

JOACHIM J. ARTS
Curriculum Vitae

Belgium

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birthday: May 14, 1983

EDUCATION

- 2009-2013: PhD Operations Research, Eindhoven University of Technology
- 2007-2009: MSc Operations Management & Logistics, Cum Laude, Eindhoven University of Technology
- 2004-2008: BSc Industrial Engineering & Management Science, Cum Laude, Eindhoven University of Technology

WORK EXPERIENCE

- September 2022 - present: Full Professor of Operations Management and Logistics and Study Director of the MSc in Logistics and Supply Chain Management at the University of Luxembourg, Luxembourg Center for Logistics and Supply Chain Management (LCL).
- September 2017 - 2022: Associate Professor of Operations Management and Logistics and Study Director of the MSc in Logistics and Supply Chain Management at the University of Luxembourg, Luxembourg Center for Logistics and Supply Chain Management (LCL).
- September 2017 - Present: Research affiliate, Massachusetts Institute of Technology (MIT), Center for Transportation and Logistics (CTL)
- December 2016 - August 2017: Tenured Assistant Professor of Industrial Engineering on Associate Professor track at Eindhoven University of Technology.
- September 2015 - August 2017: Affiliated Researcher at the Centrum voor Wiskunde en Informatica (CWI) in Amsterdam
- September 2013 - 2016: Tenure track Assistant Professor of Industrial Engineering at Eindhoven University of Technology.
- February 2015 - August 2015: Visiting Scholar, Sloan School of Management, Massachusetts Institute of Technology.
- September 2012 - December 2012: Visiting PhD student at the Operations Research Center of the Massachusetts Institute of Technology.
- September 2009 - August 2013: PhD candidate at the School of Industrial Engineering, Eindhoven University of Technology and the Dutch Railways.
- 2002-2004: Missionary service in the West-Indies mission of the church of Jesus Christ of latter-day saints.

PUBLISHED AND ACCEPTED PAPERS

- (A-core) Drent, C., Drent, M., Arts, J.J., Kapodistria, S. (2022) Real-Time Integrated Learning and Decision Making for Cumulative Shock Degradation **Manufacturing & Service Operations Management** accepted <https://doi.org/10.1287/msom.2022.1149>

- (A-core) Drent*, M., Arts J.J. (2021) Expediting in two-echelon spare parts inventory systems. **Manufacturing & Service Operations Management** **23**(6):1431-1448 <https://doi.org/10.1287/msom.2020.0888>
- Tönissen*, D.D., Arts, J.J., Shen, Z.J. (2021) A column-and-constraint generation algorithm for two-stage stochastic programming problems. **TOP** **29**:781-798 <https://doi.org/10.1007/s11750-021-00593-2>
- Tönissen*, D.D., Arts, J.J. (2020) The stochastic maintenance location routing allocation problem for rolling stock. **International Journal of Production Economics** **230** <https://doi.org/10.1016/j.ijpe.2020.107826>
- (A-related) Tönissen*, D.D., Arts, J.J., Shen, Z.J. (2019) Maintenance location routing for rolling stock under line and fleet planning uncertainty. **Transportation Science** **53**(5):1252-1270 <https://doi.org/10.1287/trsc.2018.0866>
- Arts, J. J., Basten, R. J. I., van Houtum, G. J. J. A. N. (2019). Maintenance service logistics. In H. Zijm, M. Klumpp, A. Regattieri, & S. Heragu (Eds.), **Operations, Logistics and Supply Chain Management** (pp. 493-517). Amsterdam: Springer. https://doi.org/10.1007/978-3-319-92447-2_22
- (B-core) Tönissen*, D.D., Arts, J.J. (2018) Economies of scale in recoverable robust maintenance location routing for rolling stock. **Transportation Research Part B: Methodological** **117A**:360-377 <https://doi.org/10.1016/j.trb.2018.09.006>
- (B-core) Arts, J.J., Basten, R.J.I. (2018) Design of multi-component periodic maintenance programs with single-component models. **IIE Transactions** **49**(4):429-441 <https://doi.org/10.1080/24725854.2018.1437301>
- Arts, J.J., Van Houtum, G.J., Zwart, B. (2017) The asymptotic hazard rate of sums of discrete random variables. **Statistics and Probability Letters** **125**:171-173. <http://dx.doi.org/10.1016/j.spl.2017.02.006>
- (B-core) Basten, R.J.I., Arts, J.J. (2017) Fleet readiness: stocking spare parts and high-tech assets. **IIE Transactions**, **49**(4):1-13. <http://www.tandfonline.com/doi/abs/10.1080/0740817X.2016.1243281>
- (A-core) Arts, J., Basten, R.J.I., Van Houtum, G.J. (2016) Repairable stocking and expediting in a fluctuating demand environment: Optimal policy and heuristics, **Operations Research** **64**(6):1285-1301. <http://pubsonline.informs.org/doi/abs/10.1287/opre.2016.1498>
- (B-core) Arts, J.J. (2017) A multi-item approach to repairable stocking and expediting in a fluctuating demand environment, **European Journal of Operational Research**, **256**(1):102-115. <http://www.sciencedirect.com/science/article/pii/S0377221716304234>
- Arts, J. (2014). Spare parts planning and control for maintenance operations. In J. Pombo (Ed.), Conference Paper : Proceedings of the Second International Conference on Railway Technology : Research, Development and Maintenance, 8-11 April 2014, Ajaccio, Corsica, France, (pp. 301-1/17). Stirlingshire, United Kingdom: Civil-Comp Press. <http://www.ctresources.info/ccp/paper.html?id=7951>
- Driessen, M.A., Arts, J., Van Houtum, G.J., Rustenburg, W.D., Huisman, B. (2014). Maintenance spare parts planning and control: A framework for control and agenda for future research, **Production Planning and Control**, **26**(5):407-426 <http://www.tandfonline.com/doi/abs/10.1080/09537287.2014.907586>
- Arts, J., Flapper, S.D. (2013). Aggregate overhaul and supply chain planning for rotables, **Annals of Operations Research**, **224**(1):77-100, <http://link.springer.com/article/10.1007/s10479-013-1426-0>
- (B-core) Arts, J., Kiesmüller, G.P. (2013). Analysis of a two-echelon inventory system with two supply modes, **European Journal of Operational Research**, **225**(2):263-272, <http://dx.doi.org/10.1016/j.ejor.2012.09.043>

