

CURRICULUM VITAE of Walter TERKAJ

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Born in Milano, September 10, 1980
Nationality: Italian

e-mail: walter.terkaj@itia.cnr.it , walter.terkaj@polimi.it
website: www.terkaj.com



Academic and Work Career

- *28/10/2005:* Master Degree *cum laude* in Industrial Engineering at Politecnico di Milano (www.polimi.it). Title of the thesis: "A Stochastic Programming model for the Loading of a multi-cell FMS", under the supervision of Prof. Tolio. The thesis work received the "Premio di Laurea AITeM 2005" – "Prize for Master Thesis" by Italian Association of Manufacturing (www.aitem.org).
- *Jan.2006-Dec.2008:* Ph.D. Program in "Manufacturing and Production Systems" at Politecnico di Milano, under the supervision of Prof. Tolio. Admission with scholarship.
- *Sept 2008-Feb 2009:* Research period at MTA SZTAKI (The Computer and Automation Research Institute, Hungarian Academy of Sciences) in Budapest, Hungary (<http://www.sztaki.hu/department/EMI/>).
- *Mar 2009-May 2011:* Contract researcher at ITIA-CNR (Institute of Industrial Technologies and Automation - National Research Council of Italy, www.itia.cnr.it/en).
- *17/04/2009:* Ph.D. title *cum laude* in "Manufacturing and Production Systems" at Politecnico di Milano.
- *Mar 2010-present:* Adjunct professor at Politecnico di Milano.
- *Jun 2011-Oct 2012:* Researcher (III level) at ITIA-CNR (Institute of Industrial Technologies and Automation - National Research Council of Italy), fixed-term staff.
- *Oct 2012-present:* Researcher (III level) at ITIA-CNR (Institute of Industrial Technologies and Automation - National Research Council of Italy), permanent staff.

Research Interests

The main research interests are related to the study and modeling of production systems, in particular issues related to design and short-term production planning of manufacturing systems.

A broad activity where he is involved is the formalization of system, process and product data in the manufacturing area. In particular, attention is paid to the representation of data and knowledge using ontologies (Semantic Web). As member of the Linked Data Working Group (<http://www.buildingsmart.org/standards/standards-organization/groups/linked-data-working-group/>) of buildingSMART International and member of the W3C Linked Building Data Community Group (<http://www.buildingsmart-tech.org/future/linked-data/linked-data>), he is collaborating to the publishing of an official ontology version (<http://www.buildingsmart-tech.org/future/linked-data/linked-data>) of the standard IFC - Industry Foundation Classes (ISO 16739:2013).

Furthermore, he works on the development of Virtual Factory technologies, facing problems related to the interoperability of software tools supporting different phases of the factory life cycle.

Regarding the configuration of manufacturing systems, attention is paid to modeling and performance evaluation of highly automated systems such as Flexible Manufacturing Systems (FMS) and Focused Flexibility Manufacturing Systems (FFMS).

Finally, interest is shown towards the application of mathematical techniques, such as Stochastic Programming, to the manufacturing domain.

Teaching Experience

- 2006-2008 Teaching assistant of the course Reconfigurable Manufacturing Systems. Course for Master Degree in Industrial Engineering at Politecnico di Milano. Professor: T.Tolio. A.Y. 2006-07, 2007-2008.
- 2009 Teaching assistant of the English-language course Reconfigurable Manufacturing Systems. Course for Master Degree in Industrial Engineering at Politecnico di Milano, Como campus. Professor: M.Colledani. A.Y. 2008-2009.
- 2010-2015 Adjunct professor of the course Reconfigurable Manufacturing Systems. Course for Master Degree in Industrial Engineering at Politecnico di Milano. ([link](#)) A.Y. 2009-10, 2010-11, 2011-12, 2012-13, 2013-14, 2014-15.
- 2015-2016 Adjunct professor of the course Manufacturing Systems Engineering. Course for Master Degree in Management Engineering and Mechanical Engineering at Politecnico di Milano. English-language course. ([link](#)) A.Y. 2015-16.

