

Curriculum Vitae

Jakob Beetz

Chair of Computational Design

Department of Architecture

RWTH Aachen University

Germany

j.beetz@caad.arch.rwth-aachen.de

Personal

- Date of Birth: December 24th, 1974
- Citizenship: German
- Marital Status: Married, two children

Languages

- German: Native
- English: Full professional proficiency (CEFR C2)
- Dutch: Full professional proficiency
- French: Basic Knowledge
-

Research Interests

- Computer Aided (Architectural) Design CA(A)D
- Building Information Modeling (BIM)
- Computer Supported Cooperative Work (CSCW)
- Construction Informatics
- Virtual Reality (VR) / Augmented Reality (AR)
- Semantic Web and Linked Data
- Systems Engineering
- Design and decision support systems (DDSS)
- Knowledge Engineering

Education

2009 Publication and defense of PhD thesis “Facilitating distributed collaboration in the AEC/FM sector using Semantic Web Technologies”, supervised by prof.dr.ir Bauke de Vries and dr.ir. Jos van Leeuwen

2003-2008 PhD student in the Design Systems group of prof.dr.ir. B. de Vries at the Department of Architecture, Building and Planning at the Eindhoven University of Technology (TU/e). Integrated in the Design and Decision Support Systems (DDSS) Research School.

2003 Architecture Degree “Diplom-Ingenieur” (Equivalent to M.Sc.) at Bauhaus University Weimar. Thesis: “Lea – Pen-Based Parametric Sketching in the Early Stages of Architectural Design” at the Computer Science in Architecture group of Prof.Dr.-Ing. D. Donath [Grade A]

2002 Participation in CE222 “AEC Global Team Class” Prof. R. Fruchter at

- Stanford University
- 1999 Additional enrollment at Department of Media, specialization in Media Systems
- 1996-2003 Student at Bauhaus-Universität Weimar; Department of Architecture
- 1994 "Abitur" (German high school degree) at Shadow-Schule Berlin [Grade A]

Professional experience

- 2017 Appointment as a full professor "Computational Design" at the department of Architecture, RWTH Aachen University, Germany
- 2016 Appointment for a full professorship "Digital Architecture and Planning" at the department of architecture, Technische Universität Wien, Austria
- 2015 Appointment for a Professorship (S99) "Building Information Modeling" at the Faculty of Civil Engineering at the Technical University Graz, Austria. (not filled in)
- since 2008 Assistant professor at the Information Systems in the Built Environment (formerly named Design Systems Group), prof.dr.ir. Bauke de Vries at the Department of Architecture, Building and Planning; Eindhoven University of Technology.
- 1994-2002 Participation in several projects in architectural office "Architekturbüro Beetz": all phases in the building process, emphasis on construction planning, preparation of tender documents, participation in the awarding of contracts and construction management.
- 1998-2003 Bauhaus University Weimar, Dept. for Computer Science in Architectural Design and Urban Planning; Prof. D. Donath: Student assistant and student research assistant; Participation in several research projects, conference organization, assistance to Prof. Donath in classes, basic teaching.
- 1999 – 2001 Several research internships at German National Research Center for Information Technology (GMD); Virtual Environments Group (IMK.VE), Bonn; Prof. Bernd Fröhlich.
- 2001 Hongkong University (HKU); Prof. Tom Kwan: Research Internship for the Joint Research Project; "The influence of virtual environments on the design of (digital) architectural expressions";
- 1997-2003 several smaller freelance software projects and consultancies for various companies and organizations

Funded Research Projects and industry initiatives

- 2018-2022 Horizon 2020 BIM4REN – Building Information Modelling based tools & technologies toward fast and efficient RENovation of residential buildings. Funded by European Commission. Total funding 6,9 million EUR.
- 2017-2018 Stufenkonzept Auftraggeber-Plattform DB Station&Service AG. Funded by Deutsche Bahn AG. With Semmtech BV.
- 2016-2017 okstraOWL – Linked Data representation of the German Highway Model OKSTRA. Funded by the Bundesanstalt für Straßenwesen BAST (German Road Authority). With TU München. Total Funding 200.000 EUR.
- 2013-2016 DURAARK – Durable Architectural Knowledge project for the long-term digital preservation of BIM data including point clouds and linked data sets. . STREP project funded by the European Commission within the 7th Framework Program. Grant Agreement no: 600908, total funding 3 million EUR. Technical coordinator and work package leader.
- 2012-2016 CB-NL – Concept Library of the Netherlands. Cross-domain repository for building and infrastructural concept descriptions. Funded by public institutions (Ministry of Infrastructure), contractors and owners under the umbrella of the Building Information Council of the Netherlands. Total funding ca. 1 million EUR. ICT technical advisory group member.
- 2012-2013 3DSDI – Three Dimensional Spatial Data Infrastructures – Grant of the Next Generation Infrastructures (NGI) consortium on quay wall models and information management at the Port of Rotterdam. Next Generation Infrastructures Grant 08.04, total funding 250,000 EUR.
- 2010-present bimserver.org – Co-founder Open source model server platform built upon the ISO 16739 Industry Foundation Classes (IFC) based on Service Oriented and Model Driven Architecture (SDA/MDA). Several commercial spin-offs, continued use in numerous funded R&D projects across the world.
- 2007-present COINS – Research and Development for the COINS project for the standardization of information exchange in the Dutch building industry focused on Systems Engineering. Modification and application of existing information models and exchange methods in real-world industry projects.
- 2006-present IFD/bSDD – Conduction of studies and reports on the ongoing efforts around ISO 12006 and the “International Framework for Dictionaries” IFD. Advisor to the Dutch STABU foundation and the Norwegian Building Research Institute SINTEF Bygforsk for the harmonization of building and construction related taxonomies. Prototypical implementations of tools for the connection of ISO 12006 information

