Curriculum Vitae of ERWIN RAUCH

Personal information

ERWIN RAUCH
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Education since leaving school

- 2019: **National Scientific Habilitation (ASN)** for Assoc. Prof. level in the scientific sector ING-IND/16 (Production Systems and Technologies).
- 2013: **PhD (Dr.-Ing.), Research Doctorate**, dissertation titled "Concept of a changeable and modular production system for franchising models", Supervisor: Univ.-Prof. Dr.-Ing. Dr.-Ing. E.h. Dr. h.c. Dieter Spath, University of Stuttgart, Germany, grade: "summa cum laude".
- 2004-2007: **Dipl.-Wirtsch.-Ing., Master in Business Administration** with specialization in Accounting-Auditing-Consulting and Logistics, TUM Business School, Munich, Germany.
- 2004-2006: **M.Sc., Master of Science in Mechanical Engineering** with specialization in Production Management, Technical University of Munich, Germany.
- 2001-2004: **B.Sc., Bachelor of Science in Production and Logistics**, Politecnico di Torino / Free University of Bolzano, Italy.
- 1996-2001: **perito industriale, Technical High-School degree** in Mechanical Engineering, Bolzano, Italy.

Present appointments

- **Since 2014 Assistant Professor of manufacturing technology and systems (SSD ING-IND/16) part-time RTD** – Free University of Bolzano, Faculty of Science and Technology, Industrial Engineering and Automation (IEA)
- **Since 2014 Head of "Smart Mini Factory" laboratory for Industry 4.0** at the Faculty of Science and Technology – www.smartminifactory.it
- **Since 2016 Vice-Director of the study course council for the Master program in Industrial Mechanical Engineering**, coordination of the international Double Degree program with Otto v. Guericke University of Magdeburg (Germany)
- **Member of the Ph.D. Collegium** of the program "Sustainable Energy and Technologies" and "Advanced Systems Engineering", Faculty of Science and Technology, unibz.

- **Advisory Board Member** Fraunhofer Italia Research – Automation and Mechatronics Engineering (AME) research group.

Professional experience

- September 2018 – today: **Contract Professor** – **Management Center Innsbruck (Austria)**, external lecturer in the in the course "Production Engineering and Operations III" (in English), Master in Industrial Engineering.
- February 2017 – February 2018: **Contract Professor** – **International School of Management (Germany)**, external lecturer in the course "International Operational Management" (in English), Master in International Management, Campus Munich (Germany).
- February 2013 – February 2014: **Contract Professor** in the course "Production Planning and Control", Bachelor in Industrial and Mechanical Engineering, **Free University of Bolzano (Italy)**.
- February 2012 – February 2017: **Associate Partner at Matt & Partner Management Consulting** in Bolzano (Italy).
- February 2007 – February 2012: **Consultant at Matt & Partner Management Consulting** in Bolzano (Italy) - Project management in international consulting projects (manufacturing systems planning, factory planning, lean and operations management, logistics and supply chain management, production planning and control).
- 2009 - 2011: **Research Fellow** in the research project "Design of lean and agile material handling systems in make-to-order production", Free University of Bolzano (Italy).
- 2007 – 2013: **Teaching Assistant** in several courses at the Faculty of Science and Technology, Free University of Bolzano (Italy).
- 2006 – 2007: **Business Analyst at ifp Consulting** in Munich (Germany), Institute for Production and Logistics, Prof. Dr.-Ing. Joachim Milberg – technical management consulting for Bosch and ZF Sachs.

Experience in academic teaching

<u>Academic year 2018/19:</u>

- Lecturer in the **1st International Summer School in Axiomatic Design – Design of Complex Systems in Industry 4.0**, Worcester Polytechnic Institute (MA, USA) with live connections to universities in Italy (unibz), Austria, Colombia, Australia and Mexico, e-learning format (video-recording with Echo360 and video-conference using Zoom) with 60 students, July 23-25 2019, 20 hours lecture, Language: English.
- Guest lecturer for **Industry 4.0 in Supply Chains and Organizations**, Worcester Polytechnic Institute (MA, USA), Master in Supply Chain Management, 4 hours lecture, Language: English.
- Contract professor in **Production Engineering and Operations III**, Management Center Innsbruck (MCI) (Austria), Master in Industrial Engineering, 1,5 ECTS, 14 hours lecture, Language: English.

- Guest lecturer for **Industry 4.0 in Production and Logistics**, Chiang Mai University (Thailand), Master in Industrial Engineering, 4 hours lecture, Language: English.
- Lecturer in the **Tutorial for Axiomatic Design**, 3rd Annual Meeting 2019 SME 4.0 – Industry 4.0 for SMEs, Chiang Mai University (Thailand), January 29 2019, 4 hours lecture, Language: English.

Academic year 2017/18:

- Contract professor in **International Operations Management**, International School of Management Campus Munich (Germany), Master in International Management, 2 ECTS, 18 hours lecture, Language: English.
- Lecturer in the **Summer School for Axiomatic Design**, Free University of Bolzano, graduate 2 ECTS, 10 hours lecture, in collaboration with Visiting Professor Chris Brown from Worcester Polytechnic Institute (USA), Language: English.

Academic year 2016-today:

- Lecturer in **Simulation in Production and Logistics**, Free University of Bolzano, graduate 5 ECTS, 16 hours lecture, Language: English.

Academic year 2014-today:

- Lecturer in **Production Systems and Industrial Logistics**, Free University of Bolzano, undergraduate 10 ECTS, 24 hours of exercise and laboratory, Language: German.
- Lecturer in **Production Planning and Control**, Free University of Bolzano, undergraduate 10 ECTS, 64 hours lecture, Language: German.

Academic year 2012/13:

- Contract Professor in **Production Planning and Control**, Free University of Bolzano, undergraduate 10 ECTS, 96 hours of lecture and exercises, Language: German.
- Teaching Assistant in **Production Systems and Industrial Logistics**, Free University of Bolzano, undergraduate 10 ECTS, 90 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Innovation oriented business management in industrial companies**, Free University of Bolzano, undergraduate 10 ECTS, 60 hours of exercise and laboratory, Language: German.

Academic year 2011/12:

- Teaching Assistant in **Production Systems and Industrial Logistics**, Free University of Bolzano, undergraduate 10 ECTS, 120 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Innovation oriented business management in industrial companies**, Free University of Bolzano, undergraduate 10 ECTS, 60 hours of exercise and laboratory, Language: German.

Academic year 2010/11:

- Teaching Assistant in **Production Systems and Industrial Logistics**, Free University of Bolzano, undergraduate 10 ECTS, 120 hours of exercise and laboratory, Language: German.