Research Project Experience

- January 2006 – March 2008: collaboration within European Network of Excellence VRL-KCiP (Virtual Research Lab for a Knowledge Community in Production) (www.vrl-kcip.com).
- February 2006 – January 2008: participation to National Project PRIN 2005 titled “Methodologies and tools to design production systems with focused flexibility”, as member of the leading research unit Politecnico di Milano.
- January 2006 – January 2009: collaboration within Working Group SPECIES (www.species.polimi.it) within CIRP - The International Academy for Production Engineering (www.cirp.net).
- September 2009 – February 2013: participation to the European research project “Holistic, extensible, scalable and standard Virtual Factory Framework” (Seventh Framework Programme, Theme FP7-NMP-2008-3.4-1), where ITIA-CNR is the leading research unit (www.vff-project.eu).
- February 2011 – January 2015: participation to the European research project VISIONAIR, “VISION Advanced Infrastructure for Research” (Seventh Framework Programme, Theme INFRA-2010-1.1.29) (www.infra-visionair.eu).
- October 2012 - May 2014: participation to the industrial project funded by Pomini TENOVA (<http://www.tenova.com/brands-detail.asp?IDBrand=22>) in collaboration with Politecnico di Milano, aimed at the development of a Virtual Factory platform to support the design of “roll shop” industrial plants.
- December 2012 – November 2015: participation to the European research project Apps4aME, “Engineering Apps for advanced Manufacturing Engineering” (Seventh Framework Programme, Theme FoF.NMP.2012-6) (<http://www.apps4ame.eu/>).
- January 2013 – December 2013: participation to National Project titled “Sustainable Factory Semantic Framework (SuFSeF)”, within the Flagship Project “La Fabbrica del Futuro” (Factory of the Future, <http://www.fabbricadelfuturo-fdf.it/?lang=en>).
- October 2013 – December 2015: participation to Regional Project titled “Fabbrica Intelligente per la Deproduzione Avanzata e Sostenibile” (FIDEAS) as responsible of Work Package 5 “Factory Integration” (<http://www.fideas.industries/>).
- Since January 2014: participation to the Work Package 4 (OR4) “Virtual Product and Production Design” within the National Project titled “Smart Manufacturing 2020” (http://www.fabbricaintelligente.it/wp-content/uploads/CFI_progetto3.pdf).
- Since February 2014: participation to National Project titled “Product and Process Co-Evolution Management via Modular Pallet configuration (Pro2Evo)”, as scientific responsible of ITIA-CNR in the project. The project was funded in the framework of the Flagship Project “La Fabbrica del Futuro - Factory of the Future” (<http://www.fabbricadelfuturo-fdf.it/progetti/sottoprogetto-2/>).

Publications on International Journals ISI WOS indexed

- Pedrielli G, Sacco M, Terkaj W, Tolio T (2012) An HLA-based distributed simulation for networked manufacturing systems analysis. *Journal of Simulation*, 6(4):237-252. ISSN: 1747-7778. [doi:10.1057/jos.2012.6](https://doi.org/10.1057/jos.2012.6)
- Kádár B, Terkaj W, Sacco M (2013) Semantic Virtual Factory supporting interoperable modelling and evaluation of production systems. *CIRP Annals Manufacturing Technology*, 62(1):443-446. [doi:10.1016/j.cirp.2013.03.045](https://doi.org/10.1016/j.cirp.2013.03.045)
- Terkaj W, Tolio T, Urgo M (2015) A virtual factory approach for in situ simulation to support production and maintenance planning. *CIRP Annals Manufacturing Technology*, 64(1):451-454. [doi:10.1016/j.cirp.2015.04.121](https://doi.org/10.1016/j.cirp.2015.04.121)
- Terkaj W, Sojic A (2015) Ontology-based Representation of IFC EXPRESS rules: an enhancement of the ifcOWL ontology. *Automation in Construction*, 57:188-201. [doi:10.1016/j.autcon.2015.04.010](https://doi.org/10.1016/j.autcon.2015.04.010)
- Pauwels P, Terkaj W (2016) EXPRESS to OWL for construction industry: towards a recommendable and usable ifcOWL ontology. *Automation in Construction*, 63:100-133. [doi:10.1016/j.autcon.2015.12.003](https://doi.org/10.1016/j.autcon.2015.12.003)
- Sojic A, Terkaj W, Contini G, Sacco M (2016) Modularising ontology and designing inference patterns to personalise health condition assessment: the case of obesity. *Journal of Biomedical Semantics*, in press. [doi:10.1186/s13326-016-0049-1](https://doi.org/10.1186/s13326-016-0049-1)

