.

“Air Traffic Flow Management,” presented at the Rocky Mountain INFORMS chapter, Denver, CO, January 2011.

“Air Traffic Flow Management,” presented at the department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI, March 2009.

“The Ground Holding Problem with *Demand* Uncertainty,” presented at the department of Business Mathematics, VU University, Amsterdam, the Netherlands, January 2009.

“A Branch-and-Cut Approach for Artificial Intelligence Planning,” presented at the department of Mathematics, University of Colorado at Denver, Denver, CO, March 2006.

“A Branch-and-Cut Approach for Artificial Intelligence Planning,” presented at the department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI, October 2005.

“Fair Allocation Concepts in Air Traffic Management,” presented at the Institute for Transportation Studies, UC-Berkeley, Berkeley, CA, October 2003.

“Fair Allocation Concepts in Air Traffic Management,” presented at the Department of Pure and Applied Mathematics, University of Padova, Padova, Italy, June 2003.

Conference and Workshop Presentations

“Dynamic Task Allocation with Learning and Forgetting,” presented at the INFORMS national meeting in Phoenix, AZ, November 2018.

“Finite-Horizon Approximate Linear Programs for an Infinite-Horizon Revenue Management Problem,” presented at presented at the INFORMS Optimization Society Conference in Denver, CO,

May 2018.

“Dynamic Task Allocation with Learning and Forgetting,” presented at the INFORMS national meeting in Houston, TX, November 2017.

“Nested Disaggregation Methods for Open-Pit Block Sequencing,” presented at the OR 2014 conference in Aachen, Germany, September 2014.

“Solving Large-Scale Network Revenue Management problems: an Aggregation Perspective,” presented at the INFORMS national meeting in San Francisco, CA, November 2014.

“Reductions of Approximate Linear Programs for Network Revenue Management,” presented at the INFORMS national meeting in Minneapolis, MN, October 2013.

“Reductions of Approximate Linear Programs for Network Revenue Management,” presented at the OR 2013 Conference in Rotterdam, The Netherlands, September 2013.

“Nested Disaggregation Methods for Open-Pit Block Sequencing,” presented at the INFORMS national meeting in Charlotte, NC, November 2011.

“The Ground Holding Problem with *Demand* Uncertainty,” presented at the INFORMS national meeting in Seattle, WA, November 2007.

“Optimal Deployment of RFID in a Supply Chain Network,” presented at the INFORMS national meeting in Seattle, WA, November 2007.

“The Cutting Stock Problem with Due Dates,” presented at the INFORMS national meeting in Seattle, WA, November 2007.

“Matchings in Connection with Ground Delay Program Planning,” presented at the INFORMS national meeting in Pittsburgh, PA, November 2006.

“A Branch-and-Cut-and-Price Approach for Artificial Intelligence Planning,” presented at the INFORMS national meeting in San Francisco, CA, November 2005.

“A Branch-and-Cut Approach for Artificial Intelligence Planning,” presented at the 9th INFORMS Computing Society Conference, Annapolis, MD, January 2005.

“Demand Uncertainty in Ground Delay Programs,” presented at the INFORMS national meeting in Denver, CO, October 2004.

“Dynamic Airline Slot Exchange during Ground Delay Programs,” presented at NEXTOR Workshop “Government, the Airline Industry and the Flying Public: a New Way of Doing Business”, Queenstown, MD, June 2004.

“Demand Uncertainty in Ground Delay Programs,” presented at AGIFORS Airline Operations 2004 Conference, Washington, DC, May 2004.

“Demand Uncertainty in Ground Delay Programs,” presented at NEXTOR Workshop “Moving Metrics: A Performance-Oriented View of the Aviation Infrastructure”, Pacific Grove, January 2004.

“Optimization Models for Dynamic Slot Exchange,” presented at the INFORMS national meeting in Atlanta, GA, October 2003.

“Dynamic Airline Slot Exchange,” presented at the EURO/INFORMS Joint International Meeting, Istanbul, Turkey, June 2003.

“A General Approach to Equity in Traffic Flow Management and its Application to Mitigating Exemption Bias in Ground Delay Programs,” presented at the 5th EUROCONTROL/FAA ATM R&D SEMINAR, Budapest, Hungary, June 2003.

“Resource Rationing and Exchange Methods in Air Traffic Management:Part II,” presented at the NEXTOR-FAA-INFORMS Conference at Virginia Tech, Falls Church, VA, May 2003.

“Fair Allocation Concepts in Air Traffic Management,” presented at the NEXTOR CDM Project Review, College Park, MD, July 2002.

“Optimization, Equity and Fair Allocation Concepts in Air Traffic Management”, presented at the First FAA Centers of Excellence Annual Meeting, Cincinnati, OH, November 2001.

“Slot Trading in Collaborative Ground Delay Programs”, presented at the INFORMS national meeting in Miami, FL, November 2001.

“An Analysis of Integer Programming Formulations and Preprocessing Techniques for a Class of AI Planning Problems”, presented at the 17th International Symposium on Mathematical Programming, Atlanta, GA, August 2000.

“On the Use of Integer Programming in AI Planning”, presented at the 16th International Joint Conference on Artificial Intelligence, Stockholm, Sweden, August 1999.

“An Analysis of Alternate Models for the Fair Allocation of Resources in Ground Delay”, presented at the INFORMS national meeting in Cincinnati, OH, May 1999.

“Compression Benefits Revisited: Airborne Delay Savings due to Flow Smoothing”, presented at the NEXTOR workshop: Improving the accuracy of CDM predictions, Boston, MA, May 1999.