- Teaching Assistant in **Innovation oriented business management in industrial companies**, Free University of Bolzano, undergraduate 10 ECTS, 60 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Technology Management**, Free University of Bolzano, graduate (Executive Master in Innovation Engineering) 5 ECTS, 50 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Production Systems**, Free University of Bolzano, graduate (Executive Master in Innovation Engineering) 5 ECTS, 50 hours of exercise and laboratory, Language: German.

Academic year 2009/10:

- Teaching Assistant in **Innovation and Project Management**, Free University of Bolzano, undergraduate 5 ECTS, 40 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Production Systems**, Free University of Bolzano, undergraduate 10 ECTS, 100 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Transport and Logistics**, Free University of Bolzano, undergraduate 10 ECTS, 80 hours of exercise and laboratory, Language: German.

Academic year 2008/09:

- Teaching Assistant in **Innovation and Project Management**, Free University of Bolzano, undergraduate 5 ECTS, 50 hours of exercise and laboratory, Language: German.
- Teaching Assistant in **Production Systems**, Free University of Bolzano, undergraduate 10 ECTS, 100 hours of exercise and laboratory, Language: German.

Supervision of students

Supervision and co-supervision of more than 50 Bachelor and Master students at Free University of Bolzano, University of Malta and MCI Management Center Innsbruck.

Supervision of PhD-candidate Luca Gualtieri (SET-cycle 33): "Development of Techniques and Technologies for Safety and Ergonomics in Collaborative Workcells".

Supervision of PhD-candidate Benedikt G. Mark, Free University of Bolzano (SET-cycle 34): "Assistance Systems in Smart Manufacturing".

Support of PhD-candidate Hendrik Stern, University of Bremen (Germany): "Integration of Human Factors in the Design of Cyber-Physical Production Systems" (main supervisor Prof. Till Becker, University of Bremen)

Support of PhD-candidate Andrew Vickery, Worcester Polytechnic Institute (WPI): "Framework for Introducing Digital and Smart Data Analytics in SMEs in the Context of Industry 4.0" (main supervisor Prof. Chris Brown, WPI).

Member of the PhD Evaluation Committee of Jenifer Vasquez, Pontificia Universidad Javeriana (Colombia) / Politecnico di Torino (Italy): "Development of a Comprehensive Sustainability Model for Environmental and Productive Process Improvement in Small and Medium-Sized Enterprises (SMEs)".

Areas of scientific interest

Research interests and activities in the field of "Design and Operation of Smart and Sustainable Industrial Production Systems":

Industry 4.0 and Smart Manufacturing

- Implementation of Industry 4.0 in SMEs
- Digitization in production and virtual manufacturing
- Smart assistance systems in manufacturing and assembly
- Connectivity in cyber-physical production systems
- Design of safe and ergonomic collaborative human-machine/robot workspaces

Artificial Intelligence and Complex Systems in Production

- Design of complex systems with Axiomatic Design
- Application of artificial intelligence and machine learning in production
- Application of artificial intelligence in engineering design and the design of manufacturing Systems

Sustainable Production Systems

- Human-centered cyber physical production systems
- Social sustainability in production
- Work 4.0 and Operator 4.0
- Ecological sustainability through distributed manufacturing systems and networks

Engineering Education 4.0

- Industry 4.0 learning factories
- Qualification and training of employees
- Teaching Axiomatic Design for Industry 4.0

Experience in research projects

The undersigned coordinated the acquisition of the following funds:

- 2020 – 2023: **Principal-Investigator for unibz in the research project "ETAT - Education & Training for Automation 4.0 in Thailand"**. Funding Body: Erasmus+ KA 2-3. Grant: € 997.757 (€ 70.000 for unibz). Research consortium with 14 partners from Europe and Thailand.
- 2020 – 2020: **Principal Investigator in the research project "Development of a Methodology for the Long-Term Sustainable Introduction of Industry 4.0 in SMEs"** Funding Body: Mobility Call for Researchers of the Autonomous Province of Bolzano. Grant: €28.625. Collaboration with Visiting Professor David S. Cochran, Purdue University Fort Wayne, IN, USA.
- 2019 – 2022: **Principal-Investigator for unibz in the research project "ICARUS - An Innovative Higher Education Institution Training Toolbox to EffeCtively AddRess the EUropean InduStry 4.0 Skills Gap and Mismatches"**. Funding Body: Erasmus+ KA 2-3. Grant: € 325.000 (€ 62.000 for unibz). Research consortium with 5

partners (University of Malta, Royal Institute of Technology KTH Sweden, University of Minho Portugal, University Politehnica of Bucharest in Romania).

- 2019 – 2022: **Co-Investigator in the research project "ASSIST4WORK - Social sustainability in production through age-appropriate and disability-friendly workplace design using assistance systems"**. Funding Body: Free University of Bolzano (internal call to increase capacity for acquiring third-party research funds). €98.000. Project partner: Fraunhofer Italia, GWB Center for disabled people Bolzano, industry partners.
- 2019 – 2019: **Principal Investigator in the research project "SIM-EH-BZ – Simulation Study of the Emergency Department in the Hospital of Bolzano"**. Funding Body: Azienda Sanitaria Alto Adige spa. €20.000 (commissioned research).
- 2018 – 2019: **Principal Investigator in the research project "PROSTAHL - Collaborative robotics for the production of individual stainless steel furniture"**. Funding Body: Prostahl srl. €12.000 (commissioned research).
- 2018 – 2020: **Co-Investigator in the research project "E-EDU 4.0 - Engineering Education 4.0"**. Funding Body: European Regional Development Fund (ERDF) - Interreg Italy-Austria. Grant: €1.150.000 (€180.000 for unibz). Research consortium with 5 partners (Carinthia University of Applied Sciences – Austria, HTL Höhere Technische Bundeslehranstalt Wolfsberg – Austria, Friuli Innovazione Centro di ricerca e di trasferimento tecnologico – Italy, t2i– trasferimento tecnologico e innovazione – Italy, Camera di Commercio di Treviso e Belluno – Italy).
- 2017 - 2020: **Project Manager of the research project "SME 4.0 – Industry 4.0 for SMEs"**. Funding Body: European Commission H2020 MSCA RISE 2016. Grant: 734.713. €783.000 (€311.500 for unibz as project coordinator). International research consortium with 8 partners (Montanuniversität Leoben - Austria, Technical University Kosice - Slovakia, Elcom sro – Slovakia, Massachusetts Institute of Technology – USA, Worcester Polytechnic Institute – USA, Chiang Mai University - Thailand, SACS MAVMM – India). First EU H2020 project with unibz as project coordinator.
- 2017 – 2020: **Principal Investigator in the research project "EYE TRACK - Industrial Usability of Eye Tracking for Manufacturing and Design in SMEs"**. Funding Body: Free University of Bolzano. Grant: TN2090. €63.000. Research consortium with 7 partners (University Modena Reggio Emilia – Italy, Fraunhofer Italia - Italy, Craftmanship Association lvh South-Tyrol – Italy, Entrepreneur Association South-Tyrol – Italy, Technical Highschool Bolzano – Italy, Planit GmbH – Italy, Barbieri electronic OHG – Italy).
- 2017 – 2019: **Co-Investigator in the research project "Smart Shopfloor - Development of a software prototype for intelligent Shop Floor Management**

through Industry 4.0 technologies". Funding Body: Free University of Bolzano. Grant: TN20179. €70.000, Principal Investigator Prof. Dominik Matt. Research consortium with 2 industrial partners (Solunio GmbH – Italy, Anyt1me srl – Italy).