Publications on International Journals

- Terkaj W, Tolio T (2006) A Stochastic approach to the FMS Loading Problem. *CIRP Journal of Manufacturing Systems*, 35(5):481-490. ISSN: 0176-3377.
- Terkaj W, Tolio T, Valente A (2010) A Stochastic Programming Approach to support the Machine Tool Builder in Designing Focused Flexibility Manufacturing Systems (FFMSs). *International Journal of Manufacturing Research*, 5(2):199-229. ISSN: 1750-0591. [doi:10.1504/IJMR.2010.031632](https://doi.org/10.1504/IJMR.2010.031632)
- Ghielmini G, Pedrazzoli P, Rovere D, Terkaj W, Boër CR, Dal Maso G, Milella F, Sacco M (2013) Virtual Factory Manager for semantic data handling. *CIRP Journal of Manufacturing Science and Technology*, 6(4):281-291. [doi:10.1016/j.cirpj.2013.08.001](https://doi.org/10.1016/j.cirpj.2013.08.001)
- Kozłowski E, Terkaj W, Gola A, Hajduk M, Świć A (2014) A Predictive Model of Multi-Stage Production Planning for Fixed Time Orders. *Management and Production Engineering Review*, 5(3):23-32. [doi:10.2478/mper-2014-0024](https://doi.org/10.2478/mper-2014-0024)
- Caldarola E, Sacco M, Terkaj W (2014) Big Data: the current Wave Front of the Tsunami. *Applied Computer Science*, 10(4):7-17.
- Modoni G, Sacco M, Terkaj W (2014) A Semantic Framework for Graph-based Enterprise Search. *Applied Computer Science*, 10(4):66-74.
- Gagliardo S, Giannini F, Monti M, Pedrielli G, Terkaj W, Sacco M, Ghellere M, Salamone F (2015) An Ontology-based Framework for Sustainable Factories. *Computer-Aided Design and Applications*, 12(2):198-207. [doi:10.1080/16864360.2014.962432](https://doi.org/10.1080/16864360.2014.962432)
- Urgo M, Terkaj W, Cenati C, Giannini F, Monti M, Pellegrinelli S (2016) Zero-point fixture systems as a reconfiguration enabler in flexible manufacturing systems. *Computer-Aided Design and Applications*, in press. [doi:10.1080/16864360.2016.1150715](https://doi.org/10.1080/16864360.2016.1150715)