TEACHING

Courses Taught: Leeds School of Business, University of Colorado

MSBC5680, Fall 2023
Optimization Modeling

BUSM3021, Spring 2021 - Spring 2023
Business and Financial Analytics

MGMT4820, Spring 2021 - Present
Decision Analytics

OPIM8820, Spring 2020
Large-Scale Optimization

MBAC6080, Spring 2005 - Summer 2020
Decision Modeling and Applications

MGMT3100, Spring 2014
Management of Service Operations

MBAX6865,
Supply Chain Systems Spring 2004 - Spring 2008

SYST6070/EMEN5600,
Survey of Operations Research Spring 2003, Spring 2004

SYST4070,
Decision Modeling Systems Spring 2004

SYST4050,
Supply Chain Systems Spring 2003

MGMT4050,
Competing with Operations Fall 2002

Courses Taught: Other

MCEN4228/5228,
Global Engineering (4 Lectures on Supply Chain Management) Fall 2006,
Department of Mechanical Engineering, University of Colorado

Equity and Fair Resource Allocation in Air Traffic Management, May 2003
Short Course for FAA Managers and Policy Makers, Aviation Analysts and Consultants,
Executive Education, R.H. Smith School of Business, University of Maryland at College Park

Introduction to Optimization Theory, Summer 2000
R.H. Smith School of Business, University of Maryland at College Park

Dissertation Advisor

Fan You, July 2022
Jose Ramirez, May 2015
Harald Reinertsen, Spring 2010
Leeds School of Business, University of Colorado

Thesis Advisor

Xiaochuan Qin, Summer 2009
Leeds School of Business, University of Colorado

Dissertation Committee Member

Hasti Rahemi, June 2023
Mark Zais, May 2014
Subhamoy Ganguly, May 2013
Michele Samorani, May 2012
Fang Liang, December 2007
Marco Better, Summer 2007
Linda LaGanga, Summer 2006
Rahul Patil, Summer 2006
Gyung Jung, Spring 2003
Leeds School of Business, University of Colorado

Patricia Heuser, Spring 2022

Department of Accounting, RWTH Aachen, Germany

David Sayah, Spring 2016
Department of Logistics Management, Johannes Gutenberg University Mainz, Germany

Maarten Soomer, Spring 2009
Department of Mathematics, VU University Amsterdam, The Netherlands

Menkes Van Den Briel, Summer 2008
Department of Industrial Engineering, Arizona State University

SERVICE

University of Colorado

Member, Engineering Dean Search Committee Fall 2021 - Spring 2022

Member, Graduate School Strategic Planning Committee Fall 2019 - Spring 2021

Leeds School of Business, University of Colorado

Member, Frasca Teaching Award Committee 2021

Chair, Faculty Conduct Committee Committee Spring 2017

Chair, Ph.D Teaching Award Committee Fall 2016, Spring 2017

Chair, Operations Management Recruiting Committee Fall 2010, Fall 2016

Member, Operations Management Recruiting Committee Fall 2022

Director, FTEP Early Career Faculty Program Spring 2012 - Spring 2014

Chair, Master's Curriculum and Policy Committee Fall 2009 - Spring 2012

Member,
Doctoral Curriculum and Policy Committee Fall 2012 - Spring 2014

Master's Curriculum and Policy Committee Fall 2007 - Spring 2009

Undergraduate Curriculum and Policy Committee Fall 2006 - Spring 2007

International Studies Faculty Committee Fall 2004 - Spring 2009

Diversity Affairs Faculty Committee Fall 2003 - Spring 2004

Organizer, Systems Division Seminar Series Spring 2004 - Spring 2007

Primary Unit Evaluation Committee,
Stacy Saturay (Member) Fall 2010

Dan Zhang (Member) Fall 2012

Lori Seward (Chair) Fall 2012, Fall 2016

Jeffrey York (Member) Fall 2013 *David Lacek* (Member) Fall 2022 *David Drake* (Chair) Fall 2022

Other

Chair, Dissertation Prize Committee Fall 2017
INFORMS Section on Aviation Applications

Member, Best Air Transportation Paper Award Committee Fall 2013, Fall 2014

INFORMS Transportation and Logistics Society

Member/Chair, Dissertation Prize Committee
INFORMS Transportation and Logistics Society

Fall 2013, Fall 2014

Treasurer/Vice-Chair/Chair
INFORMS Section on Aviation Applications

Fall 2008 - Fall 2014

Cluster Chair, INFORMS Annual Meeting, Seattle, WA
INFORMS Section on Aviation Applications

Fall 2007

Member, Dissertation Prize Committee
INFORMS Section on Aviation Applications

Fall 2005

Communications Coordinator,
INFORMS Section on Aviation Applications

Spring 2005 - Spring 2007

Sponsored Sessions Chair,
Organizing Committee, INFORMS Annual Meeting, Denver, CO

Fall 2004

Member of the Scientific Committee,
INFORMS Transportation and Logistics Society Conference

2017 - Present

Member of the Program Committee,
International Conference on Research in Air Transportation (ICRAT)

2014-Present

Ad-hoc Reviewer

2003-Present

Management Science, Operations Research, Proceedings of the IEEE, Transportation Science, Transportation Research: Part B, Transportation Research: Part C, Transportation Research: Part D, Transportation Research: Part E, Computers and Operations Research, European Journal of Operational Research, Omega, Networks, IEEE Transaction on Control Systems Technology, Interfaces, Air Traffic Control Quarterly, Journal of Transport Economics, Journal of the Operational Research Society, International Journal of Production Research, Applied Soft Computing, Operational Research, IISE Transactions, IEEE Intelligent Transportation Systems Transactions