- 2015 – 2016: **Principal Investigator in the research project "DIMASY - Design of decentralized and distributed manufacturing systems and their coordination in manufacturing networks"**. Funding Body: Free University of Bolzano. Grant: TN2028. €34.500. Research consortium with 2 partners from research and industry (Fraunhofer Italia – Italy, Tecnomag GmbH – Italy).
- 2014 – 2017: **Principal Investigator in the research project "Future-LPD - Experts survey to assess the transfer of lean methods from production to product development (Lean Product Development)"**. Funding Body: Free University of Bolzano. Grant: TN2032. €4.300.

Total acquisition of research funding: € 3.576.182 (€ 953.925 for the Free University of Bolzano, >70% third party funding from EU H2020, Interreg I-A, Erasmus+, industry).

The undersigned was/is involved as Co-Investigator in the following research projects:

- 2019 – 2020: **Team Member in the research project "CoHoMe - Comparison and Homogenization of Safety Measurements"**. Funding Body: COVR (H2020-ICT779966) cascade funding. Grant: TN2260. € 100.000 (€ 20.000 for unibz). Research consortium with Joanneum Research and Technical University Graz.
- 2019 – 2020: **Team Member in the research project "WIRE COBOTS - Wire harness assembly using collaborative robots to increase efficiency and ergonomics"**. Funding Body: ESMERA (H2020-ICT 780265) cascade funding. Grant: TN2260. € 200.000 (€ 100.000 for unibz). Research consortium with the industrial partner Carretta srl.
- 2018 – 2021: **Co-Investigator in the research project "A21 - Digital Economy and Digital Society: Challenges and Strategies for a successful digital transformation in the Tyrol Veneto Region"**. Funding Body: European Regional Development Fund (ERDF) - Interreg Italy-Austria. Grant: €300.000 (€155.000 for unibz). Research consortium with 2 partners (A21Digital – Austria, Polo Scientifico Didattico Studi sull'Impresa (PSD, Università degli Studi di Verona – Italy).
- 2017 – 2019: **Co-Investigator in the research project "COCkPiT - Collaborative Construction Process Management"**. Funding Body: European Regional Development Fund (ERDF). Grant: IN2204. €747.700 (€503.200 for unibz), Principal Investigator e scientific supervision Prof. Werner Nutt. Research consortium with 1 internal partner and 1 external partner (Faculty of Computer

Science unibz – Italy, Fraunhofer Italia – Italy).

- 2015 – 2017: **Co-Investigator in the research project "REBU - Business Model Reconfiguration and Innovation"**. Funding Body: Free University of Bolzano. Grant: TN2029. €38.050, Principal Investigator Dr. Cinzia Battistella. Research consortium with research and industrial partners (Fraunhofer Italia – Italy, University of Udine – Italy, Frener & Reifer GmbH – Italy).
- 2013 – 2016: **Co-Investigator in the research project "FISSMEs - Field study to determine requirements for flexible and agile manufacturing and assembly systems for SMEs"**. Funding Body: Free University of Bolzano. Grant: TN2003. €32.000, Principal Investigator Dr. Pasquale Russo Spena.
- 2009 – 2011: **Research Fellow in the research project "Design of lean and agile material handling systems".** Funding Body: Free University of Bolzano. Grant: TN5005. €21.000, Principal Investigator Prof. Dominik Matt.

The undersigned is involved in the submission/preparation of the following of proposals:

- 2021 - 2024: **Co-Investigator of the research project "SME 4.0 Plus – The Next Level of Sustainable, Intelligent and Human-Centered SMEs"**. Funding Body: European Commission H2020 MSCA RISE 2020. € 1.000.000 (€ 250.000 for unibz as project coordinator). International research consortium with international partners.
- 2021 – 2023: **Principal Investigator for unibz in the research project "IDFP – INTEGRATED DIGITAL FACTORY PLANNING: Development of a Framework for the Harmonization and Integration of Digital Factory Planning and Building Information Modelling"**. Funding Body: Joint Research Project South Tyrol - Austria. € 600.000 (€ 125.000 for unibz). Research consortium with Technical University of Vienna, Fraunhofer Austria and Fraunhofer Italia.
- 2020 – 2025: **Principal Investigator in the research project "ITSELF – Assisted (Re-)Design of Intelligent and Self-Optimizing Factories"**. Funding Body: ERC Starting Grant. € 1.339.000.
- 2020 – 2021: **Principal Investigator in the research project "AUTONOMIC – AUTOmated collaborative handling and defect detection Of aluminium dIe-Casting components"**. Funding Body: ESMERA (H2020-ICT 780265) cascade funding. € 200.000 (€ 90.903 for unibz). Research consortium with the industrial partner Johannes Engl Werkzeugbau OHG.
- 2020 – 2022: **Team member in the research project "EXPLOIT 4.0 - Industry 4.0 Community: From Science to Practice by Exploitation"**. Funding Body: Central Europe 2014-20. € 750.000 (€ 128.500 for unibz). Research consortium with University of Udine – Italy, Technical University of Kosice – Slovakia, Univerzita J. E. Purkyněv

Ústínad Labem – Czech Republic, Hospodářsk á a sociálnírada Ústeckéhokraje, z.s. – Czech Republic, Politechnika Krakowska im. Tadeusza Kościuszki - Poland).

- 2020 – 2023: **Co Investigator for unibz in the research proposal "MARIA - Modular Approach to Reconfigurable Industrial Assembly**". Funding Body: European Commission H2020 (Innovation Action - FoF-08-2019 Pilot lines for modular factories). Grant: €12.000.000 (€1.200.000 for unibz). International research consortium with 10 academic and industrial partners from 6 countries.
- 2020 – 2020: **Principal Investigator for unibz in the research proposal "Feasibility study of the potential for assistance systems to increase ergonomics in critical work processes at SEAB AG"**. Funding Body: SEAB spa. €8.000 (commissioned research).
- 2019 – 2020: **Team member in the research proposal "MACHeese - New automatic machine for hard-cheese washing and coating"**. Funding Body: Inoxstahlbau srl. €20.000 (commissioned research).
- 2019 – 2019: **Principal Investigator in the research proposal "LEITNER COBOT - Feasibility study for the use of collaborative robotics in electrical assembly"**. Funding Body: Leitner spa. €19.500 (commissioned research).
- 2019 – 2022: **Co Investigator for unibz in the research proposal "ACA EDU - Increase of Academic Education Levels in the Alps-Adria Region by integrated Concepts of Part-time Tertiary Education**". European Regional Development Fund (ERDF) - Interreg Italy-Austria. Grant: €1.000.000 (€250.000 for unibz). Research consortium with 9 partners (Carinthia University of Applied Sciences, Friuli Innovazione Centro di ricerca e di trasferimento tecnologico, Carinthian Tech Research, Polo tecnologico Pordenone "Andrea Galvani", Consorzio Universitario di Pordenone, Camera di Commercio di Treviso – Belluno, University of Salento, PMS Elektro- und Automationstechnik GmbH(PMS).
- 2019 – 2021: **Research team member in the research proposal "HIPERGEAR 3D - HIgh PERformance GEARs by 3D printing"**. Funding Body: PRIN 2017. €154.600. Project partner: Politecnico di Milano, Politecnico di Torino and Università degli Studi di Catania.

