

# Curriculum Vitae

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## 1. Full name and date

Surname and given names Salo, Ahti Antero  
Gender Male  
Date of writing the CV 30 January 2019

Affiliation Department of Mathematics and Systems Analysis  
Systems Analysis Laboratory  
Aalto University School of Science  
P.O. Box 11100, 00076 Aalto, Finland  
Telephone (358-0) 50 383 0636  
E-mail [ahti.salo@aalto.fi](mailto:ahti.salo@aalto.fi)

## 2. Date and place of birth

Born on 21.6.1962, Lempäälä, Finland  
Citizenship Finnish  
Current residence Helsinki

## 3. Education and degrees awarded

Dec 1992 Doctor of Technology, Helsinki University of Technology (TKK)  
Major subject in systems and operations research, minor in mathematics  
Mar 1990 Licentiate of Technology, TKK  
Major in systems and operations research, minor in mathematics  
Oct 1987 Master of Sciences (Eng.), TKK  
Major in systems and operations research, minor in computer science  
Dec 1996 Docent, quantitative methods of economics,  
Helsinki School of Economics and Business Administration  
Feb 1999 Docent, systems analysis, TKK

## 4. Other education and training, qualifications and skills

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## 5. Linguistic skills

Finnish Mother tongue  
English Excellent  
Swedish Fluent  
German Very good command  
French Good command

## 6. Current position

Jan 2010 -	Aalto University	Professor in Systems Analysis
	Director of the Systems Analysis Laboratory	Aug 2016 -
	Vice Head of Dept of Mathematics and Systems Analysis	Aug 2011 - Dec 2016
	Vice Dean of School of Science, research and partner relationships	Oct 2014 - Dec 2016

## 7. Previous work experience

Nov 2000 - Dec 2009	Helsinki University of Technology	Professor in Systems Analysis Tenured 1.11.2005
Aug 1999 - Oct 2000	Helsinki University of Technology	Professor in Applied Mathematics
Jan 1999 - Jul 1999	Helsinki University of Technology	Researcher
Aug 1998 - Dec 1998	Helsinki University of Technology	Acting Professor in Applied Mathematics
Jan 1997 - Jul 1998	VTT Group for Technology Studies	Senior Researcher
Oct 1994 - Jan 1997	Nokia Research Center	Senior Consultant
Oct 1993 - Sep 1994	Universität Mannheim	Alexander von Humboldt- Fellow
Sep 1993	TKK, Systems Analysis Laboratory	Researcher
Jun 1993 - Aug 1993	London Business School	Visiting Researcher

### Research visits

Jan 2019 (2 weeks)	University of Vienna	fsVisiting Professor
Sep - Nov 2018	London Business School	Visiting Professor
Feb - Mar 2018 (2 ½ weeks)	CentraleSupélec, Paris	Visiting Professor
July 2010 (one month)	Ecole Centrale Paris	Visiting Professor
Dec 2010 (3 weeks)	International Institute for Applied Systems Analysis (IIASA)	Visiting Professor
Jan 2010 (3 weeks)	University of Vienna	Visiting Professor
Feb 2009 - Aug 2009	Université Paris-Dauphine	Visiting Professor
Sep 2008 - Jan 2009	London Business School	Visiting Professor

### Appointments

Jan 2014 - Dec 2016	Visiting Professor, University of Strathclyde, Glasgow, UK
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## 8. Funding for research projects (since 2004)

Systematic scenario methods for the assessment of overall safety, the Finnish Research Programme on Nuclear Waste Management KYT2018, 2018-2019, 142 800 EUR (of which 89 100 EUR external funding and 53 700 kEUR Aalto University funding).

Adversarial risk analysis in the assessment of weapons systems, Scientific Advisory Board for Defense, 2017-2019, 187 134 EUR.

Platform Value Now: Value capturing in the fast emerging platform ecosystems, the Strategic Research Council of the Academy of Finland, 2015-20, 5 542 668 EUR.