to IFC data.

- 2006 IntelliGrid – contribution of fundamental methods and software implementations for the exchange of distributed IFC BIM data for the use in Grid environments for the EU-project IST -2004-004664 “InteliGrid” as a subcontractor, implementing Ontology Web Language notations of the Industry Foundation Classes

Organization and memberships

- Since 2014 Co-chair of the CIB Working Group 78
- Since 2014 Committee Member of the European Association of Product and Process Modelling in the Building Industry (EAPPM)
- Since 2014 Co-founder and member of the W3C Linked Building Data Community Group
- Since 2010 Co-founder, organizer and award committee member of the “Charles Eastman Top PhD Paper Award” during the annual CIB W78 conference series
- Since 2010 Board member of the Joint Architectural Network for Urban Synergy (JANUS)
- Since 2008 Technical Management representative of the buildingSMART chapter BeNeLux, involvement in International group activities.
- Since 2006 Involvement as reviewer of technical standards for the national standardization organization NEN
- Since 2005 Frequent reviewer for journals including Automation in Construction, ADVEI, AIEDAM, CAD, buildings, ITCon,

Conference and Workshop organization

- 2015 Chair of the 32rd CIB W78 conference, October 27th-29th 2015, Eindhoven University of Technology, The Netherlands.
- 2015 Organizer of the 3rd Workshop on Linked Data in Architecture and Construction (LDAC) July 15, 16 & 17 2015, Eindhoven University of Technology, The Netherlands
- 2015 Chair of the 22nd International Workshop of the European Group for Intelligent Computing in Engineering (EG-ICE), July, 13-15th 2015, Eindhoven University of Technology, The Netherlands.
- 2014 Co-organizer of the 2nd Linked Data in Architecture and Construction (LDAC) and 6th eeSemantics VoCamp, May 26-27 2014, Aalto

University and Tekla, Espoo, Finland.

2012 Co-chair the 8th International Conference on Geo-information for Disaster Management, Gi4DM 2012, 13-14 December, 2012, Enschede, The Netherlands

Since 2004 Co-chair of the biannual international conference series “Design and Decision Support Systems.”

Scientific Committee membership

2014 Joint ICCCB2014 and the 2014 CIB W078 conferences, June 23-25, 2014, Orlando, Florida, USA.

2013 EG-ICE Workshop 2011, 20th International Workshop: Intelligent Computing in Engineering 2013, 01.07.-03.07.2013, TU Vienna, Vienna, Austria.

2013 Technical Committee 19th CIB World Building Congress, May 2013, Queensland University of Technology, Australia.

2013 30th International CIB W78 Conference on Applications of IT in the AEC Industry, 9-12 October 2013, Beijing, China.

2013 eCAADe 2013 . Computation and Performance, September 18-20 2013, Delft University of Technology, The Netherlands.

2012 9th European Conference on Product and Process Modelling ECPPM, Julz 25ß27th Reykjavik, Iceland.

2012 eCAADe 2013, The 30th International Conference on Education and research in Computer Aided Architectural Design in Europe, September 12 - 14 2012, Prague, Czech Republic

2011 EG-ICE Workshop 2011, 6-8, July 2011 Twente University, The Netherlands.

2011 Joint Conference W078 and W102, 26-28 October 2011, Sophia Antipolis, France.

Graduate Students

PHD THESES COMPLETED

Hjelseth, Eilif (2015). Ph.D.: Foundations for BIM-based model checking systems. Transforming regulations into computable rules in BIM-based model checking systems”. Department of Mathematical Sciences and Technology Norwegian University of Life Sciences. Member of the viva committee.

Aram, S.(2014): A Knowledge-Based System Framework for Semantic Enrichment and Automated Detailed Design In AEC Projects”. Georgia Institute of Technology, USA. Committee: C.M.