Publications on International Books

- Colledani M, Terkaj W, Tolio T, Tomasella M (2008) Development of a Conceptual Reference Framework to manage manufacturing knowledge related to Products, Processes and Production Systems. In Bernard A, Tichkiewitch S (eds) *Methods and Tools for Effective Knowledge Life-Cycle-Management*. Springer: 259-284. [doi:10.1007/978-3-540-78431-9_15](https://doi.org/10.1007/978-3-540-78431-9_15)
- Terkaj W, Tolio T, Valente A (2009) Focused Flexibility in Production Systems. In ElMaraghy HA (ed) *Changeable and Reconfigurable Manufacturing Systems*. Springer: 47-66. [doi:10.1007/978-1-84882-067-8_3](https://doi.org/10.1007/978-1-84882-067-8_3)
- Terkaj W, Tolio T, Valente A (2009) Designing Manufacturing Flexibility in Dynamic Production Contexts. In Tolio T (ed) *Design of Flexible Production Systems*. Springer: 1-18. [doi:10.1007/978-3-540-85414-2_1](https://doi.org/10.1007/978-3-540-85414-2_1)
- Terkaj W, Tolio T, Valente A (2009) A Review on Manufacturing Flexibility. In: Tolio T (ed) *Design of Flexible Production Systems*. Springer: 41-61. [doi:10.1007/978-3-540-85414-2_3](https://doi.org/10.1007/978-3-540-85414-2_3)
- Colledani M, Terkaj W, Tolio T (2009) Product-Process-System Information Formalization. In: Tolio T (ed) *Design of Flexible Production Systems*. Springer: 63-86. [doi:10.1007/978-3-540-85414-2_4](https://doi.org/10.1007/978-3-540-85414-2_4)
- Terkaj W, Tolio T, Valente A (2009) Design of Focused Flexibility Manufacturing Systems (FFMSs). In: Tolio T (ed) *Design of Flexible Production Systems*. Springer: 137-190. [doi:10.1007/978-3-540-85414-2_7](https://doi.org/10.1007/978-3-540-85414-2_7)
- Bruccoleri M, Capello C, Costa A, Nucci F, Terkaj W, Valente A (2009) Testing. In: Tolio T (ed) *Design of Flexible Production Systems*. Springer: 239-293. [doi:10.1007/978-3-540-85414-2_10](https://doi.org/10.1007/978-3-540-85414-2_10)
- Pedrielli G, Tolio T, Terkaj W, Sacco M (2012) Distributed Modeling of Discrete Event Systems. In: Lim EWC (ed) *Discrete Event Simulations - Development and Applications*. InTech: 3-46. [doi:10.5772/50350](https://doi.org/10.5772/50350)
- Borgo S, Sanfilippo EM, Sojic A, Terkaj W (2015) Ontological Analysis and Engineering Standards: An Initial Study of IFC. In: Ebrahimipour V, Yacout S (eds) *Ontology Modeling in Physical Asset Integrity Management*. Springer: 17-43. [doi:10.1007/978-3-319-15326-1_2](https://doi.org/10.1007/978-3-319-15326-1_2)

Publications on International Conference Proceedings

- Terkaj W, Tolio T (2007) An approach to production system design considering the utility of the machine tool builder. *Proceedings of the 40th CIRP International Seminar on Manufacturing Systems*, Liverpool, UK, 30 May-1 June 2007.
- Tolio T, Terkaj W, Valente A (2007) Focused Flexibility and Production System Evolution. *Proceedings of the 2nd International Conference on Changeable, Agile, Reconfigurable and Virtual Production*, Toronto, Ontario, Canada, 22-24 July 2007: 17-41. ISBN 978-0-9783187-0-3.
- Terkaj W, Tolio T (2008) Design of Focused Flexibility Manufacturing Systems in uncertain environment. *Proceedings of the 6th CIRP International Conference on Intelligent Computation in Manufacturing Engineering*, Naples, Italy, 23-25 July 2007: 155-160. ISBN 978-88-900948-7-3.
- Terkaj W, Tolio T, Váncza J (2009) Rolling Horizon Stochastic Programming Approach to Designing Focused Flexible Manufacturing Systems. *Proceedings of the 7th International Conference on Manufacturing Research*, Coventry, UK, 8-10 September 2009: 234-241.
- Terkaj W, Tolio T, Váncza J (2009) Multi-stage Stochastic Programming for Manufacturing System Design. *Proceedings of the 3rd International Conference on Changeable, Agile, Reconfigurable and Virtual Production*, Munich, Germany, 5-7 October 2009: 590-601. ISBN 978-3-8316-0933-8.
- Sacco M, Pedrazzoli P, Terkaj W (2010) VFF: Virtual Factory Framework. *Proceedings of 16th International Conference on Concurrent Enterprising*, Lugano, Switzerland, 21-23 June 2010.