- (B-core) Arts, J., Vuuren, M. van, Kiesmüller, G.P. (2011). Efficient optimization on the dual-index policy using Markov chains. **IIE Transactions**, 43(8):604-620, <http://www.tandfonline.com/doi/abs/10.1080/0740817X.2010.550908>

WORKING PAPERS

- van Jaarsveld, W., Arts, J. (2020) Projected inventory level policies for lost-sales inventory systems: Asymptotic optimality in two regimes. *major revision submitted to Operations Research*
- Driessen*, J., Arts, J.J., van Houtum, G.J. (2020) On the importance of service parts when taking commonality and reliability decisions. *received major revision at Service Science*
- Arts, J.J., Levi, R., van Houtum, G.J., Zwart, B. (2020) Base-stock policies for lost-sales models: aggregation and asymptotics. *received major revision at Naval Research Logistics*
- Driessen* J., Kruijff, J., Arts, J.J., van Houtum, G.J. (2020) A new model to design line replaceable units. *received major revision at Naval Research Logistics*
- Drent*, M., Arts, J.J. (2020) Projected Expedited Inventory Position Policies. *target journal: Production and Operations Management*
- Arts J.J. and Drent*, M. (2020) Asymptotic decomposition of Markov decision processes subject to Markov modulated Poisson arrivals. *target journal: Operations Research Letters*
- Deprez*, L., Antonia K., Arts, J.J., Boute, R. (2021) Data-driven preventive maintenance for a heterogeneous machine portfolio. *second round review in Operations Research Letters*
- Demirci, A., Arts, J.J., van Houtum, G.J. (2021) A restless bandit approach for capacitated condition based maintenance scheduling. *target journal: Mathematical Methods of Operations Research*
- Becker-Perez*, N., Mantin, B., Arts, J.J. (2021) Strategic Behavior in a Serial Newsvendor Setting. *target journal: Production and Operations Management*
- Drent*, M., Moradi*, P., Arts, J.J. (2021) Efficient Emission Reduction Through Dynamic Mode Selection. *target journal: Production and Operations Management*
- Drent, C., Drent, M., Arts, J.J. (2022) Condition-Based Production for Stochastically Deteriorating Systems: Optimal Policies and Learning. *submitted to Manufacturing and Service Operations Management*