Eastman, R. Sacks, R. Gentry, J. Beetz, D. Orndorff

Redmond, A. (2013). Ph.D.: Designing a Framework for Exchanging Partial Sets of BIM information on a cloud-based Service. Dublin Institute of Technology. Supervisor: Alan Hore. Viva Committee; R. West, J. Beetz

Niemeijer, R.A. (2011). Ph.D.: [Constraint specification in architecture : a user-oriented approach for mass customization](#). Eindhoven University of Technology. Supervisors: B. de Vries & J. Beetz.

PHD THESES IN PROGRESS

Zhang, Chi (prospective graduation 2016). Ph.D.: Modular and Distributed Information Delivery Manuals and Model View Definitions based on Semantic Concepts. Eindhoven University of Technology. Supervisors: B. de Vries & J. Beetz.

Krijnen, Thomas (prospective graduation 2017). Ph.D.: Sustainable Use and Long Term Preservation of Semantically enriched and networked Building Information Models. Eindhoven University of Technology. Supervisors: B. de Vries & J. Beetz.

M.Sc. Theses Completed

Asgarpour, S. (2016). Dimensional Decision Support System: Developing A Decision Support System For 3D Concrete Printing. Graduation Committee: J. Beetz, T. Salet, Z.Y. Ahmed

Wijnholts, L.I.H. (2016). [Automated geometry checking for infrastructure projects](#). Graduation Committee: J. Beetz, T.F. Krijnen. Industry Partner: Grontmij.

Visschers, M.G. (2016). BIM based whole-building energy analysis towards an improved interoperability. Graduation Committee: J. Beetz, T.F. Krijnen, T.C. Borst, B. de Vries. Industry Partner: ARCADIS.

Kalpoë, R.R.B. (2016). The Integration of Domain-Specific building data using Linked Data. Graduation Committee: J. Beetz, J. Yzer, B. de Vries. Industry Partner: Semtech.

Yu, M. (2016). A Linked Data approach for information integration between BIM and sensor data. Graduation Committee: J. Beetz, C. Zhang, T.F. Krijnen.

Riet, M. van de (2016). Semantic Model Enrichment for BIM-Enabled Risk-Based Operation and Maintenance. Graduation Committee: J. Beetz, B.J.A van Thiel, B. de Vries. Industry Partner: ARCADIS

Schaijk, S. van (2016). [Building Information Model \(BIM\) based process mining](#): enabling knowledge reassurance and fact-based problem discovery within the Architecture, Engineering, Construction and Facility Management Industry. Graduation Committee: J. Beetz, L. van Berlo, B. de Vries. Industry Partner: TNO.

Riel, N.S.M. (2015). [Creating an information delivery manual to facilitate future cost estimations](#): a BIM-based approach to create more transparency in the quotation process regarding the

- installation of large medical equipment in existing hospitals. Graduation Committee: J. Beetz, B. de Vries. Industry Partner: Philips Healthcare.
- Schuller, K. and Claus, C.C.J, (2015). [Industry Foundation Classes data model based lighting analyses building information modeling workflow optimization](#). Graduation Committee: J.Beetz, T.F. Krijnen, B. de Vries and J. Lichtenberg.
- Wolfs, R. (2015). [3D Printing of Concrete Structures](#). Graduation Committee: T.M.A. Salet, G. Zimmermann, G. L.N. Hendriks.
- Van Aerle, M. (2015). [IFC Dataflow. An open framework for connecting BIM web services](#). Graduation Committee: J. Beetz, B. de Vries.
- Groeneveld, J.J. (2015). [Building performance simulation from a BIM](#). Graduation Committee: W. Zeiler, J.Beetz, P. van Mierlo. Industry Partner: Valstar Simonis B.V.
- Heinen, J.J. (2015). The added value of Building Information Models in the Operation & Maintenance processes: Graduation Committee: J.Beetz, B. de Vries, J. Bosman. Industry Partner: Grontmij N.V.
- Van der Burgt, A. & van Wezel, B. (2014) M.Sc.: [Large Scale Additive Manufacturing Of Topological Optimized Beams](#). Graduation Committee: J. Beetz, A.D.C. Pronk, B. de Vries.
- Muz, R.M. (2014) M.Sc.: Extending Building Information Modeling beyond Design/Construction project phase. Graduation Committee: B. de Vries, J. Beetz, K. Brandt. Industry Partner: Hochtief AG – ViCon.
- van Thiel, B. (2014) M.Sc.:[The added value of an OWL concept library in the development stage of the systems engineering process](#) Graduation Committee: B. de Vries, J. Beetz, E.C.M. de Borst, .J. van Schie. Industry Partner: ARCADIS.
- Botter, R. (2013). M.Sc.: [Efficient cost estimation with historic project information](#) (Efficiënt begroten met historische projectgegevens). Graduation committee: B. de Vries, J. Beetz, J. Dukers. Industry Partner: Dukers & de Cock Eindhoven B.V.
- Mazairac, L.A.J. (2012) M.Sc.: [BimQL : an open domain specific query language for building information models](#). Graduation committee: B. de Vries, J. Beetz, J. Jessurun .
- Kuijsten, D. (2012) M.Sc.: [Development of a multi-user information system](#) (Het ontwikkelen van een gegevenssysteem waarin gegevens door meerdere partijen gebruikt kunnen worden). Graduation committee: P.A.J. van Hoof, J. Beetz, W.F. van Woudenberg, J.J.N. Lichtenberg, Industry Partner: Royal BAM Group.
- Krijnen, T.F. (2012) M.Sc.: [On the musicality of architecture](#) (Sound ray tracer for design support). Graduation committee: J.Beetz, J. Voorthuis, B. de Vries.
- Bosma, D.S. (2012) M.Sc.: [Façade generator : a fuzzy based system for the configuration and evaluation of intelligent façades](#) Graduation committee: B. de Vries, J. Beetz, A.J. Jessurun.
- van Telgen, M.V. (2012). M.Sc.: [Parametric design and calculation of circular and elliptical tensegrity domes](#) Graduation Committee: H.H. Snijder, A.P.H.W. Habraken, J. Beetz.
- Dominicus, M.M.T. (2010) M.Sc.: [Cellular structures in architecture : remodeling bonestructures](#)