National and International collaboration

- Collaboration with **Fraunhofer Italia Innovation Engineering Center IEC (Italy)** in the field of research.
- Collaboration with Prof. Gerhard Hilmer and Dr. Benjamin Massow from **MCI Innsbruck** in teaching and in a research project on collaborative robotics.
- Collaboration with Prof. Franco Fraccaroli and Maria Paola Paladino, **Department of Psychology and Cognitive Science, University of Trento** to prepare a research proposal for investigating psychological ergonomics in collaborative workspaces.
- Collaboration with Prof. Margherita Peruzzini from **Università degli Studi di Modena e Reggio Emilia (Italy)** in

research: use of eye tracking and biometric measurement technologies for assembly process optimisation.

- Collaboration with Prof. Carlo Gorla from **Politecnico di Milano (Italy),** Prof.ssa Francesca Maria Curà del **Politecnico di Torino (Italy)** and Prof.ssa Giovanna Fargione **dell'Università degli Studi di Catania (Italy)** in research: preparation of a research proposal on the characterization and industrialization of gear components through additive manufacturing technologies.
- Collaboration with **Joanneum Research GmbH Graz (Austria)** in the field of research: preparation of an INTERREG proposal together with Fraunhofer Italia.
- Collaboration with the **Carinthia University of Applied Sciences (Austria)** for the preparation of an INTERREG Italy-Austria proposal in 2017 together with other Italian and Austrian partners (schools, chambers of commerce, transfer centres) on Engineering Education 4.0.
- Collaboration with Prof. Wilfried Sihn of **Fraunhofer Austria** preparing a research proposal.
- Collaboration with Professor Jens Kiefer of the **University of Applied Science in Ulm (Germany)** teaching and research.
- Collaboration with Professor Sven Seidenstricker from **Baden-Wuerttemberg Cooperative State University Moosbach (Germany)** and MSc. Robert Hammerl of the **University of Stuttgart (Germany)** in research.
- Collaboration with Prof. Michael Freitag and Prof. Till Becker from **BIBA Bremer Institut für Produktion und Logistik GmbH and University of Bremen (Germany)** in research on human factors in Cyber Physical Systems.
- Collaboration with Prof. Hartmut Zadek of the **Otto von Guericke University of Magdeburg (Germany)** during his period of Visiting Professor at the Free University of Bolzano to extend the collaboration in teaching (Double Degree program) and research.
- Collaboration with Prof. Christian Linder from **ESCP Europe Business School (London, UK)** in research on human-centred manufacturing and Industry 4.0 in supply chain management.
- Collaboration with Prof. Christopher Brown from **Worcester Polytechnic Institute (Worcester, USA)** and Prof. Sang-Gook Kim from **Massachusetts Institute of Technology MIT (Boston, USA)** on Axiomatic Design for Industry 4.0.
- In the project "SME 4.0 - Industry 4.0 for SMEs: Smart Manufacturing and Logistics for SMEs in an X-to-order and the Mass Customisation Environment", a collaboration has begun with the following international partners: **Technical University of Kosice (Slovakia), Montanuniversität Leoben (Austria), MIT (USA), Worcester Polytechnic Institute (USA), Chiang Mai University (Thailand), SACS MAVMM Engineering College (India), Elcom sro (Slovakia)**.
- Invitation of Prof. Glenn Ballard **(University of California, Berkeley** and founder of the "Last Planner" concept) to

become member of the Lean Construction Institute.

- Collaboration with **Prof. Carlos Antonio Meisel from Universidad de Ibagué (Colombia)** in the coordination and organization of the 1st International Summer School on Axiomatic Design for Industry 4.0.
- Collaboration with Dr. Nirut Naksuk from the **National Metal and Materials Technology Center (MTEC) at Bangkok Science Park** (Thailand) in researcher exchange.
- Collaboration with Prof. Jonathan Borg and Dr. Emmanuel Francalanza of the **University of Malta (Malta)**. Preparation of a proposal for the COST (EU) program in 2017 on Global Manufacturing for SME together with **KTH Stockholm (Sweden), University of Troyes (France), University of Warwick (UK), Politecnico di Milano (Italy), Politecnico de Porto (Portugal), University of Applied Science Upper Austria (Austria), University of Miskolc (Hungary), University of Luxemburg (Luxemburg), University of Stuttgart (Germany) and Fraunhofer IAO of Stuttgart (Germany)**.

Research stays abroad

- June - September 2019: **Visiting Research Scholar** – Worcester Polytechnic Institute (WPI), Faculty of Mechanical Engineering, Worcester Massachusetts (USA)
- June 2019: **Visiting Research Scholar** – Elcom sro and Technical University of Košice, Prešov (Slovakia)
- November 2018 - February 2019: **Visiting Research Scholar** – Chiang Mai University, Faculty of Engineering, Department of Industrial Engineering, Chiang Mai (Thailand)
- June 2018: **Visiting Research Scholar** – Elcom sro and Technical University of Košice, Prešov (Slovakia)
- September - November 2017: **Visiting Research Scholar** – Worcester Polytechnic Institute (WPI), Faculty of Mechanical Engineering, Worcester Massachusetts (USA)

Participation in exhibitions

- Coordination of the participation of the Smart Mini Factory at the "**EOS Digital Enterprise Day" at Castel Maretsch** with a demonstration of collaborative robotics and a talk on Industry 4.0, October, 17-18 2019.
- Coordination of the participation of the Smart Mini Factory at the "**TechParcour Handwerk 2019" at NOI 2019** with an exhibition and demonstration of collaborative robotics, Augmented Reality and assistance systems, July 26 2019.
- Participation at the "**LUNA - Long night of the research 2019**" with an exhibition and demonstration in the Smart Mini Factory laboratory titled "Smart Factory".
- Coordination of the participation of the Smart Mini Factory at the "**SPC IPC Drives Parma 2018 – Cultura 4.0" at the fair of Parma** with a stand of the Smart Mini Factory lab, May 22-24 2018.
- Coordination of the participation of the Smart Mini Factory at "**Handwerk 2030" at NOI** with an exhibition and demonstration of Industry 4.0 technologies, July 13 2018.
- Participation at the "**LUNA - Long night of the research**

2016" with an exhibition and demonstration in the Smart Mini Factory laboratory titled "Hybrid assembly and human-robot collaboration".

