

CURRICULUM VITAE

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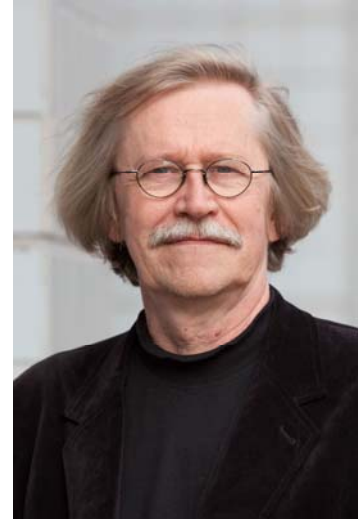


Photo: Suvi Kiviniemi 2010

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1 Studies

- Ph.D. dissertation: "Requirements Management Interface to Building Product Models", GPA of courses 4.0 out of 4.0. CIFE, Civil and Environmental Engineering Department, Stanford University, USA, 2005
- Post-graduate/doctorate studies on construction ICT. Royal Institute of Technology (KTH), Stockholm, Sweden 1996-1999
- Master of Science in Architecture with honours at Department of Architecture in Helsinki University of Technology (HUT), Finland, 1982
- First part of Master of Science in Architecture (equivalent to Bachelor of Architecture) at Helsinki University of Technology (HUT), Finland, 1973
- Matriculate Examination in Hyvinkään Uusi Yhteiskoulu with general grade of laudatur (maximum grade), 1970

2 Employment

- **The University of Salford**, School of Built Environment, UK since 2010: Professor of Digital Architectural Design, Head of Design Directorate, Member of SCRI (Salford Centre for Research and Innovation), Member of HaCIRIC (The Health and Care Infrastructure Research and Innovation Centre)
- **Insinööritoimisto Olof Granlund Oy** (Engineering Office), Helsinki 2008-2010: Vice President for Innovation and Development
- **VTT, Technical Research Centre of Finland**, Espoo 1996-2008: Research Professor of ICT for Built Environment 2006-2008, Chief Research Scientist 1999-2006, Senior Research Scientist 1996-1999. Research Coordinator of "ICT and Processes in Built Environment" at VTT 2008. Visiting fellow and PhD student at Stanford University, California 2003-2005.
- **Tampere University of Technology, Department of Architecture**, Tampere 1990-1996: CAD Lecturer. Responsibility to organize and implement CAD education in the Department of Architecture.
- **Studio Kivi Oy** (Architect Office), Helsinki 1990-1996: Managing Director and Owner
- **Arcadia Oy Arkkitehtitoimisto** (Architect Office), Joensuu 1990-1996: Partner
- **Arkkitehtitoimisto Arto Sipinen Ky** (Architect Office), Helsinki/Espoo 1973-1991: Office Manager 1977-1991, Project Architect 1973-1977
- **Keskus-Sato Oy Arkkitehtiosasto** (Architect Office), Helsinki 1972-1973: Assistant Designer
- **Walter Hebel KG** (Drafting Equipment Manufacturer), Kirchen, Germany, 1969: Assistant Mechanic (Hilfsmechaniker)

3 Awards and Grants

- FIATECH CETI (Celebration of Engineering & Technology Innovation) Outstanding Researcher 2008 Award (Granted in March 2009)
- Confederation of Finnish Construction Industries' Grant for Ph.D. studies 2002
- UICB Building Information Award with Hannu Penttilä 1996
- Medal of Merit from Association of Finnish Architects SAFA 1990
- Väinö Vähäkallio Foundation Award 1984

4 Information Technology R&D

4.1 R&D Projects at the University of Salford

- Traditional 2D and Building Information Modeling in Design: a Comparative Study for Manchester City Council, with Ricardo Codinhoto, 2011
- "Facility Design, Services and Operations" & "Tools for Engagement and Decision Making" in HaCRIC (The Health and Care Infrastructure Research and Innovation Centre) since 2010
- Member of SCRI (Salford Centre for Research and Innovation) since 2010

4.2 R&D Projects at Olof Granlund 2008-2010

- HosPilot - Intelligent Energy Efficiency Control in Hospitals, funded by EU, 2009-2010
- USA Business Model, funded by Tekes, 2009-2010
- Leader for preparations of "B³ – BIM-based Business" program for Strategic Centre for Research and Innovation for Built Environment (RYM-SHOK) 2009-2010

4.3 Projects at VTT, Technical Research Centre of Finland 1996-2008

- SCOBE - Sustainable Construction Operations Knowledge Base 2008
- RYM-SHOK - Research Agenda for Strategic Centre for Science, Technology and Innovation for the Finnish Real Estate and Construction Cluster 2008
- INBIS - Integrated Building Information Strategy 2008
- BOSS Roadmap - Business Oriented Software Strategy Roadmap for Ruukki Construction with Sami Kazi 2008
- Skanska BIM Strategy 2008
- Tekla White Paper "Information Modeling in Improved Management of Building Construction" with Stephen Fox 2007-2008
- CIB IDS - Integrated Design Solutions 2007-2008
- GPS II - Global Project Strategies Phase II, collaboration project with CRGP/Stanford University 2007-2008
- ECIPIP – Engineering and Construction Project Information Platform, collaboration project with CIFE/Stanford University since March 2007
- Product Models and Visualization in the of Building Performance and Lifecycle Management 2006-2008
- HospiTool - User-oriented Hospital Space with Esa Nykänen 2006-2008
- BuildNova - Building Innovation in the European Construction Sector with Sami Kazi 2006-2008
- FoundIT - Taking eCollaboration Techniques into Productive Use in the Construction Industry 2005-2008
- BIM Guidelines for Senate Properties leading the workgroup 2006-2007
- TUMA - BIM Research Capabilities at VTT with Tarja Mäkeläinen 2006-2007
- Skanska – Management of Client Requirements in Residential Production 2006-2007
- Strat-CON - R&D Strategies for ICT in Construction with Sami Kazi and Matti Hannus, 2006-2007
- TUOVI - Building Information Models and Visualization 2006-2007
- RASI - Product Code System for Building and Fitting Industries 2006-2007
- ISCIS - Integrated Supply Chain Information Systems 2005-2007
- VBE II - Virtual Building Environments Phase II 2005-2007
- Future Engineering Technology Roadmap for VTT 2006-2007

- GPS - Global Project Strategies, collaboration project with CRGP/Stanford University 2005-2006
- Analysis of the Norwegian Infrastructure Product Data Model System 2005-2006
- Design and Production Information Systems Strategy for Honkarakenne Oyj 2006
- INFRA 2010 - Roadmap for the Finnish Infra Sector with Pertti Lahdenperä 2005
- Virtual and Augmented Reality Roadmap for VTT as one of the authors 2005
- PREMISS - Requirements Management Interface to Building Product Models as a visiting fellow and Ph.D. student in Stanford University 2003-2005
- Programme Manager of the Finnish national Technology Programme "Vera - Information Networking in the Construction Process" 1997-2002, Programme consisted of 161 project with a total budget of 46.7 M€

4.4 Committee Memberships and Evaluation Tasks

4.4.1 Memberships in International Committees and Organizations

- FIATECH Academic Committee member since 2010
- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers): BIM Steering Committee member since 2009
- buildingSMART Korea, member of the Advisory Committee since 2009
- Salford University, member of the School of the Built Environment's Design Directorate Steering Committee 2009-2010
- Salford Centre for Research and Innovation, Salford University, UK, Chairman of the Steering Committee 2002-2009, member 2009-2010
- buildingSMART/International Alliance for Interoperability (IAI)
 - International Technical Advisory Group (TAG): member since 2005
 - International Technical Management Committee (ITM): Chairman 2005-2007
 - International Council (IC) and Executive Committee (ExCom): Chairman 1998-2000, Deputy Chairman 2000-2001, member 2005-2007
 - buildingSMART Nordic/IAI Nordic Chapter: Chairman 1996-1998 and 2000-2002, Business Manager 1999, member 2005-2008
- buildingSMART Finland/IAI Forum Finland: Chairman 1996-2002 and 2005-2008, member of the board 2008-2010
- BLIS - Building Lifecycle Interoperable Software Association
 - International Chairman 2001-2003
 - International Deputy Chairman since 2003
- CIB W078 & W102 Joint Conference in Sophia Antipolis, October 2011, Member of Scientific Committee
- ECPPM 2010 Conference in Cork, September 2010, Member of Scientific Committee
- iccbe²⁰¹⁰ Conference and the eg-ice10 Workshop in Nottingham, June 2010, Member of International Scientific Committee
- CIB IDS 2009 Conference "Improving Construction and Use through Integrated Design Solutions" in Helsinki, June 2009, Member of Scientific Committee
- EuropIA.12 Conference in Paris, March 2009, Member of Scientific Committee
- CIB focus area "Integrated Design Solutions" (IDS), Project Leader 2008
- CIFE Summer Program in Helsinki, June 2008, Member of the Organizing Committee
- Joint CIB W96 & W102 Conference in Helsinki, June 2008, Member of Scientific Committee
- IABSE 2008 Conference in Helsinki, June 2008, Member of Scientific Committee
- Build ICT 2008 Conference in Helsinki, June 2008, Member of the Organizing Committee