Graduation Committee: J. Lichtenberg, J. Beetz and A. Pronk.

Rooy, I. & Schinkel, P. (2009) M.Sc.: [A flexible mold for double-curved pre-cast concrete façade elements](#) (Dubbel gekromde oppervlaktes met behulp van een textiele mal) Graduation Committee: J. Lichtenberg, A. Pronk, J. Beetz, M. Cox.

Peer-reviewed Publications

2018

- Beetz, J., 2018. Structured Vocabularies in Construction: Classifications, Taxonomies and Ontologies, in: Borrmann, A., König, M., Koch, C., Beetz, J. (Eds.), Building Information Modeling: Technology Foundations and Industry Practice. Springer International Publishing, Cham, pp. 155–165. https://doi.org/10.1007/978-3-319-92862-3_8
- Beetz, J., Borrmann, A., 2018. Benefits and Limitations of Linked Data Approaches for Road Modeling and Data Exchange, in: Smith, I.F.C., Domer, B. (Eds.), Advanced Computing Strategies for Engineering, Lecture Notes in Computer Science. Springer International Publishing, pp. 245–261.
- Borrmann, A., Beetz, J., Koch, C., Liebich, T., Muhic, S., 2018. Industry Foundation Classes: A Standardized Data Model for the Vendor-Neutral Exchange of Digital Building Models, in: Borrmann, A., König, M., Koch, C., Beetz, J. (Eds.), Building Information Modeling: Technology Foundations and Industry Practice. Springer International Publishing, Cham, pp. 81–126. https://doi.org/10.1007/978-3-319-92862-3_5
- Borrmann, A., König, M., Koch, C., Beetz, J. (Eds.), 2018. Building Information Modeling; 1st ed. Springer International Publishing, Cham.
- Borrmann, A., König, M., Koch, C., Beetz, J., 2018. Building Information Modeling: Why? What? How? Springer International Publishing, Cham, pp. 1–24.
- Borrmann, A., König, M., Koch, C., Beetz, J., 2018. Conclusions and Outlook, in: Borrmann, A., König, M., Koch, C., Beetz, J. (Eds.), Building Information Modeling: Technology Foundations and Industry Practice. Springer International Publishing, Cham, pp. 571–574. https://doi.org/10.1007/978-3-319-92862-3_35
- Krijnen, T., Beetz, J., 2018. A SPARQL query engine for binary-formatted IFC building models. Automation in construction 95, 46–63. <https://doi.org/10.1016/j.autcon.2018.07.014>
- Oraskari, J., Beetz, J., Törmä, S., 2018. Federated Building Models in collaborative AEC/FM settings using IPFS. Presented at the 17th International Conference on Computing in Civil and Building Engineering.
- Pauwels, P., McGlenn, K., Törmä, S., Beetz, J., 2018. Linked Data, in: Borrmann, A., König, M., Koch, C., Beetz, J. (Eds.), Building Information Modeling: Technology Foundations and Industry Practice. Springer International Publishing, Cham, pp. 181–197. https://doi.org/10.1007/978-3-319-92862-3_10
- Schapke, S.-E., Beetz, J., König, M., Koch, C., Borrmann, A., 2018. Collaborative Data Management, in: Borrmann, A., König, M., Koch, C., Beetz, J. (Eds.), Building Information Modeling: Technology Foundations and Industry Practice. Springer International Publishing, Cham, pp. 251–277. https://doi.org/10.1007/978-3-319-92862-3_14
- Zhang, C., Beetz, J., de Vries, B., 2018. BimSPARQL: Domain-specific functional SPARQL extensions for querying RDF building data. Semantic web 9, 829–855. <https://doi.org/10.3233/SW-180297>