- Participation at the "**Research Day 2015**" at the Free University of Bolzano (October 2015) on the topic: "Industry 4.0 - the intelligent and smart factory" - exhibition of actual research activities.
- Participation at the "**LUNA - Long night of the research 2014**" with an exhibition and demonstration in the "mini-factory"-laboratory titled "Simulation and optimization of manual assembly processes in the mini-factory!".
- Participation at the "**LUNA - Long night of the research 2012**" with an exhibition and demonstration in the "mini-factory"-laboratory titled "How to increase productivity in the variant-driven production".
- Participation at the "**LUNA - Long night of the research 2010**" with an exhibition and demonstration titled "From a product idea to a finished product – Planning, simulation and realization of industrial production processes". Demonstration of material-flow simulation case studies with FlexSim Simulation software.

Invited talks

- **Speaker at the congress Science&Law of UIA (Union Internationale des Avocates)** with the title: "From Research to Market: Challenges of Technology Transfer in the Digital Age", July 10, 2020, Trieste, Italy.
- **Speaker at ESOF EuroScience Open Forum 2020** in Trieste (www.esof.eu/en) for the theme "The 4th Industrial Revolution". Title: "Transfer of Industry 4.0 to Small and Medium Sized Enterprises", July 5-9, 2020, Trieste, Italy.
- **Key Note Speaker at DSMIE 2020**, presentation with the title "Industry 4.0+: A look at the next level of intelligent and self-optimizing factories", 3rd International Conference on Design, Simulation, Manufacturing (DSMIE-2020), June 9-12, 2020, Kharkiv, Ukraine.
- **Speaker at "Der Mensch steht wieder im Mittelpunkt" - 10 Years of Fraunhofer Italia**, presentation with the title „Socially Sustainable Production", January 16, 2020, NOI Techpark Bolzano, Italy.
- **Speaker at Cluster Event of the European Commission**, poster presentation with the title "Applications of AI / Machine Learning in SMEs", December 10 2019, Brussels, Belgium.
- **Speaker and Workshop Leader "Collaborative Robotics and Workplaces" - Digital Talent Day 2019**, Chamber of Commerce of Bolzano, December 9 2019.
- **Speaker at seminar on the integration of people with disabilities into the labour market,** Municipality of Bolzano, October 4 2019, title "Worker Assistance Systems for a better integration of disabled people in industrial companies".
- **Speaker PhD Seminar Worcester Polytechnic Institute, Foisie Business School,** September 4 2019, Title "With Industry 4.0 towards the Smart and Digital Factory of the

Future".

- **Speaker Executive Management Board meeting Chiang Mai University, Faculty of Engineering (Thailand)**, December 10 2018, Title "Industry 4.0 - Challenges and opportunities to rethink on higher education".
- **Speaker and moderator to the 1st Digital Laboratory of Confindustria Marche (Italy)**, October 18 2018, presentation with the title "Industry 4.0 for production and logistics" and moderation of round table discussion, organised by Confindustria Marche and Federmanager.
- **Speaker at MCI Management Center Innsbruck (Austria), WING-Kaminabend** May 11 2018. Presentation with the title "Innovative Aspects in Production Planning & Management".
- **Speaker at the Digital Day (Italy),** May 11 2018, round table discussion on Digitalization and Industry 4.0, organised by the Chamber of Commerce of Bolzano.
- **Speaker in a Workshop at Wirtschaftskammer Lienz (Austria),** January 25 2018, discussion on future Engineering Education, organised by Innos.
- **Speaker at the Student Award Ceremony at WPI (USA)**, November 13 2017, speech and Question-Answer-session on "Industry 4.0 – the new industrial revolution in Europe", organised by the SME (Society of Manufacturing Engineers) chapter in Worcester, MA.
- **Speaker at the round table of CV Forum 2017** (Italy), July 7 2017, congress of the Triveneto Accountants. Round table discussion on the topic of "Industry 4.0 and the profession of Accountants", moderated by Il Sole24ore journalist Katy Mandurino.
- **Speaker at the University of Malta (Malta)**, June 2 2017, seminar on Digital Factories for Innovative Product Development. Title "Industry 4.0 and Digitalisation -a challenge for SMEs".
- **Speaker at MCI Management Center Innsbruck (Austria), WING-Kaminabend** September 25 2015. Title "From Lean Management to Smart Factory - The role of the engineer in the era of Industry 4.0, CPS and IoT.
- **Speaker at the Research Day 2015** at Bozen-Bolzano with the following presentation "Industry 4.0 - the intelligent and smart factory".
- **Speaker at the "Start-up Aperitifs" (Italy)**, May 28 2013 organised by the Chamber of Commerce of Bolzano. Title "Growing as an entrepreneur - Today's challenges".
- **Speaker invited to the round table (Italy)** on the topic "Ethics in business? And exists!" Published in "forum-schule-heute", No. 2, 2013.
- **Speaker "Treffpunkt Wirtschaft 2012" (Italy)**, 6 July 2012 organised by the Chamber of Commerce of Bolzano. Title "Companies in change - growth in organisation and processes".

Presentation at conferences

- **International Conference on Axiomatic Design (ICAD) 2019** Sydney, Australia - presentation of 3 conference papers
- **CIRP Learning Factories 2019** Braunschweig, Germany - presentation of 1 conference paper
- **IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) 2018** Bangkok, Thailand – presentation of 3 conference papers
- **International Conference on Axiomatic Design (ICAD) 2018** Reykjavik, Iceland - presentation of 2 conference papers
- **CIRP Learning Factories 2017** Darmstadt, Germany – presentation of 1 paper
- **CIRP Design 2016** Stockholm, Sweden – presentation of 1 paper
- **CIRPe Web Conference 2015** Cranfield, UK – presentation of 1 conference paper
- **CIRP Conference on Life Cycle Engineering (LCE) 2015** Sydney, Australia – presentation of 2 conference papers
- **International Conference on Production Research (ICPR) 2014** Cluj-Napoca, Romania – presentation of 2 conference papers
- **CIRP Conference on Manufacturing Systems (CMS) 2014** Windsor, Canada – presentation of 2 conference papers
- **Conference on Changeable, Agile, Reconfigurable and Virtual Production (CARV)** Munich, Germany – presentation of 2 conference papers
- **AITEM 2013** Ancona, Italy - presentation of 1 conference paper
- **CIRP Conference on Intelligent Computation in Manufacturing Engineering (ICME) 2012** Naples, Italy - presentation of 2 conference papers
- **International Conference on Sheet Metal (SHEMET) 2011** Leuven, Belgium – presentation of 1 conference paper
- **International Multi-Conference on Engineering and Technological Innovation (IMETI) 2010** Orlando, FL, USA – presentation of 1 conference paper
- **CIRP Conference on Intelligent Computation in Manufacturing Engineering (ICME) 2010** Naples, Italy – presentation of 2 conference papers
- **Conference on Changeable, Agile, Reconfigurable and Virtual Production (CARV) 2009** Munich, Germany – presentation of 2 conference papers