Systematization of methodologies for safety justification, the Finnish Research Programme on Nuclear Waste Management KYT2018, 2015-2018, 259 000 EUR (of which 137 000 EUR external funding and 122 000 EUR Aalto University funding).

Probabilistic risk assessment method development and applications, the Finnish Research Programme on Nuclear Power Plant Safety SAFIR2018, 2015-, 39 000 EUR (of which 27 500 kEUR external funding and 11 500 EUR Aalto University funding).

Sustainable transitions of European energy markets (STEEM), Aalto Energy Efficiency Research Programme, 2013-2017, 186 800 EUR.

Universities, funding systems, and the renewal of the industrial knowledge base, Tekes, 2012-14, 77 683 EUR (Aalto-subproject in the consortium consisting of ETLA (co-ordinator), University of Helsinki, and VTT).

Improving the reliability of complex systems, Scientific Advisory Board for Defense, 2012-2013, 130 000 EUR.

Pre-study of current and prospective procurement approaches, Nokia Corporation, 2010-11, 20 000 EUR.

Development of probabilistic risk Assessment and its applications (PRADA), the Finnish Research Programme on Nuclear Power Plant Safety SAFIR2014, 133 200 EUR (of which 70 % external funding and 30% and Aalto University funding).

Uncertainties and risk taking in research and innovation policy, Helsinki Institute of Science and Technology Studies, 2010-11, 23 000 EUR.

Cost-effectiveness analysis of naval weapons systems, Headquarters of the Finnish Navy, 2010, 30 000 EUR.

Multi-criteria cost-effectiveness analysis of weapons systems, National Defence University, 2010, 80 000 EUR.

Collaborative priority-setting for innovation activities in Eastern Finland, ESR funding co-ordinated by Savonia University of Applied Sciences, 2009-10, 50 000 EUR.

Foresight and innovation processes in dynamic value networks, Finnish Funding Agency for Technology and Innovation (Tekes), 2008-10, total funding 299 641 EUR (of which 189 641 EUR for TKK).

Decision models for foresight processes and portfolio optimization, Academy of Finland, 2008-09, 125 833 EUR.

Decision models for the formation of forest stands, UPM Kymmene, 2008-09, 26 600 EUR.

Competition and the productivity of university research groups, Ministry of Education, 2008-09, 136 000 EUR.

Portfolio modelling and optimization for standardization activities, Nokia Corporation, 2008, 25 000 EUR.

Decision analysis in project portfolio optimization, Academy of Finland, 2007-10, 128 400 EUR.

Prioritization of themes for wood product research, Finnish Forest Industries Federation, 2008, 5 000 EUR.

Portfolio modelling in the identification of regional innovation opportunities (Ylä-Savo), 2007, 20 492 EUR.

Portfolio modelling in the analysis of weapons systems, Scientific Advisory Board for Defense, 2007-09,

Robust portfolio modelling in the development of bridge repair programs, Pöyry Plc, 2007, 15 000 EUR.

Processes of multi-scale energy policy, Helsinki Institute of Science and Technology Studies, 2007-09, 22 222 EUR.

Foresight process for the development of a research agenda for packaging industries, Association of Packaging Technology and Research, 2006, 5 000 EUR.

Robust portfolio modelling in innovation management, Finnish Funding Agency for Technology and Innovation (Tekes) and several firms, 2005-07, 452 500 EUR (of which 210 000 EUR for Salo's research group).

Portfolio optimization in road asset management, Finnish Road Administration, 2005, 16 000 EUR.

FinnSight 2015, the joint foresight exercise of the Academy of Finland and Tekes, 2005-06, 56 500 EUR.

Internet-based repository for innovation ideas, Ministry of Trade and Industry, 2005, 12 500 EUR.

Development of the strategic research agenda for the forest-based sector technology platform, Finnish Forest Industries Federation, 2005, 5 000 EUR.

Multicriteria analysis for the selection of forest reserves offered for reservation, Ministry of Agriculture and Forestry, 2005, 50 000 EUR.