2017

- Krijnen, T., Beetz, J., 2017. An IFC schema extension and binary serialization format to efficiently integrate point cloud data into building models. Advanced Engineering Informatics SI EG-ICE-2015.
- Pauwels, P., Krijnen, T., Terkaj, W., Beetz, J., 2017. Enhancing the ifcOWL ontology with an alternative representation for geometric data. Automation in Construction 80, 77–94. <https://doi.org/10.1016/j.autcon.2017.03.001>
- Pauwels, P., de Farias, T.M., Zhang, C., Roxin, A., Beetz, J., De Roo, J., Nicolle, C., 2017a. A

- performance benchmark over semantic rule checking approaches in construction industry. *Advanced Engineering Informatics* 33, 68–88. <https://doi.org/10.1016/j.aei.2017.05.001>
- Oldfield, J., van Oosterom, P., Beetz, J., Krijnen, T., 2017a. Working with Open BIM Standards to Source Legal Spaces for a 3D Cadastre. *ISPRS International Journal of Geo-Information* 6, 351. <https://doi.org/10.3390/ijgi6110351>
- Krijnen, T., Beetz, J., 2017. An IFC schema extension and binary serialization format to efficiently integrate point cloud data into building models. *Advanced Engineering Informatics* 33, 473–490. <https://doi.org/10.1016/j.aei.2017.03.008>
- Beetz, J., Hartmann, T., 2017. 2015 edition of the Workshop of European Group for Intelligent Computing in Engineering (EG-ICE). *Advanced Engineering Informatics* 33, 425–426. <https://doi.org/10.1016/j.aei.2017.05.004>

2016

- Beetz, J. et al DURAARK: Enrichment and Preservation of Architectural Knowledge. Münster, S., Pfarr-Harfst, M., Ioannides, M., Kuroczyński, P. Quak, E. (Eds.): *How to manage data and knowledge related to interpretative digital 3D reconstructions of Cultural Heritage?*, Springer LNCS. Accepted Book chapter to appear in 2016.
- Zhang, C. & Beetz, J. (2016) Rule representation using Linked Data technologies. *Proceedings of 23rd EG-ICE Workshop 2016*.
- Krijnen, T., Beetz, J. (2016) Efficient Binary Serialization of IFC Models Using HDF5, 16th International Conference on Computing in Civil and Building Engineering (ICCCBE2016), July, 6-8, Osaka, Japan
- Krijnen, T., Beetz, J. (submitted 2016) An IFC Schema Extension and Binary Serialization for Efficiently Capturing Point Cloud Data. Submitted to *Advanced Engineering Informatics*

2015

- Borrmann, A., König, M., Koch, C., Beetz, J. (eds.) (2015) [Building Information Modeling - Technologische Grundlagen und industrielle Anwendungen](#). ISBN 978-3-658-05605-6., Springer Vieweg, 591 pages
- Pauwels, P., Törmä, S., Beetz, J. Weise, M., Liebich, T. (2015) [Linked Data in Architecture and Construction. Special Issue Automation in Construction](#). *Automation in Construction* 57, pp. 175-177, doi:10.1016/j.autcon.2015.06.007
- Krijnen, T., Beetz, J., Ochmann, S., Vock, R., Wessel, R. (2015) Extending IFC with point cloud data. *Proceedings of the 22nd International Workshop of the European Group for Intelligent Computing in Engineering 13th and 16th July 2015, Eindhoven, The Netherlands*
- Beetz, J., Borrmann, A. & Weise, M., (2015). Prozessgestützte Definition von Modellinhalten. In A. Borrmann et al., eds. *Building Information Modeling*. Springer Fachmedien Wiesbaden, pp. 129–147.
- Borrmann, A. Beetz, J., Koch, C., Liebich, T., (2015). Industry Foundation Classes – Ein herstellerunabhängiges Datenmodell für den gesamten Lebenszyklus eines Bauwerks. In A. Borrmann et al., eds. *Building Information Modeling*. Springer Fachmedien Wiesbaden, pp. 83–127.
- Schapke, S.-E., Beetz, J., Koch, C., König, M. (2015). Kooperative Datenverwaltung. In A. Borrmann et al., eds. *Building Information Modeling*. Springer Fachmedien Wiesbaden, pp. 207–236.
- Beetz, J., (2015). *Ordnungssysteme im Bauwesen: Terminologien, Klassifikationen, Taxonomien*

und Ontologien. In A. Borrmann et al., eds. Building Information Modeling. Springer Fachmedien Wiesbaden, pp. 163–175.