Awards in Research

- **South Tyrolean Research Award 2019** endowed with 40,000 Euro of funding for research on "Potentials of Biological Transformation in Manufacturing", awarded on December 19, 2019 in Bolzano, Italy (NOI TechPark).
- **Best Student Paper Award** for the paper "Smart Data Analytics in SME Manufacturing – an Axiomatic Design based Conceptual Framework", ICAD 2019, 13th International Conference on Axiomatic Design. Sydney, Australia, October 18-20, 2019.

- **Best Track Paper Award (Track Industry 4.0)** for the paper "Suitability of Industry 4.0 Concepts for Small and Medium Sized Enterprises: Comparison between an Expert Survey and a User Survey", IEOM 2019 9th International Conference on Industrial Engineering and Operations Management. Bangkok, Thailand, March 5-7, 2019.
- **Outstanding Paper Award** for the paper "Advanced Automation for SMEs in the I4.0 Revolution: Engineering Education and Employees Training in the Smart Mini Factory Laboratory", IEEM 2018 International Conference on Industrial Engineering and Engineering Management. Bangkok, Thailand, December 16-19, 2018.
- **Best Track Paper Award (Track Engineering Education)** for the paper "Safe Human-Machine Centered Design of an Assembly Station in a Learning Factory Environment", IEOM 2018 8th International Conference on Industrial Engineering and Operations Management. Bandung, Indonesia, March 6-8, 2018.
- **Best Track Paper Award (Track Sustainability in Supply Chain)** for the paper "Sustainable City Logistics through Shared Resource Concepts", IEOM 2018 8th International Conference on Industrial Engineering and Operations Management. Bandung, Indonesia, March 6-8, 2018.
- **Best Track Paper Award (Track Construction Management)** for the paper "Mobile On-site Factories – Scalable and Distributed Manufacturing Systems for the Construction Industry", IEOM 2015 5th International Conference on Industrial Engineering and Operations Management. Dubai, United Arab Emirates, March 3-5, 2015.
- **Overall Best Paper Award** for the paper "An AD based Design and Implementation Approach for Franchise-Networks with distributed manufacturing units", ICAD 2013 Seventh International Conference on Axiomatic Design. Worcester, USA, Juni 27-28, 2013.
- **Nomination for best dissertation 2013** – University of Stuttgart.

Awards in Teaching

- **Award for best performance in relationship with students 2018** in the graduate course "MSc. in Industrial Mechanical Engineering" (suggested by students and awarded by the Faculty of Science and Technology, Free University of Bolzano).
- **Award for best teaching in German in the undergraduate course 2017** "BSc. in Industrial and Mechanical Engineering" (awarded by the Faculty of Science and Technology, Free University of Bolzano).
- **Award for best performance in relationship with students 2017** a in the graduate course "MSc. in Industrial Mechanical Engineering" (suggested by students and awarded by the Faculty of Science and Technology, Free University of Bolzano).

Memberships

- **AITEM** - Member of Associazione Italiana di Tecnologie Maufatturiere (Italian Association of Manufacturing Technologies Ing-Ind/16)
- **VDI** - Member of Verein Deutscher Ingenieure (Association of German Engineers)
- **LCI** - Member of Lean Construction Institute, USA
- **SME** - Member of Society of Manufacturing Engineers, USA
- **AEM** - Member of Association for Manufacturing Excellence, USA
- **IEOM** - Member of Industrial Engineering and Operations Management group

Editor activity

- **Editorial Board** Journal of Engineering Sciences (ISSN 2312-2498)
- **Guest Editor** for the Special Issue: "Industry 4.0 for SMEs - Smart Manufacturing and Logistics for SMEs" – Sustainability (MDPI)
- **Article Editor** for SAGE Open Journal for Manufacturing, Industry 4.0 and Industrial Management.

Reviewer activity

- International Journal of Production Economics (Elsevier)
- International Journal of Production Research (Elsevier)
- Journal of Cleaner Production (Elsevier)
- Journal of Manufacturing Systems (Elsevier)
- Manufacturing Letters (Elsevier)
- Robotics and Computer-Integrated Manufacturing (Elsevier)
- Computers in Industry (Elsevier)
- Computers & Industrial Engineering (Elsevier)
- International Journal of Industrial Ergonomics (Elsevier)
- Sustainable Production and Consumption (Elsevier)
- CIRP Procedia Journal (Elsevier)
- Procedia Manufacturing (Elsevier)
- Journal of Business Research (Elsevier)
- Engineering Science and Technology, an International Journal (Elsevier)
- European Management Journal (Elsevier)
- Journal of Manufacturing Technology Management (Emerald)
- International Journal of Contemporary Hospitality Management (Emerald)
- International Journal of Health Care Quality Assurance (Emerald)
- Artificial Intelligence for Engineering Design, Analysis and Manufacturing (Cambridge University Press)
- International Journal of Sustainable Engineering (Taylor & Francis)
- Systems Engineering (Wiley)
- IEEE Transactions on Engineering Management
- International Journal of Lean Enterprise Research (Inderscience)
- International Journal of Agile Systems and Management (Inderscience)
- International Journal of Industrial Engineering and Operations Management (IEOM)

- SAGE Open Journal (Sage)
- International Journal of Industrial Engineering: Theory, Applications and Practice (University of Texas)
- Chiang Mai University (CMU) Journal of Natural Sciences
- International Journal of Engineering and Technology Innovation (TAETI)
- Journal of Open Innovation: Technology, Market, and Complexity (MDPI)
- Sustainability (MDPI)
- Technologies (MDPI)
- Applied Sciences (MDPI)
- Systems (MDPI)
- Actuators (MDPI)
- Social Sciences (MDPI)
- Reviewer in many International Conferences (CIRP, IEEE, ICAD, IEOM,…).