Collaborative shaping of research agendas in WoodWisdom-Net, Academy of Finland, 2005, 28 000 EUR.

Multicriteria portfolio optimization in forest reserve selection, Ministry of Agriculture, 2004, 10 000 EUR.

Multidimensional weak signals in foresight activities, Ministry of Trade and Industry, 2004, 25 000 EUR.

Prospective evaluation of ClimTech, the national programme on technology development and climate change, Tekes, 2003, 3 000 EUR.

Development of priorities for a Scandinavian research programme for forestry and forest industries, Silicon Fibers Oy, 2002-03, 14 506 EUR.

Multi-criteria methods in project portfolio analysis, Tekes, 2003-05, 199 272 EUR.

Decision models for technology foresight and technology assessment, Academy of Finland, 2002-05, 720 000 FIM.

Computer-assisted foresight and evaluation processes, Tekes, 2002-04, 175 300 EUR.

## 9. Merits in teaching and pedagogical competence

Developer and responsible teacher of graduate level courses at Helsinki University of Technology ('99-'09) and Aalto University ('10-) on decision analysis and problem solving (~50 students per year), risk analysis (~80), investment science (~40) and seminar on case studies in operations research (~20).

Supervisor of

157 Master's Theses

32 Bachelor's Theses

11 Licentiate's Theses

at Helsinki University of Technology (-'09) and Aalto University ('10-).

Supervisor 21 Doctoral Dissertations in systems and operations research (instructor unless otherwise indicated; positions refer to the situation in January 2019):

1. Jukka-Pekka Salmenkaita '04, Senior Solution Consultant, Elisa
2. Janne Gustafsson '05, Portfolio Manager, Ilmarinen Mutual Pension Company
3. Simo Makkonen '05, Chairman of the Board of Directors, MeeDoc
4. Totti Könnölä '06, Managing Director, Insight Foresight Institute (IFI)
5. Kari Alanne '07, Senior University Lecturer, Aalto University School of Engineering
6. Toni Jarimo '08, Senior Development Manager, Kesko
7. Juuso Liesiö '08, Assistant Professor, Aalto University School of Business
8. Janne Kettunen '09, Assistant Professor, George Washington University
9. Ville Brummer '10, Programme Director, Crisis Management Initiative (CMI)
10. Kimmo Soramäki '12, Founder and Director, Financial Network Analytics
11. Antti Punkka '13, Professor of Practice, Aalto University School of Science
12. Tommi Ekholm '13, Postdoctoral Research Fellow, Aalto University School of Science (instructed by Prof. Ilkka Savolainen)
13. Anssi Käki '14, Development Manager, UPM Energy
14. Eeva Vilkkumaa '14, Assistant Professor, Aalto University School of Business
15. Anna Repo '15, Researcher, the Finnish Environment Institute (instructed by Prof. Jari Lisk)
16. Mikko Dufva '16, Leading Specialist, The Finnish Innovation Fund Sitra (instructed by Dr. Tony Ahlqvist)
17. Jussi Kangaspunta '16, Analyst, Veikko Laine Ltd
18. Antti Toppila '16, Analyst, Danske Bank
19. Pekka Mild '17, Development Manager, Maintpartner Group
20. Tero Tyrväinen '17, Researcher, VTT
21. Yrjänä Hynninen '18, Consultant, Nordic Healthcare Group

Leader of a research group consisting of five full-time doctoral students and one post-doc at Aalto University. Supervisor of six part-time doctoral students employed at other organizations.

Invited lecturer at the *International MCDM Summer School*, Taiwan, July 2006 and Paris, June 2010.

## 10. Awards, prizes and honours

*Espoo Ambassador 2018*, awarded by the city of Espoo in recognition for international research efforts at the top of the field in Finland, activity in scientific associations and organization of significant international conferences.

Winner (with Profs. Jeffrey Keisler and Alec Morton) of the *2013 Publication Award of the INFORMS Decision Analysis Society*, in recognition of the book A. Salo, J. Keisler and A. Morton (eds.) *Portfolio Decision Analysis: Improved Methods for Resource Allocation*, Springer International Series in Operations Research & Management Science, Vol. 162, Springer, New York, 2011.