- Sacco M, Dal Maso G, Milella F, Pedrazzoli P, Rovere D, Terkaj W (2011) Virtual Factory Manager. In: Shumaker R (ed) Virtual and Mixed Reality - Systems and Applications, Lecture Notes in Computer Science, Volume 6774, 397-406. Springer Berlin Heidelberg. [doi:10.1007/978-3-642-22024-1_44](https://doi.org/10.1007/978-3-642-22024-1_44)
- Pedrielli G, Scavardone P, Tolio T, Sacco M, Terkaj W (2011) Simulation of Complex Manufacturing Systems via HLA-Based Infrastructure. 2011 IEEE Workshop on Principles of Advanced and Distributed Simulation (PADS). Nice, France: 1-9. [doi:10.1109/PADS.2011.5936772](https://doi.org/10.1109/PADS.2011.5936772)
- Ghielmini G, Pedrazzoli P, Rovere D, Terkaj W, Boer C, Dal Maso G, Milella F, Sacco M (2011) Virtual Factory Manager of Semantic Data. Proceedings of DET2011 7th International Conference on Digital Enterprise Technology, Athens, Greece, 28-30 September 2011.
- Hints R, Vanca M, Terkaj W, Marra E, Temperini S, Banabic D (2011) A Virtual Factory tool to enhance the integrated design of production lines. Proceedings of DET2011 7th International Conference on Digital Enterprise Technology, Athens, Greece, 28-30 September 2011.
- Terkaj W, Pedrielli G, Sacco M (2012) Virtual Factory Data Model. Workshop on Ontology and Semantic Web for Manufacturing OSEMA 2012, CEUR Workshop Proceedings, vol. 886, pp 29-43.
- Terkaj W, Urgo M (2012) Virtual Factory Data Model to support Performance Evaluation of Production Systems. Workshop on Ontology and Semantic Web for Manufacturing OSEMA 2012, CEUR Workshop Proceedings, vol. 886, pp 44-58.
- Sacco M, Terkaj W, Redaelli C, Temperini S, Sadocco S (2012) VFF Industrial Scenario: the COMAU case study. Proceedings of the Joint Virtual Reality Conference, Madrid, Spain, 17-19 October, 2012.
- Candea G, Candea C, Radu C, Terkaj W, Sacco M, Suci O (2012) A practical use of the Virtual Factory Framework. Proceedings of the 14th International Conference on Modern Information Technology in the Innovation Processes of industrial enterprises, Budapest, Hungary, 24-26 October, 2012.
- Terkaj W, Urgo M, Kádár B, Popovics G, Kemény L (2012) Modeling and simulation of production systems supported by a Virtual Factory Framework. Proceedings of the 14th International Conference on Modern Information Technology in the Innovation Processes of industrial enterprises, Budapest, Hungary, 24-26 October, 2012.
- Sacco M, Terkaj W, Redaelli C (2012) VFF: a framework for interoperability. Proceedings of the 14th International Conference on Modern Information Technology in the Innovation Processes of industrial enterprises, Budapest, Hungary, 24-26 October, 2012.
- Tolio T, Sacco M, Terkaj W, Urgo M (2013) Virtual Factory: an Integrated Framework for Manufacturing Systems Design and Analysis. Procedia CIRP 7:25-30. [doi:10.1016/j.procir.2013.05.005](https://doi.org/10.1016/j.procir.2013.05.005)
- Colledani M, Pedrielli G, Terkaj W, Urgo M (2013) Integrated Virtual Platform for Manufacturing Systems Design. Procedia CIRP 7:425-430. [doi:10.1016/j.procir.2013.06.010](https://doi.org/10.1016/j.procir.2013.06.010)
- Terkaj W, Danza L, Devitofrancesco A, Gagliardo S, Ghellere M, Giannini F, Monti M, Pedrielli G, Sacco M, Salamone F (2014) A Semantic Framework for Sustainable Factories. Procedia CIRP 17:547-552. [doi:10.1016/j.procir.2014.01.059](https://doi.org/10.1016/j.procir.2014.01.059)
- Sacco M, Caldarola EG, Modoni G, Terkaj W (2014) Supporting the Design of AAL through a SW Integration Framework: The D4All Project. In: Stephanidis C, Antona M (eds) Universal Access in Human-Computer Interaction. Design and Development Methods for Universal Access, Lecture Notes in Computer Science, Volume 8513, 75-84. Springer International Publishing.
- Modoni GE, Sacco M, Terkaj W (2014) A survey of RDF store solutions. Proceedings of 2014 International ICE Conference on Engineering, Technology and Innovation (ICE), Bergamo, Italy, 23-25 June 2014. [doi:10.1109/ICE.2014.6871541](https://doi.org/10.1109/ICE.2014.6871541)