2014

- Niemeijer, R.A., Vries, B. de & Beetz, J. (2014). [Freedom through constraints: user-oriented architectural design](#). *Advanced Engineering Informatics*, 28(1), 28-36.
- Beetz, J. (2014). [A framework for a scalable network of concept libraries using distributed graph databases](#). 2014 International Conference on Computing in Civil and Building Engineering Orlando, Florida, United States, June 23-25, 2014 pp. 569-576
- Aram, S., Eastman, C., Beetz, J. (2014). [Qualitative and Quantitative Cost Estimation: A Methodology Analysis](#). *Computing in Civil and Building Engineering*. 2014 International Conference on Computing in Civil and Building Engineering Orlando, Florida, United States June 23-25, 2014 pp. 381-389
- Zhang, C., Beetz, J., de Vries, B (2014). [An Ontological Approach for Semantic Validation of IFC Models](#). Proc. of the 21st International Workshop on Intelligent Computing in Engineering (EG-ICE) 2014 - July 16th-18th, 2014 Cardiff, UK
- Tamke, M., Jensen, M.M., Beetz, J., Krijnen, T., Edvardsen, D.F, (2014). [Building Information Deduced - State and potentials for Information query in Building Information Modelling](#). Proc. of the 32nd eCAADe Conference - Volume 2, Newcastle upon Tyne, England, UK, 10-12 September 2014. pp. 375-384
- Zhang, C., Beetz, J., Weise, M. (2014). [Model view checking: automated validation for IFC building models](#). Proc of the eWork and eBusiness in Architecture, Engineering and Construction conference. 17-19th September 2014, Vienna, Austria. pp. 123-128.
- Beetz, J., van den Braak, W.C., Botter, R. Zlatanova, S. & de Laat, R. (2014). [Interoperable data models for infrastructural artefacts – a novel IFC extension method using RDF vocabularies exemplified with quay wall structures for harbors](#). Proc or the eWork and eBusiness in Architecture, Engineering and Construction conference. 17-19th September 2014, Vienna, Austria pp. 129-135.

2013

- Bhatt, M., Borrmann, A., Amor, R. & [Beetz, J.](#) (2013). [Architecture, computing, and design assistance](#). *Automation in Construction*, 32, 161-164.
- Ji, Y., Borrmann, A., [Beetz, J.](#) & Obergrießer, M. (2013). [Exchange of parametric bridge models using a neutral data format](#). *Journal of Computing in Civil Engineering*.
- Stoter, J., [Beetz, J.](#), Ledoux, H., Reuvers, M., Klooster, R., Janssen, M., Penninga, F., Zlatanova, S. & Brink, L. (2013). [Implementation of a National 3D Standard: Case of the Netherlands](#). In J. Pouliot, S. Daniel, F. Hubert & A. Zamydi (Eds.), *Progress and New Trends in 3D Geoinformation Sciences* (pp. 277-298). Springer.
- Mazairac, L.A.J. & Beetz, J. (2013). BIMQL : an open query language for building information models. *Advanced Engineering Informatics*, 27(4), 444-456.
- Beetz, J., Dietze, S., Berndt, R. & Tamke, M. (2013). [Towards the long-term preservation of building information models](#). Proceedings of the 30th CIB W78 2013 conference. Beijing,

China. pp. 209-217

Telgen, M.V. van, Snijder, B., Habraken, A. & Beetz, J. (2013). [Parametric design and calculation of circular and elliptical tensegrity domes](#). IASS 2013 Symposium The International Association for Shell and Spatial Structures (IASS), 23-27 September 2013, Wroclaw, Wroclaw, Poland.

Dietze, S., Beetz, J., Gadiraju, U., Katsimpras, G., Wessel, R. & Berndt, R. (2013). [Towards preservation of semantically enriched architectural knowledge](#). Proc. of 3rd International Workshop on Semantic Digital Archives (SDA 2013) Valetta, Malta, Valetta, Malta.

Zhang, C., Beetz, J. & Vries, B. de (2013). [Towards model view definition on semantic level : a state of the art review](#). Proc. of the 20th EG-ICE 2013, Vienna, Austria

2012

[Allameh, E.](#), [Heidari Jozam, M.](#), [Vries, B. de](#), [Timmermans, H.J.P.](#), [Beetz, J.](#) & Mozaffar, F. (2012). [The role of Smart Home in Smart Real Estate](#). *Journal of European Real Estate Research*, 5(2), 156-170. Awarded Paper.

Berlo, L.A.H.M. van, [Beetz, J.](#), Bos, P., Hendriks, H. & Tongeren, R.C.J van (2012). [Collaborative engineering with IFC : new insights and technology](#). In G. Gudnason & R. Scherer (Eds.), *Proceeding of the 9th European Conference on Product and Process Modelling, July 25-27, 2012. Reykjavik, Iceland, (pp. 811-818)*. Routledge Taylor & Francis Group.

[Dominicus, M.M.T.](#), Hoppe, L.D. ten, [Beetz, J.](#), [Pronk, A.D.C.](#) & [Mohammadi, M.](#) (2012). [Façade elements based on optimised open cell structures : An Experimental modelling proces for the designer](#). *Proceeding of the Design and Decision Support Systems in Architecture and Urban Planning Conference (DDSS2012), 27-29 August 2012, Eindhoven, The Netherlands, (pp. 1-8)*. Eindhoven.