Finalist in the competition for the *2007 Practice Award of the INFORMS Decision Analysis Society*, based on the case study "Integrated Multi-Criteria Budgeting for Maintenance and Rehabilitation Policies at the Finnish Road Administration", presented with Pekka Mild.

Co-author of the paper "Contingent Portfolio Programming for the Management of Risky Projects" (published in *Operations Research* 53/6 (2005) 946-956) for which Janne Gustafsson won the *2005 Best Student Paper Award of the INFORMS Decision Analysis Society*.

## 11. Other academic merits

### Evaluation of candidates for academic positions

Evaluator of candidates for appointment as Research Director in futures research, University of Turku, 2018.

Evaluator of candidates for appointment as Assistant/Associate/Full Professor in business administration, primarily data analysis, Åbo Akademi University, 2017.

Evaluator of candidates for appointment as Associate Professor in data analytics, University of Jyväskylä, 2017.

Evaluator of the qualifications of Dr. Jouko Vankka for appointment as Professor in military technology, National Defence University, Finland, 2016.

Evaluator of candidates for appointment as Professor in technology foresight and innovation, Technical University of Denmark (DTU), 2016.

Evaluator of the qualifications of Dr. Kimmo Laakso for appointment Docent in futures studies, with specialization in corporate foresight, University of Turku, 2015.

Evaluator of the qualifications of Dr. Kalle Piirainen for appointment as Docent in production economics, with specialization in innovation management, Lappeenranta University of Technology, 2014.

Evaluator of the qualifications of Dr. Erin Baker for appointment as Full Professor, University Massachusetts Amherst, 2013.

Evaluator of Dr. Aron Larsson for appointment as Docent in data and systems sciences, Stockholm University 2012.

Evaluator of candidates for appointment as Professor in futures studies, University of Turku, 2012.

Evaluator of the qualifications of Dr. Michael Ornetzeder for tenure at the Institute of Technology Assessment (ITA) in Austria, 2012.

Evaluator of candidates for appointment as Senior Lecturer in computer and systems sciences, with specialization in systems analysis, Stockholm University, 2011.

Evaluator of candidates for appointment as Professor in technology foresight and innovation, the Technical University of Denmark (DTU), 2011.

Evaluator of candidates for appointment as Professor in military technology, National Defence University, Finland, 2011.

Evaluator of candidates for appointment as Senior Lecturer in computer and systems sciences, with specialization in systems analysis, especially mathematical and statistical modelling within the energy sector, Stockholm University, 2011.

Evaluator of Dr. Aron Larsson for appointment as Associate Senior Lecturer in computer and systems sciences, with a specialization in computer-aided decision support in society, Stockholm University 2010.

Evaluator of the achievements of Dr. Afzal Siddiqui for promotion to Senior Lecturer at the University College of London (UCL), 2010.

Evaluator of candidates for appointment as Senior Lecturer in computer and systems sciences, with specialization in systems analysis, Stockholm University, 2010.

Evaluator of candidates for appointment as Professor in business mathematics, Vaasa University, 2008.

Evaluator of candidates for appointment as Senior Lecturer in computer and systems science with specialization in system analysis, Stockholm University, 2008.

Evaluator of candidates for appointment as Assistant Senior Lecturer in systems analysis at Royal Institute of Technology, Stockholm, 2007.

Evaluator of the qualifications of PhD Richard Langlais for acting as Professor in environmental protection, Helsinki University of Technology, 2006.

Evaluator of the qualifications of PhD Henrik Bruun for acting as Professor in environmental protection technology, Helsinki University of Technology, 2005.

### **Examination of Doctoral Theses**

External rapporteur and chairman of the jury in the examination of the Doctoral Dissertation of Tairan Wang (CentralSupélec, France, '15).

Preliminary examiner in the Doctoral Dissertation of Abolfazl Keshvari (Aalto University School of Business, Finland, '14).