MANUSCRIPTS IN PREPARATION

- Working title: Periodicity in intermittent demand: Improved forecasting and optimal inventory control. Joint work with Sarah van der Auweraer and Thomas van Pelt
- Working title: Machine learning for difficult stochastic inventory models. Joint work with Yaron Shaposhnik and Xinji Liu
- Working title: Condition Based Production Control with Learning for Deteriorating Systems. Joint work with Collin Drent

HONORS AND AWARDS

- Education award 2016, best lecturer, Master Operations Management & Logistics, Eindhoven University of Technology
- EURO doctoral dissertation award 2015
- Education award 2014, best lecturer, Master Operations Management & Logistics, Eindhoven University of Technology

- De Breed-Kreiken - Prins Bernhard Cultuurfonds fellow, 2012
- Master Thesis award 2010 of the VVS-OR (Vereniging Voor Statistiek en Operationele Research), the Dutch society for statistics and operational research.
- Finalist for the 2009 Eindhoven University of Technology final project award on behalf of the School of Industrial Engineering.

FUNDING

- Funder: BASF, Year 2021, PI, Amount: 179000, Title: Multi-objective value chain excellence with uncertain parameters. This is direct collaboration between BASF and myself on the trade-off between profitability and carbon footprint of different supply chain designs.
- Funder: SCK-CEN (Belgian Nuclear Research Center), Year 2021, PI, Amount: 199000, Title: Medical radioisotope supply chain design for security: Efficiency, alignment and speed. This is a direct collaboration between SCK-CEN and myself on the design of medical radioisotope supply chains.
- Funder: Fonds Nationale de Recherche (FNR), Instrument: BRIDGES, Year: 2020, Co-applicant, Amount: 563770 EURO, Title: Anticipatory Train Optimization with Intelligent Management (ANTOINE), with co-funding from Chemin de la Fer Luxembourgeois (CFL) Amount 85000 EURO
- Funder: FNR, Instrument: AFR, Year: 2017, PI, Amount: 200000 EURO, Title: Dual sourcing strategies for carbon efficient supply chains. This is a personal PhD Grant from FNR for Melvin Drent.
- Funder Netherlands Organisation for Scientific Research (NWO), Instrument: VENI, Year: 2016, PI, Amount: 241443 EURO, Title: Learning from degradation data: When to shut down public services. (This is an early career grant from the Netherlands Organisation for Scientific Research.)
- Funder: NWO and the Dutch Institute for Advanced Logistics (DINALOG), Instrument: Vital Logistics, Year: 2015, Acting project leader, Amount: 419232 EURO from NWO, with co-funding from Philips, the Amsterdam fire brigade, Intemo, CityGIS, and CQM Title: Emergency Service Logistics: Network Design and Dynamic Dispatching (DynaMerge). This was a joint project with CWI.

PhD SUPERVISION

- Denise Tönissen started her project December 2013 and graduated February 2018 from the Eindhoven University of Technology (4 year PhD program). Since November of 2017 she is a tenure track assistant professor at the Free University of Amsterdam in their business school. The results of this research led to 5 papers of which 2 are published, 2 under revision, and 1 under review.
- Joni Driessen started his project in February 2014 and defended his thesis in June 2018. He is currently employed by Consultants in Quantitative Methods (CQM) in Eindhoven. The results of this research led to 5 chapters of which 1 is published and 4 are under review or soon to be submitted.
- Chiel van Oosterom started his project in May 2010 and I became involved as advisor in 2015. He is currently a post-doc at University of Wageningen and has 3 published papers.
- Melvin Drent started his project in November 2017 and plans to defend in the summer of 2021. He has one paper published in Manufacturing and Service Operations Management and won the Best Student Paper Award 2020 of the International Society for Inventory Research for a paper he plans to submit soon. He also won the PhD research award 2019 of the faculty of law economics and finance.
- Nicole Perez-Becker (2017-present) works on supply chain management issues related to food waste. She is co-supervised by Benny Mantin and myself. She plans to defend in 2022.
- Bonn Kleiford Seranilla (2019-present) works on dual dynamic programming algorithms and plans to defend in 2023. He is co-supervised by Nils Löhndorf and myself.