- EuropIA.11 Conference in Montreal, Canada, September 2007, Member of International Advisory Board
- CIB-W78 Conference in Maribor, Slovenia, June 2007, Member of the Scientific Committee
- ECPPM 2005 Conference in Valencia, Spain, September 2005, Chairman of the Scientific Committee, member of the Steering Committee
- EuropIA.10 Conference in Damaskus, Syria, September 2005, Member of International Advisory Board
- ENIA 2005 Conference, V Encontro Nacional de Inteligência Artificial in Brazil in July 2005, Member of the Technical Program Committee
- BuildingEnvelopes.org project, CDI (Center of Design Informatics), Harvard University, member of the Scientific Committee 2001-2004
- CIB-W78 Conference in Toronto, May 2004, member of the Technical Committee
- EIA9 9th EuropIA International Conference, Delft University of Technology and Istanbul Technical University, Istanbul October 2003, member of the International Advisory Board
- 10th ISPE International Conference on Concurrent Engineering: "4D/ nD modelling" Madeira Island, Portugal, July 2003, member of the International Scientific Committee
- 9th ISPE International Conference on Concurrent Engineering, Research and Applications (CE2002): "Mobile Computing in Engineering" Cranfield University, UK July 2002, member of the International Scientific Committee
- ECPPM 2002 (European Conference of Product and Process Modelling): "eWork and eBusiness in AEC" Portoroz, Slovenia September 2002, member of the Editorial Board and Program Committee
- CIB W78 Conference in Aarhus June 2002, member of the International Scientific Committee
- 2nd Worldwide ECCE symposium: "Information and Communication Technology in the Practice of Building and Civil Engineering", Espoo June 2001, member of the Technical Advisory Committee
- ILCDES 2000: "Integrated Life-Cycle Design of Materials and Structures", Helsinki May 2000, member of the Scientific Committee
- Representative of Tekes in the Industrial Advisory Board and Technical Advisory Board of CIFE 1999-2005

4.4.2 *International Evaluation Tasks*

- EPSRC's (The Engineering and Physical Sciences Research Council) 2nd Annual review of IMRCs (Innovative Manufacturing Research Centres) in UK: International Evaluator of Innovative Construction Research Centre at Reading University, January 2004
- FaceIT 2001: Competition of the Best Information Technology Application for Building and Facility Management in Sweden in 2001, member of the Jury
- FaceIT2000: Competition of the Best Information Technology Application for Building and Facility Management in Sweden in 2000, member of the Jury
- Finnish representative and evaluator in COMBINE 2 (Computer Models for Building Industry in Europe 1992-1995), Dublin 1995

4.4.3 *Official Representative in International Conferences*

- ENCI - Extended Nordic Construction IT Network meeting, Helsinki August 1998
- IAI representative in ISO SC4 (STEP) meetings, Orlando February 1998 and Bad Aibling June 1998
- Finnish representative in ISO TC10/SC8/WG16 "Preparation for new construction industry documentation standards development" 1998-1999

- IAI International Council and Technical meetings, International Chairman 1998-2002, Deputy Chairman 2000-2002, Nordic representative 1996-2002
- Finnish representative in ISO TC10/SC8/WG13 "CAD Technique - Use of Computers for preparation of construction documentation, 1994-1999
- Member of the Finnish delegation in an invited CAD-conference of Nordic Associations of Architects in (Nordiska IT-seminariet), Stockholm 1993

4.4.4 *Membership in National Technology Policy Development Workgroups*

- Leader of the "Integrated Business Processes for the Lifecycle of Built Environment" R&D program preparations for RYM-SHOK (Strategic Centre for Science, Technology and Innovation for the Finnish Real Estate and Construction Cluster) 2009
- Coordinator of the "Innovative Processes Enabled by ICT" research area in the RYM-SHOK preparation group 2008
- Digital Product Process (DTP) Program, member of the Preparation Steering Committee 2007
- Vision 2010 - The Finnish Real Estate and Construction Cluster's vision for 2010, member of the ICT workgroup 2001-2002 and 2005
- Construction Cluster Technology Program (SARA), member of the preparation workgroup 2001-2002
- INFRA Technology Program, member of the ICT workgroup 2001-2002
- VERA Technology Program, member of the preparation workgroup 1996-1997, Program Manager in the Steering Committee 1997-2002.

4.4.5 *Steering Committee Memberships in Finnish R&D Projects*

- Turva-BIM (Use of BIM in Safety Planning), VTT 2007-2008
- Artuos - Development and Deployment of BIM, Finnmap Consulting Oy 2007-2008
- Service Beyond Technology Strategic Theme Project, VTT 2005-2008
- Technology in Community Strategic Steering Group, VTT 2005-2008
- DigiBuild - Roadmap for ICT-based Opportunities in the Development of Built Environment, VTT 2007
- Product Code System for Building and Fitting Industries, Rasi 2006-2007
- AEC-FM software opportunities in the USA, VTT 2002-2003
- LifePlan - Service Life Planning from theory to practical processes, VTT 2002-2003
- Development of IFC R3 HVAC Domain Models in BS-8 co-operation, VTT 2002-2003
- PC-VR - PC technology Based Virtual Reality, VTT 2002-2003
- BS-VE - 3D Visualization of Building Services in Virtual Environment, HUT Telecommunications Software and Multimedia Laboratory 2001-2002
- ÄLMARA - Intelligent Building Materials Indicating Moisture and Emissions, VTT 2001-2002
- IFC Model Server, Secom Ltd and VTT 2001-2002
- PCC-IFC - Precast Concrete Construction IFC -project, Finnish Association of Construction Product Industries 2001-2002
- Roadmap for Intelligent IFC Product Model, VTT 2000-2002
- BS2000 - Product Data for Building Services Software, Satakunta Polytechnic: Development and Research Centre O'Sata 2000-2002
- 3D Visualization of Building Services in Virtual Environment, HUT Telecommunications Software and Multimedia Laboratory 2000-2001
- ICT Future Projects Committee of VTT 1999-2002
- MoPo - Models for the Construction Process, VTT 1999-2001
- IAI BS-7 - Building Performance Monitoring, VTT 1999-2001

- KAIMA - Knowledge Acquisition for IFC-Product Model Analysis, Solibri Inc. 1999-2000
- Transfer of Finnish Information Technology to Japanese and Chinese Construction Business Markets - pre-study, VTT 1999-2000
- Digital HVAC Product Information, LVI-tietokeskus 1999-2000
- Product Code System for Building and Fitting Industries - feasibility study, Rasi 1999-2000
- SPADEX - Spatial Data Exchange, YIT Oyj 1998-2001
- FinnST-1 - Finnish participation in the IAI ST-1 Steel frame construction -project, Finnish Constructional Steelwork Association (FCSA) 1998-2001
- Information Networks in Facility Management, Tampere University of Technology 1998-2000
- Construction IT Thesis, Tampere University of Technology 1998-2000
- RINET - Building Product Database, VTT 1998-1999
- Assistant for the International Technical Director in IAI, ToCoMan Oy 1998-1999
- VIRAPS - Virtual apartments, University of Art and Design Helsinki 1997-2001
- Development of the Data Management and Construction Process, Skanska Oy 1997-1999
- Project Manual for Construction Clients, The Finnish Association of Building Owners and Construction Clients (RAKLI) 1997-1999
- RATAS Manual for Structural Engineering, The Building Information Ltd (Rakennustieto Oy) 1997-1998
- TIMI - Benefits of IT in the Construction Industry, ToCoMan Oy 1997-1998
- IAI Forum Finland, VTT 1996-2002
- RATAS: Main Committee IT Expert Member 1994-2001

4.5 Publications and Presentations

4.5.1 *Doctoral Dissertation*

- Doctoral dissertation "Requirements Management Interface to Building Product Models", Civil and Environmental Engineering Department, Stanford University, USA 2005, UMI publication number 3162341, CIFE Technical report TR161, 2005 (URL: <http://cife.stanford.edu/online.publications/TR161.pdf>), VTT Publications 1235-0621, ISBN 951-38-6655-6 and VTT's online PDF 1455-0849, ISBN 951-38-6656-4 (URL: <http://www.vtt.fi/inf/pdf/>)