Preliminary examiner in the Doctoral Dissertation of Axel Nyberg (Åbo Akademi University, Finland, '14).

External rapporteur in the examination of the Doctoral Dissertation of Olivier Cailloux (Ecole Centrale Paris, France, '12).

External rapporteur in the examination of the Doctoral Dissertation of Jun Zheng (Ecole Centrale Paris, France, '12).

External examiner of the Doctor of Business Administration (DBA) Thesis of Alex Koh (Manchester Business School, University of Manchester, United Kingdom, '11).

Examiner of the Doctoral Dissertation of Mart Landsberg (Tallinn University of Technology, Estonia, '08).

Official Opponent in the defence of the Doctoral Dissertation of Jim Idefeldt (Mittuniversitet, '07).

Preliminary examiner in the Doctoral Dissertation of Kaj-Mikael Björk (Åbo Akademi University, Finland, '06).  
 Preliminary examiner ('05) and official opponent ('06) in the Doctoral Dissertation of Raimo Voutilainen (Helsinki School of Economics, Finland).  
 Official Opponent in the defence of the Doctoral Dissertation of Xiaosong Ding (Mittuniversitet, Sweden, '05).  
 Official opponent in the defence of the Licentiate Thesis of Jim Johansson (Mithögskolan, Sweden, '04).

### **Evaluation and project management responsibilities**

Chairman of the jury of the *EURO Doctoral Dissertation Award* (EDDA) of the *Association of European Operational Research Societies* (EURO), 2016. Member of the jury in 2010, 2012, 2013 and 2015 (the award is given to recognize the best Dissertation in the field of operations research defended in the members countries of EURO).

Evaluator of the Advanced Systems Analysis research programme of the *International Institute for Applied Systems Analysis* (IIASA), 2015.

Evaluator of proposals for *Exploratory Workshops* of the *European Science Foundation* (ESF), 2013.

Member of the Evaluation Panel of the *Laboratoire d'Analyse et Modélisation de Systèmes pour l'Aide à la Decision* (LAMSADE), a joint laboratory of Université Paris Dauphine and the Centre national de la recherche scientifique (CNRS), 2012.

Member of the Evaluation Panel of the *Finnish Metals and Engineering Competence Cluster* (FIMECC), 2012.

Member of the International Evaluation Panel of the *Helmholtz-Programme on Technology, Society and Innovation*, 2009.

Project manager of *FinnSight 2015*, the joint national foresight exercise of the Academy of Finland and the Finnish Funding Agency for Technology and Innovation (Tekes), 2005-06.

Chairman of the International Evaluation Panel of the German technology foresight exercise *Futur*, 2004-05.

Invited presenter on foresight methodologies at the brainstorming workshop *Shaping the European Dimension of Foresight*, organized by EU Directorate-General for Research, March 2005.

Member in the EU COST A22 Action on *European Network for Foresight Methodologies*, 2004-.

Reviewer of technology assessment and foresight projects in the EU-funded STRATA-research programme on *Strategic Analysis of Specific Science and Technology Policy Issues*, 2002.

Reviewer of results from the *European Science and Technology Observatory* project on the monitoring of technological forecasting, technology assessment, technology foresight activities in the European Union, 2001.

### **Editorial responsibilities**

Editor-in-Chief of *EURO Journal on Decision Processes*, a journal established by the Association of European Operational Research Societies (EURO) in 2011, 2012-July 2016 and one of the nine Editors of the journal, August 2016-.

Associate Editor of the journal *Decision Analysis* (2007-2010), established by the INFORMS Decision Analysis Society in 2004; member of the Editorial Board (2011-).

Member of the Editorial Boards of *Decision Analysis* (2011-), *International Journal of Information Technology and Decision Making* (2002-), *International Journal of Foresight and Innovation Policy* (2004-), *Intelligent Decision Technologies* (2007-), *The Open Operational Research Journal* (2007-2014), *IEEE Transactions on Engineering Management* (2010-2015).