Reviewer activity for funding agencies

- **Expert and reviewer for the National Research Council (NRC) Canada** for validation of research projects regarding Smart Factories and Cyber-Physical Production Systems.
- **Expert and reviewer for the Dutch Research Council (NWO)** for validation of research projects regarding Industry 4.0 and Smart Manufacturing.
- **External expert for the European Commission** in the evaluation of grant applications, projects and tenders, and to provide opinions and advice in specific cases.
- **Expert in the Italian digital register of independent scientific experts** for the scientific evaluation of Italian research.
- **Expert and reviewer for Finpiemonte** (Italy) for validation of research projects regarding to Industry 4.0 (FESR 2014-2020)

Organization of workshops and conferences

- Co-Chair and speaker at the **"4th Annual Meeting "SME 4.0 – Industry 4.0 for SMEs"**, February 19-20 2020 at Technical University of Kosice, Slovakia.
- Chair of the **"Workshop on Safety and Ergonomics for Collaborative Workspaces"**, January 31 2020 at the Free University of Bolzano.
- Chair and speaker at **Project-Meeting of the Interreg Italia-Austria research project "Engineering Education 4.0"**, Bolzano (Italy), October 3rd 2019.
- Program Committee at **"InterPartner 2019 International Conference on Advanced Manufacturing Processes"**, September 10-13, 2019, Odessa, Ukraine.
- Organizing committee and speaker at the **1st International Summer School on Axiomatic Design** hosted at Worcester Polytechnic Institute (WPI), USA, July 23-25 2019.
- Co-Chair and speaker at **2nd Stakeholder Workshop of the Interreg Italia-Austria research project "Engineering Education 4.0"**, Bolzano (Italy), May 29 2019.
- Co-Chair and speaker at **1st Stakeholder Workshop of the Interreg Italia-Austria research project "Engineering**

Education 4.0", Bolzano (Italy), February 22 2019.

- Co-Chair and speaker at **Kick-Off Workshop of the research project "ASSIST4WORK - Social sustainability in production through age-appropriate and disability-friendly workplace design using assistance systems"**, Bolzano (Italy), February 21 2019.
- Co-Chair and speaker at the **"3rd Annual Meeting SME 4.0 – Industry 4.0 for SMEs"**, January 30-31 2019 at Chiang Mai University, Thailand.
- Program committee at the **"2nd International Conference on Design, Simulation, Manufacturing: The Innovation Exchange"**, June 11-14 2019, Lutsk, Ukraine.
- Member of **European Academic Committee at "2nd European IEOM Conference Industrial Engineering and Operations Management"**, Paris, France, July 26-27 2018.
- Organizing committee of the **yearly meeting of Wissenschaftliche Gesellschaft für Arbeits- und Betriebsorganisation (WGAB) 2018** hosted at Bolzano, Italy, September 14-15 2018.
- Organizing committee of the **yearly annual meeting of Associazione Italiana Tecnologie Manifatturiere (AITEM) 2018** hosted at Bolzano, Italy, September 9-11 2018.
- Organization of a **Workshop with Messe Köln regarding future trends in food production**, Bolzano, July 23 2018.
- Organizing committee and speaker at the **Summer School on Axiomatic Design** hosted at Bolzano, Italy, July 17-19 2018.
- Co-Chair and speaker at the **"2nd Annual Meeting SME 4.0 – Industry 4.0 for SMEs"**, May 24-25 2018 at Montanuniversität Leoben, Austria.
- Organizing committee and speaker at the **International Workshop "Eye tracking and biometric systems: breaking into industrial engineering"**, December 7 2017 at the Free University of Bolzano, Italy.
- **Organization of 3 workshops at industrial companies in New England USA** within the research project "SME 4.0 - Industry 4.0 for SMEs" in November 2017. Industry partners: IG Marston in Holbrook, MA 02343; Bel Air Finishing Supply Corporation in North Kingstown, RI 02852 and Donahue Industries Inc. in Shrewsbury, MA 01545.
- Co-Chair and speaker at **Workshop with local SMEs in the EU project SME 4.0** to identify requirements of small and medium sized enterprises, Worcester, MA (USA), September 28 2017.
- Co-Chair and speaker at **Workshop with local SMEs in the EU project SME 4.0** to identify requirements of small and medium sized enterprises, Bolzano (Italy), June 9 2017.
- Co-Chair and speaker at the **"1st Annual Meeting SME 4.0 – Industry 4.0 for SMEs"**, February 8-9 2017 at the Free University of Bolzano, Italy.

Technology transfer

Head of the learning factory lab "Smart Mini Factory - laboratory for Industry 4.0" with a budget of over 1,5 mio. Euro (capacity building funding of the Autonomous Province of Bolzano) and 20 professors, researchers, PhD students, project assistants and lab technicians from different disciplines involved. The aim is to create a platform where researcher, students and enterprises meet each other and work in an interdisciplinary way on applied research projects. Students have the possibility to participate in research projects with companies and have the opportunity to collaborate with high-qualified staff from research.

- **Mission 1 (RESEARCH):** Conduct internationally competitive basic and applied research on Smart Manufacturing and Industrial Automation.
- **Mission 2 (TEACHING):** Increase qualification regarding Industry 4.0 and digitalization in South Tyrol. The Smart Mini Factory lab offers training courses on Industry 4.0 topics for professionals from companies as well as for students and teachers from technical High Schools.
- **Mission 3 (INDUSTRY):** Collaboration with local industry and craftsmanship (commissioned research, sponsorship of phd students or participation in third party funding research programmes).

Third mission

- 2019/20: **Organization of a series of 9 seminars on Industry 4.0 topics for High School students** in the Smart Mini Factory lab together with Bitz Fablab and NOI Maker Space.
- 2019/20: **Organization of a series of 14 seminars on Industry 4.0 topics for professionals from industry and High School teachers** in the Smart Mini Factory lab together with Fraunhofer Italia and NOI Maker Space; Module 1 on "Mechanical Engineering and Product Development" and Module 2 on "Production and Process Technology" (https://smartminifactory.it/wp-content/uploads/2018/10/SMF_Booklet_2019-20.pdf).
- 2019: **Industry 4.0 training and lab demonstrations for provincial office of research and innovation, department innovation lvh-apa, High School teacher, MirSarner, group toolmaker lvh-apa, group of small industrial enterprises of Assoimprenditore** in the Smart Mini Factory lab.
- 2019: **Radio lecturer for UNI Radio** on RAI Südtirol (three radio-lectures on Industry 4.0 in 2019). Link: http://www.raibz.rai.it/feed.php?id=83.
- 2019: **Lecturer in the new diploma course "Praxislehrgang Digitale Transformation"** of the craftsmanship association lvh-apa with the module "Digital Production"
- 2019: **Lecturer in the new diploma course "Lehrgang Innovation und Digitalisierung"** of the Chamber of Commerce of Bolzano with the module "Change Management"
- 2019: **Tutoring of an Internship student from TFO Bolzano"**, internship of 1 month.