4.5.2 *Journal Papers*

- "Challenges for Integrated Design and Delivery Solutions" with Robert Owen, Robert Amor, Mark Palmer, John Dickinson, Clyde B Tatum, Abdul Samad Kazi, Matthijs Prins and Bill East in AEDM (Architectural Engineering and Design Management) Journal, IDDS Special Edition (10.3763/aedm.2010.IDDS1), November 2010, pp. 232-240
- "Engineering-centric BIM" with Chris Wilkins in ASHRAE Journal, Volume 50, No 12, December 2008, pp. 44-48
- "Building a Project Ontology with Extreme Collaboration and Virtual Design and Construction" with Ana Cristina Bicharra Garcia, John Kunz and Martin Ekström, Advanced Engineering Informatics, Volume 18, Issue 2, April 2004, Pages 71-83.
- Electronic Journal of Information Technology in Construction – ITcon: Surveys of IT in the Construction Industry and Experience of the IT Barometer in Scandinavia, with Rob Howard and Olle Samuelson. Vol. 3, pp. 47-59, <http://www.itcon.org/1998/4>, 1998
- Electronic Journal of Information Technology in Construction – ITcon: ISO DIS 13567 - The Proposed International Standard for Structuring Layers in Computer Aided

4.5.3 *International Keynote Presentations and Papers*

- SB2010 Finland Conference "Sustainable Community": Keynote "BIM in Evaluation and Management of Sustainability" with Erik Bichard. Extended abstract in Conference proceedings ISBN 978-951-758-506-4, pp.4-5, Espoo September 2010
- CIB IDS 2009 Conference "Improving Construction and Use through Integrated Design Solutions": Keynote "A Survival Strategy - How to Integrate Design Systems and Processes in a Fragmented Industry?" extended abstract in Conference proceedings ISBN 978-951-758-506-4 pp. 9-11, Helsinki June 2009
- Second London International Conference on buildingSMART. Two keynote presentations (Government & Industry Workshop and Conference): Keynote presentation "Finland's Strategy to Transform the Competitiveness of its Construction Industry 10 Years On", London June 2008
- bibs IT/CAD Conference: Keynote presentation "Integrated BIM: leading edge or bleeding edge? Some Finnish experiences and views", Odense October 2007
- International Symposium on Building Information Modelling - the Next Big Change in Construction: Keynote presentation "IDS & BIM, 10 Years' Perspective: Dream and Reality", Brussels October 2007
- ASCE, CIB-W78 & ICCCB Joint International Conference on Computing and Decision Making in Civil and Building Engineering Keynote Presentation: "Ten Years of IFC Development; Why are we not yet there?", Montreal June 2006
- CRC Construction Innovation Conference "Clients Driving Innovation: Moving Ideas Into Practice": Keynote paper "Adopting Innovation: Building Information Models in the Finnish Real Estate And Construction Cluster", Gold Coast March 2006, published in the Conference proceedings by CRC Cooperative Research Centre for Construction Innovation, pp. 15-23, 2006
- eSmart Conference: Keynote presentation with John Mitchell and Stefan Larsson "From 2D Projections to Product Model Information", Manchester November 2002
- Australasian Chapter IAI Seminars: Four keynote presentations "Changing Industry Culture - The Effects of ICT on the Construction Industry" in Sydney, Auckland, Brisbane and Melbourne November 2002
- Japan IAI Seminar: Keynote presentation "Interoperable ICT tools in Real Construction Projects - Finnish Experiences of New Processes", Tokyo October 2002
- Construction Plus E-Construction Conference "Priceless Objects": Keynote presentation "Finnish ICT Strategies for the Construction and Real Estate Cluster", London February 2002
- ECAADE 2001 Conference: Keynote presentation "Information Sharing on Internet in AEC/FM Processes", Helsinki August 2001
- Annual Spring Conference of Architectural Institute of Korea: Keynote presentation "IT in Collaborative Design and Construction Process", Seoul April 2001
- IAI Korea Chapter's Industry Day: Keynote presentation "Information Sharing in Collaborative Design and Construction Process", Seoul April 2001
- 2nd International Symposium on Prefabrication: Keynote paper: "Integrated Processes, Software Interoperability and Information Networking in the Construction Industry". Due to late invitation the paper was distributed separately in the conference. Helsinki May 2000
- Nordbygg Exhibition, Seminar for Building Owners: Keynote presentation "Vera - Information Networking in the Construction Process", Stockholm March 2000
- IAI Road Show: Three keynote presentations "Vera - Information Networking in the Construction Process" in Melbourne, Sydney and Brisbane February 2000

- CAAD Futures Conference: Keynote paper: "Software Interoperability in the AEC-FM Industry". Due to late invitation the paper was distributed separately in the conference. Atlanta June 1999
- 8th International Conference on Durability of Building Materials and Components: Keynote paper: "IAI and IFC - State-of-the-Art". Conference Proceedings "Durability of Building Materials and Components 8", Volume 4 "Information Technology in Construction", ISBN 0-660-17743-9, pp. 2157-2168. Vancouver June 1999
- Japan A/E/C Systems Show: Keynote presentation "Need for Global Standards in AEC-FM Industry", Tokyo September 1998
- ACS Exhibition: Keynote paper: "Online and in the Net". Due to late invitation the paper was distributed separately in the conference. Frankfurt November 1996

4.5.4 *International Invited Presentations and Papers*

- SCRI Forum "How Design Change Through BIM?": Presentation "BIM Guidelines and Impacts of Integrated BIM in Design Process", Salford December 2010
- NCC Nordic CEOs Annual Meeting: Invited presentation "VDC/BIM Status Overview", Helsinki November 2010
- Workshop and Seminar of the Estonian Group for Lean Construction "Building Information Modelling in Construction Education": Invited participation in workshop and concluding comments of the seminar, Tallinn November 2010
- SCRI Forum "Clients and BIM: How to realise the benefits?": Presentation "Clients' BIM Requirements", Salford October 2010
- Global Summit on Sustainable Built Environment "Better Building Better World": Invited presentation "BIM/VDC: Adoption, Policy, Standards", Shanghai August 2010
- LEAF 2010 (10th Annual Leading European Architects Forum): Invited member in the panel discussion "Architecture for the Future", London September 2010
- Symposium "Agenda for 21st Century Architectural Education: Furthering the Debate": Invited presentation "Barriers to Collaboration in Practice – How Might Architectural Education Respond to a Collaboration Agenda?", Manchester June 2010
- Lecture Series "BIM Management and Processes" at Aarhus School of Architecture: Invited presentation "Challenges of Interoperable BIM in and between Organizations", Copenhagen January 2010
- CIFE Summer Program 2009: Invited presentation and moderator in the Session "Energy Modeling, Analysis and Performance in Design and Practice", Washington DC June 2009
- International Symposium "Distributed Intelligence in Design": Invited presentation "The Effects of Integrated BIM in the Process and Business Models", Salford University May 2009
- CIFE Summer Program 2008: Invited presentation "Practice and Vision for VDC/BIM to Support Integration and Automation", Helsinki June 2008
- International buildingSMART Forum: Invited presentation "BIM and IFC in Finland - State-of-the-Art and Some Case Studies", Tokyo April 2008
- International Workshop on Collaborative Human Futures - A New Design Paradigm: Invited paper: "Potential Obstacles to Use BIM in Architectural Design" with Martin Fischer. Workshop Proceedings pp. 53-65, Hong Kong Polytechnic University, Hong Kong November 2007
- Health Capital Assets Managers Consortium Conference: Invited presentation "Life Cycle Management of Information from Brief to Commissioning and Management", Brisbane November 2007