Krijnen, T., [Beetz, J.](#), [Voorthuis, J.C.T.](#) & [Vries, B. de](#) (2012). [Explauralisation : the experience of exploring architecture made audible](#). In H. Achten, J. Pavlíček, J. Hulín & D. Matějovská (Eds.), *Proceeding of the Digital Physicality – Proceedings of the 30th International Conference on Education and research in Computer Aided Architectural Design in Europe, Prague, Czech Republic, September 12-14, 2012, Volume 1, (1, pp. 593-599)*. Prague, Czech Republic: eCAADe (Education and research in Computer Aided Architectural Design in Europe) and ČVUT, Faculty of Architecture.

Mazairac, W. & [Beetz, J.](#) (2012). [Towards a Framework for a Domain Specific Open Query Language for Building Information Models](#). In P. Geyer, A. Borrmann, Y. Rafiq & P. de Wilde (Eds.), *Proceeding of the International Workshop: Intelligent Computing in Engineering*, München: Technische Universität München.

Zlatanova, S. & [Beetz, J.](#) (2012). [3D spatial information infrasturcture : the case of Port Rotterdam](#). In T Leduc, G. Moreau & R. Billen (Eds.), *Proceeding of the Final Conference of the European Cost Action TU0801 : Semantic enrichment of 3D city models for sustainable urban development, (pp. 03010-1-03010-8)*. Nantes, France.

2011

Allameh, E., Heidari Jozam, M., Vries, B. de, Timmermans, H.J.P. & Beetz, J. (2011). Smart Home as a smart real estate, A state of the art review. Conference Paper : 18th International Conference of European Real Estate Society, Eindhoven: ERES 2011.

Beetz, J., Berlo, L.A.H.M. van, Laat, R. de & Bonsma, P. (2011). Advances in the development and application of an open source model server for building information. Conference Paper : Proceedings of the 28th International Conference of CIB W78, Sophia Antipolis, October 2011, France, (pp. 1-7). France.

Ji, Y., Beetz, J., Bonsma, P., Nisbet, N., Katz, C. & Borrmann, A. (2011). Integration of Parametric Geometry into IFC-Bridge. Conference Paper : Proceedings of the 23rd European Conference Forum Bauinformatik, 12-14 september 2011, Cork, Ireland, Cork, Ireland.

Niemeijer, R.A., Vries, B. de & Beetz, J. (2011). Freedom through constraints : useroriented architectural design. In T. Hartmann, P. de Wilde & Y. Rafiq (Eds.), Conference Paper : Proceedings of the 2011 EG-ICE Workshop, July 6-8 , 2011, Enschede, The Netherlands, (pp. 1-7). Enschede, The Netherlands.

2010

Vries, B. de, Beetz, J., Achten, H.H., Dijkstra, J. & Jessurun, A.J. (2010). Design Systems Group: Knowledge models for design and engineering (2005-2010). In H.H. Achten, B. de Vries & P.J. Stappers (Eds.), Design Research in the Netherlands 2010: Proceedings of the Symposium held on 20-21 May 2010 Eindhoven University of Technology (pp. 53-63). Eindhoven: Technische Universiteit Eindhoven.

Beetz, J., Berlo, L.A.H.M. van, Laat, R. de & Helm, P. van den (2010). Bimserver.org - an Open Source IFC model server. Proc. of. 27th International Conference on Applications of IT in the AEC Industry CIB-W78, Cairo, November 2010, (pp. 1-8).

Beetz, J., Laat, R. de, Berlo, L.A.H.M. van & Helm, P. van den (2010). Towards an open building information model server. Proceedings of the 10th International Conference On Design and Decision Support Systems in Architecture and Urban Planning, Eindhoven: Eindhoven University of Technology.

Borrmann, A. & Beetz, J. (2010). Towards spatial reasoning on building information models. Proc. of the 8th European Conference on Product and Process Modeling (ECPMP), Cork, September 2010, (pp. 1-6). Cork, Ireland.

Niemeijer, R.A., Vries, B. de & Beetz, J. (2010). Constraint Soup - Interpreting Natural Language Architectural Constraints. Proceedings of the 6th International Conference on Natural Language Processing and Knowledge Engineering, Beijing, August 2010, (pp. 71-76). Beijing: IEEE.

Niemeijer, R.A., Vries, B. de & Beetz, J. (2010). Designing with constraints - Towards mass customization in the housing industry. In H.J.P. Timmermans & B. de Vries (Eds.), 10th International Conference on Design & Decision Support Systems, (pp. CD-ROM). Eindhoven: Eindhoven University of Technology, Department of Architecture, Building, and Planning.