- Sojic A, Terkaj W, Contini G, Sacco M (2014) Towards a teenager tailored ontology – Supporting inference about the obesity-related health status. In Jansen L, Boeker M, Herre H, Loebe F (eds) *Ontologies and Data in Life Sciences (ODLS 2014)*, pp 42-47. ISSN 1610-7233.
- Terkaj W, Urgo M (2014) Ontology-based modeling of production systems for design and performance evaluation. *Proceedings of 12th IEEE International Conference on Industrial Informatics (INDIN)*, pp 748-753. ISBN: 978-1-4799-4905-2. [doi:10.1109/INDIN.2014.6945606](https://doi.org/10.1109/INDIN.2014.6945606)
- Borgo S, Sanfilippo EM, Sojic A, Terkaj W (2014) Towards an Ontological Grounding of IFC. *Proceedings of the 6th Workshop on Formal Ontologies meet Industry (FOMI 2014)*, CEUR Workshop Proceedings, vol. 1333.
- Modoni GE, Caldarola EG, Terkaj W, Sacco M (2015) The Knowledge Reuse in an Industrial Scenario: A Case Study. *eKNOW 2015, The Seventh International Conference on Information, Process, and Knowledge Management*, pp 66-71.
- Pauwels P, Terkaj W, Krijnen T, Beetz J (2015) Coping with lists in the ifcOWL ontology. *EG-ICE 2015 - 22nd Workshop of the European Group of Intelligent Computing in Engineering*, Eindhoven, Netherlands, 13-15 July 2015.
- El Kadiri S, Terkaj W, Urwin EN, Palmer C, Kiritsis D, Young R (2015) Ontology in engineering applications. *FOMI 2015 7th International Workshop on Formal Ontologies Meet Industry. Lecture Notes in Business Information Processing*, vol 225, pp 126-137, Springer Verlag. [doi:10.1007/978-3-319-21545-7_11](https://doi.org/10.1007/978-3-319-21545-7_11)
- Pellegrinelli S, Terkaj W, Urgo M (2016) A Concept for a Pallet Configuration Approach Using Zero-point Clamping Systems. *Procedia CIRP* 41:123-128. [doi:10.1016/j.procir.2015.12.084](https://doi.org/10.1016/j.procir.2015.12.084)

Bibliometrics

Scopus *h*-index: 10

Scopus *h*-index (excluding self-citations): 8

Google Scholar *h*-index: 12

Skills

- Programming languages: C++ (expert), Java (basic), C# (basic), LaTeX
- Modeling languages: RDF, OWL, UML
- Programming libraries: ILOG Concert Technology, wxWidgets, Redland API, C++ REST SDK, Boost C++

Languages

- Italian: native speaker
- English: Listening C1, Reading C1, Speaking C1, Writing C1

I hereby authorize the use of my personal data according to the Italian Legislative Decree n. 196/2003