- International buildingSMART Forum, Queensland Government Session: Invited presentation "Integrated BIM in Finland Senate Properties' BIM requirements", Brisbane November 2007
- International Workshop on Lean Construction and Automation in Infra Sector: Invited presentation "Model-based Information Systems", Berkeley University April 2007
- Virtual Futures for Design and Construction Workshop: Invited Presentation "Integrated Building Information Models as Virtual Prototypes", Salford University September 2006
- IAI UK Annual Conference 2006: Adopting Innovation: Invited presentation "BIM & IFC in Finland", London June 2006
- 15th Annual Workshop of The Workplace Network: Invited presentation "VBE/BIM Status Overview", Helsinki May 2006
- CRC Construction Innovation Breakfast Seminar: Invited presentation "Innovation & Efficiencies in Construction Project Delivery and Property Management through Information and Communication Technologies and Building Information Models", Melbourne March 2006
- CSIRO Requirements Management Workshop: Invited presentation "Requirements Management Interface to Building Product Models", Melbourne March 2006
- University of New South Wales: Invited presentation "IFC for Open Collaboration - a Case Study of the ProIT Project", Sydney March 2006
- University of New South Wales: Invited Faculty Lecture "What Is the Role of BIM in Education for Professionals in the Built Environment?", Sydney March 2006
- University of Queensland: Invited presentation "Building Information Models", Brisbane March 2006
- Executive CRC Construction Innovation Briefing: Three invited presentations "Adopting Innovation - Building Information Models in the Finnish Real Estate and Construction Cluster", CRC Construction Innovation and CSIRO, Brisbane; RAI Member Seminar, Sydney; John Holland Group Executive Briefing, Melbourne - March 2006
- Executive Seminar "New Paradigm in Property Development: Healthy, Comfortable and Ecological Buildings in a Modern City": Three invited presentations "Management of Customer Requirements in Product Model Environment", Abu Dhabi, Dubai and Bahrain, October 2005
- International Workshop on Lifetime Engineering of Civil Infrastructure: Invited paper "Integrated Product Models in Life-Cycle Evaluation and Management of the Built Environment", Yamaguchi University, Ube, Japan, October 2005
- GCADS 2004, Computer Aided Requirement Management Workshop: Invited paper "Room Related Requirements Model Concept in Building Product Model Environment" with Martin Fischer. Workshop proceedings, pp. 3-21. Carnegie Mellon University, Pittsburgh July 2004
- CIFE Summer Program 2004: Invited presentation in the panel session "Owners 2010 Vision & Strategic Plan", Stanford University, Palo Alto June 2004
- AIA Conference "Building Connections": Invited presentation "Global Perspectives on Interoperability and Data Exchange Standards", Washington DC April 2004
- Finnish Software Day in CIFE: Invited presentation "Overview of the Finnish AEC/FM Software Market", Stanford University, Palo Alto April 2004
- ProIT Seminar 2004: Invited presentation "Requirements Management Interface to Product Models", Helsinki January 2004
- AIA Conference "Connecting the Dots": Invited presentation "Virtual Building Environments - Integrating Knowledge, Data, and Software for Multidisciplinary Design, Analysis, and Visualization" with Professor Martin Fischer and Dr. Vladimir Bazjanac, San Francisco October 2003

- AIA Conference "Connecting the Dots": Invited presentation "Federal Agency Initiatives and International Case Studies in 3D Object Modelling and XML Schema Development: 3D Object Modelling and XML Development" with Stephen Hagan, Calvin Kam and Bambi Tran, San Francisco October 2003
- IAI Industry Day 2003: Invited presentations "VERA - Information Networking in the Construction Process & Integrated Finnish Construction" and "BLIS – Design Coordination using IFC Project Models" with Yoshinobu Adachi, Dianne Davis, Robin Drogemuller, Jan Karlshoej and Kari Karstila, Washington DC May 2003
- A/E/C Systems 2002 "Ripple Effect": Invited Panel Session "Global Networking Address", Anaheim June 2002
- IT Construction Best Practice Conference: Invited presentation "Sharing of Information - an International View", London May 2002
- EFCA 2002 Conference "Information Society - New Challenge for Consulting Engineers": Invited presentation "ICT and R&D for Construction and Life Cycle Management", Helsinki May 2002
- AIA Conference "Six Degrees of Collaboration": Invited presentation "Collaboration Technology in Design, Construction and Facility Management", Washington DC April 2002
- EU Workshop "New Ways of Working": Invited presentation "Clustering Multidisciplinary Research", Brussels January 2002
- RECI 2001, Real Estate, Construction and the Internet Conference: Invited presentation in the panel session "New Business Models for the Building Industry", CDI/Harvard University, Cambridge November 2001
- Interop AEC+FM 2001 Conference: Invited presentation "Overview of Finnish Approach to ICT R&D for AEC/FM Industry", Sydney October 2001
- ICIS 2001 Conference: Invited presentation "Finnish ICT Strategies in Technology Development Programs for the Construction and Real Estate Cluster", Helsinki June 2001
- Nordic IT workshop "Udvikling af Byggeriet" [Development of Construction]: Invited presentation "Information Networking in the Construction Process", Copenhagen March 2001
- International Symposium "New Technologies in Architecture: Digital Design and Manufacturing Techniques": Invited presentation "Information Sharing on Internet in Collaborative Design and Construction Process", Harvard University October 2000
- IAI International Business Briefing "Building Design, Construction and Operation: Leveraging Technology For Business Advantage": Invited presentation "Industry and Government Partnership: Finland's Competitive Edge", London October 2000
- CIFE Summer Program 2000: Invited presentation "What you can expect of the IFCs", Stanford University, September 2000
- ILCDES 2000 Conference: Invited presentation "Software Interoperability and Information Networking in the Construction Industry", Helsinki June 2000
- Construction IT members meeting: Invited presentations "Vera - Information Networking in the Construction Process" and "Rembrand - A Technology Program for Real Estate Business and Services", Loughborough May 2000
- Japan CAD Data Exchange Consortium: Invited presentation "European and Finnish Construction R&D projects", Tokyo September 1998
- Malaysian IAI Seminar: Invited presentation "IAI Nordic Chapter & Vera Program", Johor Bahru October 1997

4.5.5 *Refereed Papers in International Conferences*

- SB08World Sustainable Building Conference: Paper "Sustainable building and BIM" with Tarja Häkkinen. Conference proceedings by CSIRO, Melbourne September 2008
- ECPPM 2008 Conference eBusiness and eWork in AEC: Paper "IFC Certification Process and Data Exchange Problems" Conference proceedings ISBN 978-0-415-48245-5, pp. 517-522, Sophia Antipolis September 2008
- Joint CIB-W96/102 Conference "Improving Performance": Paper "Need for integration - CIB's new focus area, Integrated Design Solutions, IDS". Extended abstract in the Conference Proceedings ISBN 978-951-758-492-0, pp. 71-72, Helsinki June 2008
- Joint CIB-W96/102 Conference "Improving Performance": Paper "Putting the Client in the Back Seat – Philosophy of the BIM Guidelines" with Tiina Koppinen, Jun Kojima, Tarja Mäkeläinen, Mirikka Rekola, Jiri Hietanen, and Heikki Kulusjärvi. Extended abstract in the Conference Proceedings ISBN 978-951-758-492-0, pp. 93-94 and full paper in the Conference CD, Helsinki June 2008
- CIB-W78 2007 Conference - Bringing ITC knowledge to work: Paper "Reduction, Simplification, Translation and Interpretation in the Exchange of Model Data" with Vladimir Bazjanac. Conference Proceedings ISBN 978-961-248-033-2, pp. 163-168, Maribor June 2007
- Joint 2006 CIB W065/W055/W086 Symposium - Construction in the XXI century: Local and global challenges: Paper "A road map for the development of transport infrastructure management" with Pertti Lahdenperä and Leena Korkiala-Tanttu. Conference proceedings. Rome October 2006
- CIB-W78 Conference: Special workshop "Managing the Multiple Model Space" introduction "Integration of Multiple Product Models" with John Haymaker. CIB publication 304, ISBN 3-86005-478-3, pp. 35. Dresden July 2005
- CIB-W78 Conference: Paper "Integration of Multiple Product Models: IFC Model Servers as a Potential Solution" for a special workshop "Managing the Multiple Model Space" with Martin Fischer and Vladimir Bazjanac. CIB publication 304, ISBN 3-86005-478-3, pp. 37-40. Dresden July 2005
- CIB-W78 Conference: Paper "Multi-model Environment: Links between Objects in Different Building Models" with Martin Fischer and Vladimir Bazjanac. CIB publication 304, ISBN 3-86005-478-3, pp. 277-284. Dresden July 2005
- ECPPM 2004 (European Conference of Product and Process Modelling): Paper "Pilot implementation of a requirements model" with Martin Fischer. Conference proceedings "eWork and eBusiness in Architecture, Engineering and Construction", Balkema. ISBN 04 1535, pp. 117-125. Istanbul September 2004
- ICCCBE-X (10th International Conference on Computing in Civil and Building Engineering): Paper: "Requirements Management Interface to Building Product Models" with Martin Fischer. Conference proceedings, ISBN 3-86068-213-X, abstract on page 252, full paper on the conference CD. Weimar June 2004
- First International nD Workshop: Paper "Requirements Management with Product Models" with Martin Fischer. Conference proceedings, pp. 25-29. Manchester January 2003
- CIB-W78 Conference: Paper "The latest developments in communications and e-commerce - IT Barometer in 3 Nordic countries" with Rob Howard and Olle Samuelson. Conference proceedings volume 2, ISBN 87-90078-34-9, pp. 149-156. Aarhus June 2002
- CIB-W78 Conference: Paper "Monitoring a National Construction IT Program" with Jarmo Laitinen, Mika Lautanala and Reijo Kangas. Reykjavik July 2000
- International Facility Management Conference: Paper "Information Management for User-orientated Real Property Industry" with Mikko Hyytinen and Kauko Tulla, pp. 23-27, Moscow 1999