Regular referee for a large range of international journals in decision analysis, decision support systems, foresight methodologies, innovation management (incl. *Management Science*, *Operations Research*, *European Journal of Operational Research*, *Research Policy*, *Risk Analysis*, *IEEE Transactions on Technology Management*, *Journal of the Operational Research Society*, *Technological Forecasting and Social Change*, *Journal of Forecasting*, *International Journal of Forecasting*, *Journal of Multi-Criteria Decision Analysis*, *Decision Sciences*, *International Journal of Technology Management*, *Group Decision and Negotiation*).

### **Service duties at Aalto University**

Member of the Aalto University Academic Affairs Committee, 2018-.

Member of the Academic Committee for Science, 2010-; Vice-Chairman of the Committee, 2014-.

Vice Member of the Aalto University Academic Affairs Committee, 2014-17.

Vice Chairman as the representative of Aalto University School of Science on the Tenured Professor's Council, 2014-2015.

Vice Head of the Degree Programme on Engineering Physics and Mathematics, 2010-2014.

Vice Member of the Doctoral Programme Committee of Aalto University School of Science, 2011-2016.

### **Memberships in programme and organizing committees of scientific conferences**

Chair of the Local Organizing Committee of the *Society for Risk Analysis (SRA) Nordic Chapter Conference*, November 2017, Espoo, Finland. <https://blogs.aalto.fi/risk2017/keynotes/>

Chair of the Local Organizing Committee of the Conference *Building Expertise for Innovation*, held in collaboration with the COST IS1304 Action *Expert Judgement Network* and the two projects *Platform Value Now* and *Digital Disruption in Industry* of the Strategic Research Council of the Academy of Finland, April 2017, Espoo, Finland. <http://platformvaluenow.org/innconference/keynotes/>

Member of the Technical Programme Committee of the *International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2017)*, September 2017, Pittsburgh, USA.

Member of the Programme Committee of the *21<sup>st</sup> Conference of the International Federation of Operational Research Societies (IFORS 2017)*, July 2017, Quebec, Canada.

Member of the Academic Committee of the Thematic Conference on *Computation and Big Data in Transport* of the *European Community on Computational Methods in Applied Sciences (ECCOMAS CM3-2017)*, November 2017, Brussels, Belgium.

Member of the Programme Committee of the *27<sup>th</sup> EURO Conference of the Association of the European Operational Research Societies (EURO XVII)*, July 2015, Glasgow, UK.

Member of the Programme Committee of the *4<sup>th</sup> International Conference on Operations Research and Enterprise Systems (ICORES 2015)*, January 2015, Lisbon, Portugal.

Member of the Programme Committee of the *3rd International Conference on Operations Research and Enterprise Systems (ICORES 2014)*, March 2014, Angers, France.

Member of the Local Organizing Committee of the *11<sup>th</sup> International Probabilistic Safety Assessment and Management Conference* and the *Annual European Safety and Reliability Conference (PSAM 2012 & ESREL 11)*, June 2012, Helsinki, Finland.

Member of the Programme Committee of *Group Decision & Negotiation 2012 (GDN 2012)*, May 2012, Recife, Brazil.

Member of the International Committee of the *2012 International Conference on e-Commerce, e-Administration, e-Society, e-Education, and e-Technology*, March 2012, Hong Kong, China.

Member of the Conference Committee of the *4<sup>th</sup> International Seville Conference on Future-Oriented Technology Analysis (FTA)*, May 2011, Sevilla, Spain.

Member of the Programme Committee of *Group Decision & Negotiation 2011 (GDN 2011)*, June 2011, Amman, Jordania.

Chairman of the Programme Committee of the *Aalto Event on Science and Technology in Society*, August 2011, Helsinki, Finland.

Member of the International Program Committee of the *2<sup>nd</sup> KES International Symposium on Intelligent Decision Technologies (IDT 2010)*, July 2010, Baltimore, USA.