2009

Beetz, J., Leeuwen, J.P. van & Vries, B. de (2009). IfcOWL: A case of transforming EXPRESS schemas into ontologies. Artificial Intelligence for Engineering Design, Analysis and Manufacturing, 23(Special Issue 01), 89-101. in Web of Science Cited 13 times

Achten, H.H. & Beetz, J. (2009). What happened to collaborative design?. In G. Cagdas & C. Gulen (Eds.), Computation: The new realm of architectural design - Proceedings of the 27th

Conference on Education and Research in Computer Aided Architectural Design in Europe, (pp. 357-365). Istanbul: Istanbul Technical University & Yildiz Technical University.

Beetz, J. & Vries, B. de (2009). Building Product Catalogues on the Semantic Web. In A. Dikbas, E. Ergen & H. Giritli (Eds.), *Managing IT in Construction/Managing Construction for Tomorrow*, (pp. 221-227). Leiden: CRC Press.

Krijnen, T., Beetz, J. & Vries, B. de (2009). Airport Schiphol - Behavioural Simulation of a Design Concept. In G. Cagdas & B. Coloakoglu (Eds.), *Computation : the new realm of architectural design : proceedings of the 27th conference on education and research in computer aided architectural design in Europe*, Istanbul, Sept. 2009, (pp. 559-565). Istanbul: Cencler Printing.

Niemeijer, R.A., Vries, B. de & Beetz, J. (2009). Check-mate: Automatic constraint checking of IFC models. In A. Dikbas, E. Ergen & H. Giritli (Eds.), *Managing IT in Construction/Managing Construction for Tomorrow*, (pp. 479-486). London: CRC Press.

Niemeijer, R.A., Vries, B. de & Beetz, J. (2009). One size fits none – A user interface for constraint-based design. *ACADIA 09: reForm()* – Association for Computer Aided Design, (pp. 245-247). Chicago: ACADIA.

2008 and earlier

Niemeijer, R.A., Vries, B. de & Beetz, J. (2008). Identifying technical obstacles for a constraint-based mass customization system. Conference Paper : 9th International Conference on Design & Decision Support Systems in Architecture and Urban Planning, Leende, July 2008, (pp. 1-15). Eindhoven.

Beetz, J., Vries, B. de & Leeuwen, J.P. van (2007). RFD-based distributed functional part specifications for the facilitation of service-based architecture. In D. Rebolj (Ed.), *Proceedings of the 24th W78 Conference*, Maribor, Slovenia, June 2007, (pp. 183-188).

Beetz, J., Leeuwen, J.P. van & Vries, B. de (2006). Towards a topological reasoning service for IFC-based building information models in a Semantic Web context. In H. Rivard, M.M.S. Cheung, H.G. Melhem, E.T. Miresco, R. Amor & F.L. Ribeiro (Eds.), *Building on IT - Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering*, (pp. 3426-3435).

Beetz, J., Leeuwen, J.P. van & Vries, B. de (2006). Distributed Collaboration in the Context of the Semantic Web. In J.P. van Leeuwen & H.J.P. Timmermans (Eds.), *Progress in Design & Decision Support Systems in Architecture and Urban Planning*, (pp. 313-323). Eindhoven: Eindhoven University of Technology.

Beetz, J., Leeuwen, J.P. van & Vries, B. de (2005). An Ontology Web Language Notation of the Industry Foundation Classes. In R.J. Scherer, P. Katranuschkov & S.-E. Sconfke (Eds.), *Proceedings of the 22nd CIB W78 Conference on Information Technology in Construction*, (pp. 193-198). Dresden: Technical University of Dresden.

Beetz, J., Leeuwen, J.P. van & Vries, B. de (2004). Towards a Multi Agent System for the Support of Collaborative Design - Assembling a toolbox for the creation of a proof of concept. In J.P. van Leeuwen & H.J.P. Timmermans (Eds.), *Developments in Design & Decision Support Systems in Architecture and Urban Planning*, (pp. 269-280). Eindhoven University of

Technology.

Fröhlich, B., Kruijff, E., Beetz J., Seichter, H., Plate, J. (2002) 6DOF Control through a Handheld Coordinate System - VRST Paper Submission 2002

Donath, D., Petzold, F., Beetz, J., Seichter, H. and Grether, K. (2001) Augmented Reality Techniques for the Design and Modernization in an Existing Building Environment. Proc. of the 21st ACADIA conference 2001. (pp. 322-329). Buffalo, New York, USA.

Donath, D., Beetz, J., Grether, J., Kruijff, E., Petzold, F. and Seichter, H. (2001) Cooling Factory, a concrete project to test new architectural applications for augmented reality Proc. of the ICAV3D conference (pp. 14-17). Mykonos, Greece

Regenbrecht, H., Kruijff, E., Donath, D., Seichter, H. and Beetz, J. (2000). VRAM - A virtual Reality Aided Modeler. In: Proc. of the eCAADe conference 2000. (pp. 235-237) Weimar, Germany.