- ECCE Symposium: Paper "ISO 13567 - The proposed international standard for structuring layers in computer aided building design" with Bo-Christer Björk and Kurt Löwnertz. Conference proceedings "Computers in the Practice of Building and Civil Engineering" Association of Finnish Civil Engineers RIL, ISBN 951-758-378-8, pp. 85-89. Lahti September 1997
- CIB-W78 Conference: Paper "VERA - Information Networking in the Construction Process" with Mika Lautanala and Kari Kaitainen. CIB conference proceedings 208. ISBN 086-443-636X, pp. 207-214. Cairns July 1997
- CIB-W78 conference: Paper "ISO 13567 - the Proposed International Standard for Structuring Layers in Computer Aided Building Design" with Bo-Christer Björk and Kurt Löwnertz CIB conference proceedings 198: Construction on the Information Highway, ISBN 961-6167-11-1, pp. 77-88. Bled June 1996
- International ArchComp95 seminar: Paper "Design Integration in the ICL Finnish Headquarters Project", Espoo September 1995

4.5.6 Books

- Rakennus CAD –kirja Hannu Penttilän kanssa, Rakennustieto Oy [*CAD in the Building Design with Hannu Penttilä, Building Information Ltd*] ISBN 951-682-378-5, 1995

4.5.7 Chapters of Books

Refereed papers which are published as chapters of the conference proceedings are listed in Section 4.5.5.

- Chapter "The Effects of Integrated BIM in Processes and Business Models" in "Distributed Intelligence in Design", edited by Tuba Kocaturk and Medjdoub Benachir. Wiley Blackwell, ISBN 978-1-4443-3338-1, pp. 125-135, 2011
- Chapter "Potential Obstacles to Use BIM in Architectural Design" in "Collaborative Construction Information Management", edited by Geoffrey Shen, Peter Brandon, Andrew Baldwin. Taylor & Francis, ISBN 978-0-415-48422-0, pp. 36-54, 2009
- Luku "Internet rakentamisessa" teoksessa "Rakentajan kalenteri 2001" [*Chapter "Internet in the Building Industry" in "Builder's Calendar 2001"*] Rakennustieto Oy, ISSN 0355-550 X, pp.793-799, 2000
- Chapter "Information Sharing on the Internet in Collaborative Design and Construction Process" in "New Technologies in Architecture; Digital Design and Manufacturing Techniques", Harvard University, Graduate School of Design, ISBN 0-935 617-55-8, pp. 53-57, 2000
- Luku 14 "CAD ja puu" teoksessa Eero Paloheimo (toim.) Metsä ja puu IV - Puinen rakennus [*Chapter 14 "CAD and Timber" in Eero Paloheimo (ed.) "Forest and Tree IV – Wooden Building" by Building Information Ltd*] Rakennustieto Oy, ISBN 951-682-527-3, pp. 264-281, 1999
- Luku "CAD-piirustusten kuvatasosuositus" teoksessa "Rakentajan kalenteri 1999" [*CAD Layering Recommendation in "Builder's Calendar 1999"*] Rakennustieto Oy, ISSN 0355-550 X, pp.176-178, 1998
- Liite "Arkkitehdin raportti tiedonsiirrosta. Pilottina ICL Oy:n toimitalo" teoksessa Vahala, P. (toim.) "Talo 90. Tiedonsiirto kiinteistönpidossa. Rakennuksen tuotemallin siirtäminen kiinteistöpitomalliksi" [*Appendix "Report of the architectural design data transfer. Case ICL Finnish Headquarters" in "Data Transfer in Facility Management"*] Rakennustieto Oy, ISBN 951-682-466-8, Appendix 1, 41 pages, 1997
- Useita lukuja teoksessa "Arkkitehdin RATAS käsikirja" [*Several sections in "RATAS Manual for Architects"*]. Rakennustieto Oy, ISBN 951-682-352-1, pp. 24-35, 45-55, 63-64, 69-79, 84-90, 1995
- Luku "Tiedonsiirron organisointi" teoksessa "RATAS tiedonsiirtosuositus ja tuotemalliohje" [*Chapter "Organization of the Data Transfer" in "RATAS*

Recommendation for the Data Transfer and Guide for the Product Modelling]
Rakennustieto Oy, ISBN 951-682-351-3, pp. 35-41, 1995

- Luku "CAD arkkitehdin työssä" teoksessa CAD/CAM 89 - Tietokoneavusteisen suunnittelun ja valmistuksen vuosikirja [*Chapter "CAD in Architectural Design" in "CAD/CAM 89 – Yearbook of Computer Aided Architectural Design and Manufacturing*], Makromakko Oy, ISBN 952-9513-00-3, pp. 105-109, 1989

4.5.8 Technical Reports and Working Papers

- Review of the Development and Implementation of IFC compatible BIM, a technical report with Väino Tarandi, Jan Karlshøj, Håvard Bell, and Ole Jørgen Karud for the ERAbuild funders in Denmark, Finland, Norway, Sweden and the Netherlands. Published at <http://www.deaca.dk/publicationsconstruction/76491/1/0>, 2008
- Support for Building Elements in the IFC 2x3 Implementations based on 6th Certification Workshop Results in May 2007, a technical report of IFC certification problems. Published as an internal report in the IAI/buildingSMART community, 2007
- Requirements Management and Critical Decision Points with Tiina Koppinen, VTT Working Papers 74, ISBN 978-951-38-7153-6 and ISSN 1459-7683 (electronic), 2007
- "ICT-barometri 2007 - ICT:n käyttö Suomen rakennusalalla" ["ICT barometer 2007 - Use of ICT in the Finnish Construction Industry"] VTT report for "SARA - Value Networks in Construction 2003-2007" Technology Program by Tekes. Finnish report available at http://cic.vtt.fi/buildingsmart/index.php?option=com_docman&task=doc_download&gid=24&Itemid=85 and English presentation of the results at http://cic.vtt.fi/buildingsmart/index.php?option=com_docman&task=doc_download&gid=26&Itemid=85, 2007
- InfraPDM Infra-alan tuotetietomalliselvitys – Yhteenvetoraportti [*Product Model Study for the Infra Sector – Conclusions, available only in Finnish*], with Juha Hyvärinen, Janne Porkka, Markku Pienimäki, Leena Korkiala-Tanttu, and Tarja Mäkeläinen. VTT Net Publications (<http://www.infra2010.fi/Aineisto/tuotemalliselvitys.pdf>), 2006
- InfraPDM Report 1: Objectives and Ramifications of Product Model Based System in Finnish Infra Sector, with Juha Hyvärinen, Janne Porkka, Markku Pienimäki, Leena Korkiala-Tanttu, and Tarja Mäkeläinen. VTT Net Publications (<http://www.infra2010.fi/Aineisto/Report%201.pdf>), 2006
- InfraPDM Report 2: Quadri General - Properties of Quadri Product Model Concept. Concept Usage in Norway, with Juha Hyvärinen, Janne Porkka, Markku Pienimäki, Leena Korkiala-Tanttu, and Tarja Mäkeläinen. VTT Net Publications (http://www.infra2010.fi/Aineisto/Report2_Quadri_General.pdf), 2006
- InfraPDM Report 3: Technical Evaluation of Quadri Concept for Finnish Conditions, with Juha Hyvärinen, Janne Porkka, Markku Pienimäki, Leena Korkiala-Tanttu, and Tarja Mäkeläinen. VTT Net Publications (<http://www.infra2010.fi/Aineisto/Report%203.pdf>), 2006
- Fallacies of Fast Track Tactics: Implications for Organization Theory and Project Management, with Timothy N. Carroll, Richard M. Burton and Raymond E. Levitt. Stanford University, CRGP Working Paper 005, 2004
- PREMISS - Requirements Management Interface to Building Product Models: Problem Definition and Research Issues, with Martin Fischer, Vladimir Bazjanac and Boyd Paulson. Stanford University, CIFE Working Paper WP092, 2004
- "Building a Project Ontology with Extreme Collaboration and Virtual Design and Construction" with Ana Cristina Bicharra Garcia, John Kunz and Martin Ekström, Advanced Engineering Informatics, Volume 18, Issue 2, April 2004, Pages 71-83. Published also at Stanford University, CIFE Technical report TR152, 2003