Member of the International Scientific Programme Committee of the *2<sup>nd</sup> International Conference on Applied Operational Research (ICAOR 2010)*, August 2010, Turku, Finland.

Member of the Program Committee of *Group Decision & Negotiation 2010 (GDN 2010)*, July 2010, Delft, the Netherlands.

Member of the Programme Committee of the *1<sup>st</sup> International Conference on Algorithmic Decision Theory (ADT 2009)*, October 2009, Venice, Italy.

Member of the Scientific Committee of the *4<sup>th</sup> European Conference on Technology Management (EuroMOT 2009)*, September 2009, Glasgow, UK.

Member of the International Program Committee of *Intelligent Decision Technologies (IDT 2009)*, April 2009, Himeji, Japan.

Member of the International Committee of the *2010 International Conference on e-Commerce, e-Administration, e-Society, and e-Education (e-CASE 2010)*, January 2010, Macau.

Member of the International Committee of the *2009 International Conference on e-Commerce, e-Administration, e-Society, and e-Education (e-CASE 2009)*, January 2009, Singapore.

INFORMS Decision Analysis Society sub-stream co-organizer in collaboration with Prof. Don N. Kleinmuntz at the *18<sup>th</sup> Triennial Conference of the International Federation of Operational Research Societies (IFORS)*, July 2008, Johannesburg, South Africa.

Vice-President of the Organization Committee of the 67<sup>th</sup> meeting of the European Working Group Multiple Criteria Decision Aiding, April 2008, Rovaniemi, Finland.

Invited opening plenary speaker at the 15<sup>th</sup> Mini-EURO Conference Managing Uncertainty in Decision Support Modelling, September 2004, Coimbra, Portugal.

Member of the Scientific Committee and Technological Futures Analysis Methods Working Group for the EU-US Scientific Seminar on New Technology Foresight, Forecasting & Assessment Methods, May 2004, Seville, Spain.

### **Memberships in expert groups**

Member of the Finnish Working Committee for the *International Institute for Applied Systems Analysis (IIASA)*, 2018-2020.

Member (Sep 2018 - Dec 2019) and Vice-Member (Jan 2017 - Aug 2018) of the Board of the *Finland Futures Academy*.

Member of the expert group *Strategic Foresight for Research & Innovation Policy in Horizon 2020*, appointed by the Directorate-General for Research & Innovation of the European Commission, 2015-16.

Member of the Board of the *Society of Scientists and Parliament Members* (Tutkijoiden ja kansanedustajien seura, Tutkas), 1999-.

Member of the *Foresight Steering Group* (Ennakointiluotsi), appointed by the Prime Minister's Office of Finland, 2015-.

Chairman of the systems analysis section of the *Scientific Advisory Board for Defence (MATINE, maanpuolustuksen tieteellinen neuvottelukunta in Finnish)*, 2013-2015; Vice-Chairman of the section in 2008-2012, member 2002-.

Member of the Steering Group the *Future Earth Finland – National Committee for Global Change Research*, 2014-2016.

Member of the panel on mathematics and statistics in the *Publication Forum of the Federation of Finnish Learned Societies*, 2014-2016.

Member of the Reference Group on severe accidents and risk analysis in the *Finnish Research Programme on Nuclear Power Plant Safety (SAFIR2018)*, 2015-2018.

Management Committee Member of the *COST Action IS1304 on Expert Judgment Network: Bridging The Gap Between Scientific Uncertainty and Evidence-Based Decision Making*, 2013-2017.

Management Committee Substitute Member of the *COST Action TD1207 on Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks*, 2013-2017.

President of the *Finnish Operations Research Society (FORS)*, 1999-2000 and 2010-2011.

Vice-President of FORS 2007-2009, member of the Board 1999-.

Member of the Reference Group on probabilistic risk analysis in the *Finnish Research Programme on Nuclear Power Plant Safety (SAFIR2014)*, 2011-2014.

European and Middle East regional representative in the *International Activities Committee of INFORMS* (The Institute for Operations Research and the Management Sciences), 2010-2011.