- Roozbeh Qorbanian (2020-present) started his project during the corona pandemic in April 2020 and works on pricing models for commodities together with Arcelor Mittal. He is co-supervised by Nils Löhndorf and myself.
- Federico Bigi (2021-present) works on stochastic optimization of cargo train shunting for maintenance. He is co-supervised by Francesco Viti (University of Luxembourg) and myself.
- Hongfeng Liang (2014-2017) worked on assemble-to-order optimization with stochastic programming at McMaster University Canada. I was a doctoral committee member.
- Laurens Deprez (2017-present) works on actuarial models of maintenance contracts for OEMs at the KU Leuven. I am a doctoral committee member.

SERVICE AND REFEREEING

- Associate editor of OR Spectrum
- Member of the editorial review board for Production and Operations Management
- Member of the editorial review board for Decision Sciences
- Co-organizer of the Maintenance and Service Logistics stream of the 19-th ISIR symposium on inventories; see <http://isirsymposium.hu/callforpapers/>
- Chair of the ISIR summer-school 2021; see <https://isir2021.uni.lu/>
- Co-organizer of the Young European Queueing Theorists workshop 2015 on stochastic service systems; see http://www.eurandom.tue.nl/events/workshops/2014/YEQT_2014/YEQT_index.html.
- Session organizer and chair at several conferences (e.g. POM, EURO, PHM, ISIR, INFORMS).
- Reviewer of research proposals for the KU Leuven, the German Research Foundation, the Canadian Research Foundation, and the French Research Foundation.
- Referee for Management Science, Operations Research, Manufacturing and Service Operations Management, Production and Operations Management, Transportation Science, European Journal of Operational Research, Naval Research Logistics, IIEE Transactions, Operations Research Letters, OR spectrum, Transportation Research Part E, International Journal of Production Economics, Optimization Letters, IMA Journal of Management Mathematics, Journal of the Operational Research Society, Journal of Scheduling, Computers and Industrial Engineering, Applied Mathematical Modeling, Journal of Air Transport Management, Computers and Operations Research.
- Research Luxembourg Covid-19 Taskforce member and co-author of work-package 13 report. [link](#)
- For the LCL I wrote a piece on sustainable supply chains for the European Business Review. [link](#)
- Co-organizer of the LCL Industry seminar series
- European Logistics Association award jury member representing Luxembourg. [link](#)
- Jury member best Master thesis award for the Belgian Operational Research Society (ORBEL) 2021.
- LCL Roundtable on 3D printing; 21 November 2018; [link](#)
- LCL Webinar - Luxembourg Task Force COVID 19; 19 May 2020; [link](#)
- Plenary speaker 2018 eXplore conference; 1 March 2018; [link](#)
- Plenary speaker Practice Based Research in Service Logistics; 17 January 2018, Workshop hosted by the Service Logistics Forum, [link](#)

SERVICE AND MANAGEMENT FOR THE UNIVERSITY

- Study program director MIT-Master program in Logistics and Supply Chain Management (2017-present)
- Elected member of the faculty council of the Faculty of Law Economics and Finance (FDEF) representing the Department of Economics and Management (2020-present)
- Member of the Comité de validation des acquis d'expérience for FDEF (2018-present)
- Member of the Doctoral School in Economics, Finance, and Management (DSEFM) board for the program in Operations Research and Management Science (2017-present)

TEACHING

- Completed Basis Kwalificatie Onderwijs (BKO) 2016
- Courses taught at the University of Luxembourg:
 - PhD DSEF Stochastic Models of Supply Chain Operations
 - PhD DSEF Markov Decision Processes and Reinforcement Learning
 - MSc course Inventory management
 - MSc course Maintenance and Service logistics
 - MSc course Process Management
 - BSc course Inferential Statistics
 - IAP course at MIT about Service Logistics (2018)
- Courses taught at Eindhoven University of Technology
 - Data Science Overview (PhD level, co-lecturer)
 - Modeling and Analysis of Manufacturing Systems (MSc level)
 - Advanced Maintenance and Service Logistics (MSc level)
 - Research Methods in Operations Management (MSc level, co-lecturer)
 - Service Supply Chains for Capital Goods (MSc level)
 - Quality and Reliability Engineering (BSc level)
 - Maintenance and Service Logistics (BSc level)
- Supervised over 20 MSc thesis projects mostly in cooperation with Industry, including recruitment of projects, with companies such as ASML, CFL, ExxonMobil, Vodafone, Arcelor Mittal, Lab Group, Ferrero, Dutch Railways (NS), Dutch Airforce.