4.5.9 Papers in Finnish Conferences and Seminars

List does not include the presentations which did not include a published paper; approximately 10-20 Finnish presentations of Construction ICT, BIM and Interoperability annually after 1997. *English name in italic is just a translation of the Finnish title; the material exists only in Finnish.*

- Vera teknologiaohjelma - Tietoverkottunut rakennusprosessi [*VERA - Information networking in the construction process*] teoksessa: Santala, J. & Järvinen, J. (toim.) Moniulotteisen ympäristömmen geometrinen mallintaminen ja visualisointi. Maanmittaustieteiden päivät, Espoo marraskuu 1997. Maanmittaustieteiden Seura ry, no 34. ISBN 951-22-3817-9, pp. 58-73
- Rakennuttajapäivä 1995: "Arkkitehdin tuotetietomalli kiinteistönpidossa" [Building Developer's Annual meeting 1995: "Architect's Product Data Model in Facility Management"] Helsinki 1995
- CAD-SAFA:n kevätseminaari 1991: "AutoCAD luovan suunnittelun apuvälineenä" [1991 Spring Seminar of the CAD Group of Association of Finnish Architects: "AutoCAD as a Tool in the Creative Process"] Helsinki 1991
- CAD-SAFA:n syysseminaari 1990: "AutoCAD-käyttäjän oma sovelluskehitys" [1990 Autumn Seminar of the CAD Group of Association of Finnish Architects: "AutoCAD User's Own Application Development"] Helsinki 1990
- CAD-SAFA:n kevätseminaari 1990: "AutoCAD – ArchiCAD, kaksi järjestelmää" [1990 Spring Seminar of the CAD Group of Association of Finnish Architects: "AutoCAD – ArchiCAD, two systems"] Helsinki 1990
- CAD/CAM yhdistys 1987: "AutoCAD-käyttäjän puheenvuoro" [*Seminar of the CAD/CAM Association: "Address of an AutoCAD user"*] Helsinki 1987

4.5.10 International Articles

- Article "It's Getting Better - a review of the development and implementation of IFC compatible BIM", Times Journal of Construction and Design 03/2008, pp.38-40
- Article "Informationsvernetzung in der Bauindustrie" & "Information Networking in the Construction Industry", Betonwerk + Fertigteile Technik / Concrete Plant + Precast Technology 7/2000, ISSN 0373-4311, pp. 56-65
- Article "Finnish Vera Programme", IAI Japan Chapter News Letter 1/1998

4.5.11 Finnish Articles and Interviews

- Haastattelu "Arkkitehtikoulutuksen yhteys rakennetun ympäristön muuhun opetukseen säilytettävä" [*The connection between architectural and other education for built environment must be preserved*], Arkkitehti uutiset 10/2010, sivut 10-12
- Haastattelu "Rakennusalallakin tarvitaan nörttitaitoja" [*Interview "Building Industry Needs ICT Nerds Too"*] Block 2008
- Haastattelu "Mallinnus tullut jäädäkseen" [*Interview "Modelling is here to stay"*], SKOL jäsenlehti 11/2007
- Haastattelu "Tietomallivaatimukset talotekniikan suunnitteluun" [*Interview "BIM Requirements for the Building Services Engineering"*] Projekti uutiset 09/2007
- Artikkelit "Tietomallivaatimukset" [*Article "BIM Requirements"*] Projekti uutiset 06/2007
- Haastattelu "Senaatti alkaa vaatia tuotemallipohjaista suunnittelua" [Interview "*Senate Properties Will Start to Require BIM-based Design"*], Rakennuslehti 12/2006
- Haastattelu "Ohjelmistotalot kärkkyyvät infran tuotemalliapajia" [*Article "Software Vendors Are After the BIM Markets in Infra Sector"*], Rakennuslehti 11/2006
- Haastattelu "Asiakasvaatimukset kytketään rakennuksen suunnitelmiin" [*Article "Client Requirements Linked to the Building Design"*], Skanskan asiakasesite Tuotemallintaminen – Virtuaalinen ja varma tapa toimia 2005

- Haastattelu "Uusi toimintamalli yhdistää rakennusten vaatimukset suunnitteluun" [*Interview "New Process Links Buildings' Requirements to the Design Models"*], Rakennuslehti 24/2005
- Haastattelu "Tutkijanvaihto toi puhtia rakennussuunnittelun tutkimukseen" [*Interview "Research Exchange Accelerated Research of the Building Design"*] Tekniikan näköalat (Tekes) 4/2003
- Artikkelit "Rakennuksen tuotemalli tiedonsiirron välineenä – kaupallinen läpimurto alkamassa" [*Article "Building Product Model as the Media for Information Transfer – Commercial Break-through Starting"*] with Bo-Christer Björk, Rakennuslehti 11/2002
- Haastattelu "Kohti parempaa informaation hallintaa" [*Interview "Towards Improved Information Management"*] Rakennusteollisuus RT 3/2002
- Haastattelu "ScaleCAD yhdistää elementtisuunnittelun ja tuotannon toimivaksi kokonaisuudeksi" [*Interview "ScaleCAD links the design and manufacturing processes of the pre-casted concrete facades"*] Viides elementti, 2/2002
- Artikkelit "Tietoyhteiskunnan vaikutukset kiinteistö- ja rakennusallalla" [*Article "The Impact of Information Society into the Real Estate and Construction Industry"*] Valokynä lokakuu 2001
- Artikkelit "IFC-standardi ja sen käyttösovellukset" [*Article "IFC Standard and Its Applications"*] Rakennustekniikka 1-2/2001
- Artikkelit "Suunnittelun ja tuotannon uudet tietotekniset työkalut ja sovellukset" [*Article "The New IT Tools and Applications for Design and Production"*] Rakennustekniikka 1-2/2001
- Artikkelit "Kiinteistö- ja rakennusalan tietotekniikan tulevaisuus" [*Article "The Future of Information Technology for Real Estate and Construction Industry"*] VTT Rakennustekniikan asiakaslehti maaliskuu 2000
- Haastattelu "Tietotekniikalla saadaan talon vaiheet talteen" [*Interview "Information Technology Helps to Store the History of the Building Process"*] ReTee (VTT Rakennustekniikka) maaliskuu 2000
- Haastattelu "Asenteet jarruttavat tietotekniikan hyväksikäyttöä" [*Interview "Construction Industry is Building Networks on Money"*] Kauppalehti Extra toukokuu 2000
- Artikkelit "Tietojen yhteiskäyttöisyys toteutumassa" [*Article "Data Interoperability Is Becoming to a Reality"*] Kauppalehti Extra toukokuu 2000
- Artikkelit "Tietoverkottunut rakentaminen" [*Article "Information Networks in Construction"*] Rakennuslehti 17/1999
- Haastattelu "Vera luo työkaluja rakentamisen osapuolten tiedonsiirtoon" [*Interview "Vera Creates Tools for Information Exchange in the Construction Process"*] Rakennuslehti 5/1999
- Interview "Vera breaks down the walls for IAI", Views on Finnish Technology (Tekes) 1999
- Haastattelu "Rakennusala tarvitsee tiedonsiirron standardeja" [*Interview "Construction Industry Needs Standards"*] Locus (Rakli) 3/1998
- Artikkelit "Vera - Tietoverkottunut rakennusprosessi teknologiaohjelma 1997-2002" [*Article "Vera – Information Networking in the Construction Industry"*] Projektitoiminta 1/1998
- Haastattelu "Tietoverkottuminen himottaa rakennusallaa" [*Interview "Construction Industry Interested in the Information Networks"*] Net (ICL) 1/1998
- Artikkelit "Internet rakennuttamisen työvälineenä" [*"Internet as a Tool for Building Owners"*], LOCUS (Rakli) 1/1997, s. 48-50
- Artikkelit "ISO kuvatasostandardi" [*Article "ISO CAD layering" in the Finnish Journal of CAD/CAM and Computer Graphics*] Valokynä 1/1997, ISSN 0780-0843, s. 4-6.