Member of the International Advisory Board of the *Helmholtz-Programme on Technology, Innovation, and Society (TIS)*, 2010-.

Member of the Management Committee of the *French-Finnish Association for Scientific Research and Technology* (Association Franco-Finlandaise pour la Recherche Scientifique et Technique, AFFRST), 2011-2015.

Vice-member of the Management Committee, 2008-2010.

Management Committee Member of the *COST Action IC0602 on Algorithmic Decision Theory*, 2008-2011.

Member of the Steering Group of the *Graduate School on Systems Analysis, Decision Making and Risk Management*, 2001-2013.

Member of the Steering Group of *Helsinki Institute of Science and Technology Studies (HIST)*, 2004-2009.

Vice-President 2008-2009.

Member of the Advisory Board of *VTT Technology Studies*, 2002-2005.

Member of the *High Level Expert Group on Technology Foresight*, appointed by the Directorate-General for Research of the European Commission, 2000-2001.

Member of the Scientific Advisory Group of the *Technological Scenarios Programme* at the Systems Analysis Department, RISOE Research Institute, Roskilde, Denmark, 2001-2002.



## 12. Scientific and societal impact of research

Author of 163 scientific papers of which 81 have been published in refereed international journals, including top (JUFO3, the Finnish ranking system) journals such as *Management Science*, *Operations Research*, *IEEE Transactions on Power Systems*, *Energy*, and *Decision Sciences*.

More than 5800 Google Scholar citations (January 2019).

Co-author and co-editor of the award-winning book A. Salo, J. Keisler and A. Morton (eds.) *Portfolio Decision Analysis: Improved Methods for Resource Allocation*, Springer International Series in Operations Research & Management Science, Vol. 162, Springer, New York, 2011.

Examples of journal articles include:

- E. Vilkkumaa, J. Liesiö, A. Salo and L. Ilmola-Sheppard, Scenario-based Portfolio Model for Building Robust and Proactive Atrategies, *European Journal of Operational Research* 266/1 (2018) 205-220.
- Kettunen, J. and A. Salo, Estimation of Downside Risks in Project Portfolio Selection, *Production and Operations Management* 26/10 (2017) 1839-1853.
- Mild, P., J. Liesiö and A. Salo, Selecting Infrastructure Maintenance Projects with Robust Portfolio Modeling, *Decision Support Systems* 77 (2015) 21–30.
- Käki, A., A. Salo and S. Talluri, Disruptions in Supply Networks: A Probabilistic Risk Assessment Approach, *Journal of Business Logistics* 36/3 (2015) 273–287.
- Vilkkumaa, E., A. Salo, J. Liesiö and A. Siddiqui, Fostering Breakthrough Technologies – How Do Optimal Funding Decisions Depend on Evaluation Accuracy? *Technological Forecasting and Social Change* 96 (2015) 173–190.
- Liesiö, J. and A. Salo, Scenario-Based Portfolio Selection of Investment Projects with Incomplete Probability and Utility Information, *European Journal of Operational Research* 217/1 (2012) 162-172.
- Salo, A. and A. Punkka, Ranking Intervals and Dominance Relations for Ratio-based Efficiency Analysis, *Management Science* 57/1 (2011) 200-214.
- Salo, A., V. Brummer and T. Könnölä, Axes of Balance in Foresight - Reflections from FinnSight 2015, *Technology Analysis & Strategic Management* 21/8 (2009) 989-1003.
- Könnölä, T., V. Brummer and A. Salo, Diversity in Foresight: Insights from the Fostering of Innovation Ideas, *Technological Forecasting and Social Change* 74/5 (2007) 608-626.
- Salmenkaita, J.-P. and A. Salo, Rationales for Government Intervention in the Commercialization of New Technologies, *Technology Analysis & Strategic Management* 14/2 (2002) 183-200.

## 13. Positions of trust in society and other societal merits

Member of the *Finnish Academy of Science and Letters*, 2017-.

Member of the *Finnish Academy of Technology*, 2003-.