- Artikkelit "IAI ja IFC - rakennusalan uusi standardi" [*Article "IAI and IFC - the new standard of IT in building industry" in the Finnish Journal of CAD/CAM and Computer Graphics*] Valokynä 1/1997, ISSN 0780-0843, s. 16-18
- Artikkelit "IAI ja IFC - rakennusalan tietotekniikan uusi perusta" [*Article "IAI and IFC - the new foundation of IT in building industry"*]. Rakennuslehti 29/1996, ISSN 0033-9121
- Haastattelu "CAD unohdettu arkkitehtien koulutuksessa" [*Interview "CAD Has Been Ignored in the Architectural Education"*] Rakennuslehti 6/1996
- Haastattelu "Tuotemalli helpottaa suunnittelun integrointia" [*Interview "Product Model Makes Integrated Design Easier"*] Rakennuslehti 9/1995
- Artikkelit "Arkkitehdin tuotemalli" [*Article "Architect's Product Model"*] Rakennuttaja 2/94, pp. 14-17
- Several other articles about CAD and project integration in the Finnish magazines and newspapers since 1987

4.5.12 Lecture Handouts

- "Tilatietojen hallinta AutoCAD- ja Excel-ohjelmilla" ohjelmistojen käyttöohje [*"Management of Room Program Using AutoCAD and Excel", software manual*] 1998
- AutoCAD 3D luentomoniste, Tampereen teknillinen korkeakoulu, TKK ja AEL [*AutoCAD 3D Modelling lecture handout, Tampere University of Technology (TUT), Helsinki University of Technology (HUT) and AEL*] 1993
- AutoCAD luentomoniste, Tampereen teknillinen korkeakoulu, TKK ja AEL, useita versioita 1991-1995, liite vuodelta 1993 [*AutoCAD lecture handout, TUT, HUT and AEL, several editions 1991-1995, appendix from TUT 1993*]

4.5.13 Published Official and Company Standards

In all official standards published by the Building Information Ltd (Rakennustieto Oy), Arto Kiviniemi has produced the main content of the standard and participated in the approving workgroup.

- BIM Guideline for Senate Properties, 9 volumes in English and in Finnish, as the Leading Author with Mirkka Rekola, Kaisa Belloni, Jun Kojima, Tiina Koppinen, Tarja Mäkeläinen, Heikki Kulusjärvi and Jiri Hietanen, 2007. Available in English at <http://www.senaatti.fi/document.asp?siteID=2&docID=588> and in Finnish at <http://www.senaatti.fi/document.asp?siteID=1&docID=546>:
 - Volume 1: General part (Finnish Osa 1: Yleinen osuus)
 - Volume 2: Modeling of the starting situation (Finnish Osa 2: Lähtötilanne)
 - Volume 3: Architectural Design (Finnish Osa 3: Arkkitehtisuunnittelu)
 - Volume 4: MEP design (Finnish Osa 4: TATE-suunnittelu)
 - Volume 5: Structural design (Finnish Osa 5: Rakennesuunnittelu)
 - Volume 6: Quality assurance and merging of models (Finnish Osa 6: Laadunvarmistus)
 - Volume 7: Quantity take-off (Finnish Osa 7: Määrälaskenta)
 - Volume 8: Using models for visualization (Finnish Osa 8: Havainnollistaminen)
 - Volume 9: Use of models in MEP analysis (Finnish Osa 9: TATE-analyysit)
- Huoneselosteen laatimisosje ja malli. [*Rooms, Room Specifications*] Building Information Ltd 1997. RT 15-10650
- Kalusteselosteen laatimisosje ja malli. [*Equipment, Equipment Specifications*] Building Information Ltd 1997. RT 15-10649
- Ikkunaselosteen laatimisosje ja malli. [*Windows, Window Specifications*] Building Information Ltd 1997. RT 15-10648

- Oviselosteen laatimisohje ja malli. [*Doors, Door Specifications*] Building Information Ltd 1997. RT 15-10647
- Ovi-, ikkuna-, kaluste- ja huoneselosteiden laatimisohje. [*Door, Window, Equipment and Room Specifications*] Building Information Ltd 1997. RT 15-10645
- Piirustuslehti. RT 15-10634 [*Building Drawings: Size of Sheets, Title Block and Revisions*] Building Information Ltd 1997. RT 15-10634
- Mitoituksen esittäminen. Rakennuspiirustukset. [*Building Drawings: Dimensioning, Methods and Reference Lines*] Building Information Ltd 1997. RT 15-10641
- Esitystapaohjeet. Rakennuspiirustukset. [*Building Drawings: Projection Methods, Scales, Lines, Texts and Abbreviations*] Building Information Ltd 1997. RT 15-10635
- CAD kuvatasot rakennesuunnittelussa. [*CAD Layers in Structural Design*] Building Information Ltd 1997. RT 15-10624
- CAD-standardi, Oulun yliopistollinen keskussairaala [*CAD Standard, Oulu University Hospital*] 1996
- CAD-integraatio-ohje, Valtion kiinteistölaitos [*CAD Integration Manual, Senate Properties*] 1996
- CAD kuvatasot arkkitehtisuunnittelussa [*CAD Layers in Architectural Design*] Building Information Ltd 1996. RT 15-10600
- CAD kuvatasot [*CAD Layers*] Building Information Ltd 1996. RT 15-10599

4.5.14 Program Brochures

- Productivity and Quality with Information Management, Vera Program 2000
- Tuottavuutta ja laatua kokonaisvaltaisella tietojen hallinnalla, Vera ohjelma 2000
- Vera – Information Networking in the Construction Process, Vera Program 1997
- Vera – Tietoverkottunut rakennusprosessi, Vera ohjelma 1997

4.5.15 Electronic Publishing

- “Vera – Tietoverkottunut rakennusprosessi 1997-2002” loppuraportti CD-levynä / “Vera – Information Networking in the Construction Process 1997-2002” Final Report on a CD, Tekes 2003. About 620 MB, the same report is also available at <http://cic.vtt.fi/vera/>
- Internet pages “PREMISS - Product Model Extension for Requirement Management Interfaces” at <http://cic.vtt.fi/projects/premiss/info.htm>, about 180 MB 2002-2005
- Internet-sivusto “Vera – Tietoverkottunut rakennusprosessi” at <http://www.tekes.fi/ohjelmat/index/etusivu.html>, about 250 MB, 1997-2002
- Internet pages “Vera – Information Networking in the Construction Process” at <http://www.tekes.fi/english/programmes/index/frontpage.html>, about 200 MB 1997-2002
- Internet pages “IAI Nordic Chapter” at <http://cic.vtt.fi/niai/> About 620 MB 1996-2002

4.6 Lecturer in Universities and Other Organizations

- Course “Organizational Models and Simulation in Project-based Organizations”, Helsinki University of Technology, Department of Industrial Engineering and Management 2005
- Basic and advanced CAD courses annually at Tampere University of Technology. The tasks included the planning, preparations and implementation of the CAD education in the Department of Architecture 1990-1996
- CAD course, Helsinki University of Technology, Faculty of Architecture 1993
- CAD course, University of Art and Design Helsinki 1993
- CAD and IT courses, Helsinki Institute of Technology, 1990-1991
- CAD course, Centre for Technical Training; AEL in Helsinki 1993-1995

- CAD course, Finnish Broadcasting Company; TV2 Tampere 1995
- CAD course, Edutech in Tampere University of Technology 1996
- CAD courses at ICL (Fujitsu Corporation), City Of Helsinki, SAFA and NCC 1986 - 1996

4.7 Studio Kivi, Helsinki 1990-1996

4.7.1 Software Development 1990-1996

Registered AutoCAD developer. KIVI applications and libraries for architectural design, one of leading applications for architectural design in Finland in early 90's, and still widely used in Finland by several leading architect offices.

Wide range of consultation and education activities (4.6, 4.7.2, 4.7.3)

4.7.2 CAD Integration Projects 1994-1996

- Varma-Sampo Office Building Fredrikinkatu 46, consultation for Pekka Salminen Architects 1996
- Helsinki-Vantaa Airport, consultation for Pekka Salminen Architects 1996
- Building of the Computer Science Department in Helsinki University of Technology, consultation for Engel Oy 1996
- Building for the Court of Justice and Police Department in Jyväskylä, consultation for Engel Oy 1996
- General project definitions for the University Hospital in Oulu 1996
- General project definitions for the Prison Department of the Ministry of Justice 1996
- Sanomatalo, consultation for SARC Architects Ltd 1995-1996
- Atria Meat Manufacture Ltd, consultation for Lohman Architects Oy 1995
- Vantaa Prison 1994-1995
- ICL Finnish Headquarters in Helsinki 1994-1996

4.7.3 FM Consultation Projects 1995-1997

- VAHO (Prison Department of the Ministry of Justice) 1996-1997
- State Real Property Agency (Currently Senate Properties) 1996-1997
- Oulu University Hospital 1996
- ICL Finnish Headquarters in Helsinki 1995-1996

4.7.4 National and International R&D Projects 1992-1996

Member of the team or CAD/design expert:

- Data transfer definitions from design model to facility management, Case study of ICL Finnish Headquarters, member of the project team. Rakennustieto Oy 1995-1996
- Information structures in integrated planning, member of the project team. RAKLI (Finnish Association of Building Owners and Construction Clients), SKOL (The Finnish Association of Consulting Firms), SAFA 1994
- User integrated housing design in Dessau Germany, ICT expert. VTT and ToCoMan Oy 1993-1994
- Integrated Building Design, part of STAR-project, design expert. VTT 1994-1996
- Information structures in building design; VTT 1993-1994
- CAD-system for fittings and joints, ICT and design expert. Technological developing program of Finnish Building Industry and VTT 1993
- CAD-systems for concrete building on site, ICT and design expert. Technological developing program of Finnish Concrete Industry and VTT 1993
- CAD-system for architectural design of prefabricated facades. ICT and design expert. Technological developing program of Finnish Concrete Industry and VTT 1993

- Information structure in architectural planning, ICT and design expert. VTT and Rakennustieto Oy (Building Information Ltd) 1992-1995
- CAD-system in renovation of buildings and rooms, ICT and design expert. HUT (Helsinki University of Technology) and VTT 1992 -1995

4.8 Architect Office Arto Sipinen, Helsinki 1985-1991

CAD development, education and deployment

4.8.1 Software Development 1985-1991

- Several conversion applications between different CAD software 1989-1991
- Lotus 1-2-3 applications 1989-1990
- Document management system for AutoCAD 1988
- Quantity take-off applications for AutoCAD 1986-1987
- AutoCAD applications and libraries 1986-1991
- 3D software 1985, integration to AutoCAD 1986

4.8.2 CAD Integration Projects 1986-1991

- Health Care and Social Services Institute for Helsinki Polytechnic 1990-1991
- Cultural Centre of Kuusamo 1989-1990
- Municipal Office Building in Mäntsälä 1989-1991
- Municipal Office Building in Lieto 1989-1991
- Municipal Office Building in Tammela 1988-1989
- Hotel Alba in Jyväskylä 1988-1989
- Accelerator Laboratory for Department of Physics in Jyväskylä University 1988-1990
- Buildings for the Department of Chemistry in Jyväskylä University 1986-1990

5 Design Career 1972-1996

5.1 Studio Kivi, Helsinki 1990-1996

Owner and Partner of Architect Office Arcadia in Joensuu 1991-1996

Main activities in CAD development and consultation (see 4.7)

5.1.1 Main Building Projects

- Würth Office Building and Warehouse 1989-1994
- ICL Finnish Headquarters with Tommila Architects 1994-1996

5.2 Architect Office Arto Sipinen, Helsinki 1973-1991

Project Architect 1973-1977, Bureau Chief 1977-1991

5.2.1 Competitions as the Main Assistant of Arto Sipinen

1st prizes

- Invited competition for the Municipal Office Building and Library of Iitti 1989
- Invited competition for the Cultural Centre of Kuusamo 1989
- Invited competition for the Municipal Office Building of Tammela 1988
- Invited competition for the Nolja Area Centre in Joensuu 1987
- Open Nordic competition: Helsinki City Centre 1986, shared with two other 1st prizes
- Open competition for the Cultural Centre of Lahti 1983
- Invited competition for the Municipal Office Building of Kauhajoki 1981
- Invited competition for Imatra Cultural Centre 1981
- Open competition for the Espoo Cultural Centre in Tapiola 1980

- Open competition for the urban structure of Kumpula University area 1979, shared with two other 1st prizes
- Invited competition for the Administrative Centre of Tuusula 1977
- Open competition for the Administrative Centre of Raisio 1977

Other prizes and purchases

- 2nd prize in open competition for the Municipal Office building of Kiuruvesi 1980
- 3rd prize in open competition for the Cultural Centre of Kajaani 1982
- 1st purchase in open competition for the Cultural Centre of Kerava 1985 (own project)
- 1st purchase in open competition for the Concert and Congress Hall of Tampere 1983
- 1st purchase in open competition for the Itäkeskus Centre in Helsinki 1977
- 2nd purchase in open competition for the Municipal Office building of Mikkeli 1982

5.2.2 Building Projects

Completed projects as the Project Manager and Leading Architect:

1. Health Care and Social Services Institute for Helsinki Polytechnic 1990-1991
2. Cultural Centre of Kuusamo 1989-1990
3. Municipal office building of Tammela 1988-1989
4. Hotel Alba, Jyväskylä 1988-1989
5. Accelerator Laboratory for Department of Physics in Jyväskylä University 1988-1990
6. Buildings for the Department of Chemistry in Jyväskylä University 1986-1990
7. Office and shop centre in Tapiola, Espoo 1985-1986
8. Concert Hall Mikaeli, Mikkeli 1984-1986
9. Cultural Centre of Tapiola, Espoo 1981-1989
10. Cultural Centre of Imatra 1981-1986
11. Municipal Office Building of Raisio 1978-1981
12. Municipal Office Building of Tuusula 1978-1980
13. Two university buildings in Mattilanniemi for Jyväskylä University 1978-1980
14. HOAS 36 dormitory building, Helsinki, 1978-1979
15. Training Center for National Board of Civil Aviation at Helsinki-Vantaa 1977-1978
16. Technical Telecommunication building, Kangasniemi 1977-1978
17. Technical Telecommunication building, Kajaani 1976-1978
18. Office building for HOAS, Helsinki 1974-1977
19. HOAS 26 dormitory building, Helsinki, 1974-1977
20. HOAS 13 dormitory building, Espoo, 1974-1979
21. Lohkopellontie 3 apartment house, Helsinki 1974-1976
22. HOAS 20a dormitory building, Helsinki, 1974-1976
23. HOAS 10 dormitory building, Helsinki, 1973-1975

Sketch design, not completed:

- Ateljee Eero Hiironen, Ähtäri 1990
- Kuriiritie office building, Vantaa 1989-1991

Completed projects as an assistant designer:

- Musica and Athenaeum of Arts of Jyväskylä University 1974-1977
- Main Library of Jyväskylä University 1973-1974

5.2.3 Urban Planning as the Leading Architect

- Kamppi-Töölönlahti City Center in Helsinki 1987 -1991
- Area for administration buildings in Raisio 1978-1979
- Seminaarinmäki area of Jyväskylä University 1977-1978

5.2.4 *Interior Design with Ursula Lähteenkorva-Nakai*

- Architect Office Arto Sipinen 1989
- Hotel Alba in Jyväskylä 1988-1989
- Cultural Centre of Tapiola, Espoo 1986-1989
- Cultural Centre of Imatra 1984-1986
- Municipal Office Building of Raisio 1979-1981

5.3 **Architect Office Keskus-Sato Oy, Helsinki 1972-1973**

Assistant designer in several apartment building projects in Jyväskylä

6 **Tasks in Professional Organizations**

6.1 **SAFA - Finnish Association of Architects**

- Council member 1994-1995, 1998-2000
- Education Committee member 1996
- Confidence Committee member 1992-1993
- CAD-SAFA Board: Chairman 1998-1999, Vice Chairman 1993-1994, 1996 and member 1988-1992, 1995, 1997, 2000
- YAPA-SAFA (Practicing Architects) Board: member 1990-1993

6.2 **ATL - Association of Finnish Architects' Offices**

- Member of the Quality Certification Committee of RAKLI, SKOL and ATL 1996-2002
- Quality System Committee member 1996-1998
- Erityisasiantuntijana "Arkkitehtisuunnittelun laatu järjestelmän" tietotekniikkaosoiden kehittämistyössä [Leading Expert in the information technology related issues in the development of "Quality Manual for Architectural Design"] 1996-1998
- CAD and Quality Workgroup member 1992-1993

6.3 **ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers**

- BIM Steering Committee member since 2009

7 **Professional Photography**

All publication photographs for Architect Office Arto Sipinen 1974-1990. These photos have been published in several Finnish and international magazines and books of Finnish Architecture since 1974. The photos are also in the archive of the Museum of Finnish Architecture.

- Main Library, Lahti 1990, Helsinki City Centre, Kamppi-Töölönlahti Project, Helsinki 1989, Cultural Centre of Tapiola, Espoo 1989, Concert Hall Mikaeli, Mikkeli 1988, Cultural Centre of Imatra 1986, Municipal Office Building of Kauhajoki 1984, HOAS 36 Dormitory, Helsinki 1981, Municipal Office Building of Raisio 1981, Municipal Office Building of Imatra 1975, Musica and Athenaeum of Arts of Jyväskylä University 1977-1978, Main Library of Jyväskylä University 1974-1976

8 **Personal details**

- Born 1951 in Kuopio, Finland
- Married since 1972 with Eeva Verkasalo
- Three daughters: Katja (1975), Tiina (1978) and Suvi (1979)
- Four grandchildren: Tommi (2000), Maria (2001), Kristian (2003) and Alisa (2008)
- Main hobbies: Photography (<http://www.artophoto.net/>) and hiking