- 2018: **TV-broadcast of collaboration with industry in "Sendereihe CAMPUS", Rai Sender Bozen**, December 6, 2018 (https://www.youtube.com/watch?v=LF4tNWEJ2uc)
- 2018: **Organization of a series of 8 seminars on Industry 4.0 topics for professionals from industry and High School teachers** in the Smart Mini Factory lab together with Fraunhofer Italia.
- 2015-2018: **Lecturer in the diploma course "Lehrgang Innovationsverantwortliche"** of the Chamber of Commerce of Bolzano with the module "Innovationen strukturiert planen"
- Since 2017: **Industry 4.0 training and lab visit for high schools in South Tyrol** (average two per month)
- Since 2017: **Opening and tours/demonstrations in the Smart Mini Factory Lab during Open Day**
- 2017: **Organization of 1 Work Experience Presentation (WEP) of former unibz engineering students**, March 8 2017.
- Since 2016: **Internship day of High School students** in the Smart Mini Factory lab.
- Since 2016: **Seminar and lab exercise to design and optimize an Assembly Line** in the Smart Mini Factory lab with the class of Logistics of the TFO High School Bolzano.
- 2016: **Organization of 2 Work Experience Presentations (WEP) of former unibz engineering students**, April 21 2016 and May 5 2016.
- 2016: **Organization of a Presentation of the lvh-apa Open Innovation competition** in collaboration with the local company ArsMeccanica, April 21 2016.
- Since 2014: **Coordination of "matura projects"** of the Technical High School in Bolzano (RFID project, Assembly line project, Industry 4.0 assessment website, delta robot, gripper for cobot)
- Since 2014: **Seminar for High-School students** titled "Methods and tools for Industrial Engineers" hold at Technical High School of Bolzano every year.
- Since 2014: **Presentations of the engineering study courses** at local High Schools in Bozen, Schlanders, Meran, Brixen and Bruneck.
- Since 2010: **Coordination of the third mission project "Uni meets School" since 2010** – a project with High Schools of the Province of Bolzano, giving students the opportunity to gain 2 credit points in an optional course at the Free University of Bolzano.
- Since 2010: **Lecturer in several training seminars** of the Association of craftsmen (lvh-apa) and Assoimprenditori Alto Adige in lean manufacturing and industrial cost management.

Other institutional activities

- Member in numerous **commissions for recruitment** of research and teaching staff
- Member of the **commission for selection of candidates** in the course LM-33 Master in Industrial Mechanical Engineering
- Member of the **AQ (Quality Assurance) commission** in the

LM-33 Master in Industrial Mechanical Engineering

- **Tutor** in the L-9 Bachelor in Industrial and Mechanical Engineering
- **Tutor** in the LM-33 Master in Industrial Mechanical Engineering
- **Presentation of the study programme LM-33** Master in Industrial Mechanical Engineering at Open Day and other events
- **Presentation on Industry 4.0 and lab visit** for yearly English Intensive classes of the Language Centre of unibz organized by Dr. Ennis M. Joseph

Further trainings

- Regular **occupational safety trainings** for lab responsible
- **"ERC Training course"** on how to write a successful ERC proposal – Enspire-Science Consulting, 20.06.2018.
- Training course on **"E-Learning and video-lecturing"** – internal training course at Free University of Bolzano-Bozen, 25.09.2019.

Language competence

German: mother tongue
Italian: C1 - bilingualism certificate of the Province of Bolzano, A-level
English: C1 – Cambridge CAE

Bolzano January 7, 2020

Signature

Publication list - ERWIN RAUCH

Bibliometric data

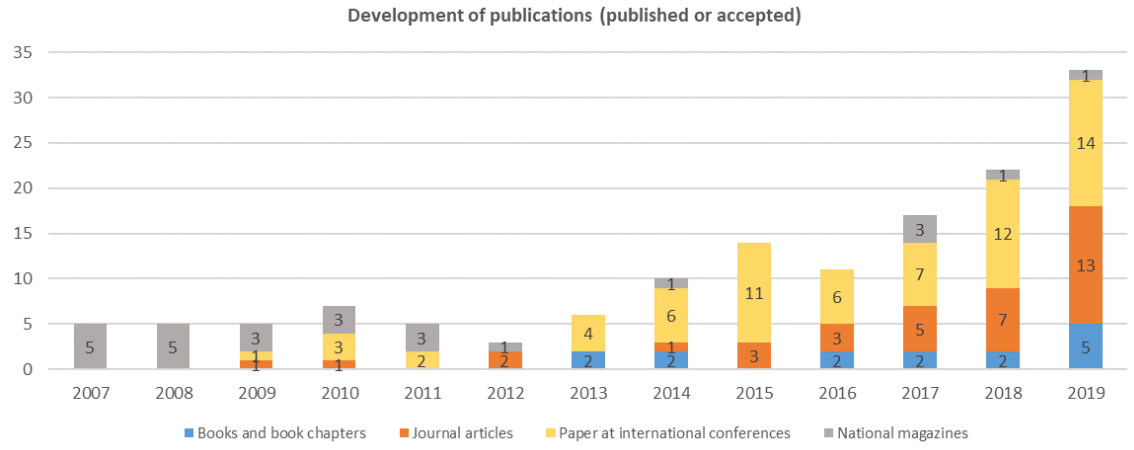
Total documents in Scopus = **78**

Journal articles in Scopus in the last 5 years = **26**
(min. for Italian Habilitation, Associato/Ordinario/Commissario = 8/17/22)

Number of citations in Scopus over the last 10 years = **623**
(min. for Italian Habilitation, Associato/Ordinario/Commissario = 69/270/485)

H-index in Scopus over the last 10 years = **14**
(min. for Italian Habilitation, Associato/Ordinario/Commissario = 5/9/13)

Publications	Published/ accepted	Submitted/ under review	Total
Books and book chapters	17		17
Journal articles	39	2	41
Paper at conferences	69	4	73
National and trade magazines	26		26
TOTAL	**151**	**6**	**157**



Number 1 author in Scopus regarding number of papers on **"Industry 4.0"** (and thus Free University of Bolzano on number 7).

Number 1 author in Scopus regarding number of papers on **"Industry 4.0"** AND **"Small and medium-sized enterprises"** (and thus also Free University of Bolzano on number 1).

Books and book chapters

1. **RAUCH, E.**, MATT, D.T.: Artificial Intelligence in Design. In: Suh, N.P. (Ed.). Design Engineering and Science, Springer Verlag (accepted chapter, to be published in 2020).

2. MATT, D.T.; **RAUCH, E.**: Application of Axiomatic Design for Manufacturing System Design. In: Suh, N.P. (Ed.). Design Engineering and Science, Springer Verlag (accepted chapter, to be published in 2020).

3. MATT, D.T.; **RAUCH, E.**: The Role of Small- and Medium-Sized Enterprises in the Digital Transformation. In Dominik T. Matt, Vladimir Modrak, Helmut Zsifkovits (Eds.). Industry 4.0 for SMEs Challenges, Opportunities and Requirements. Basingstoke: Palgrave Macmillan, in press, 2020, ISBN: 978-3-030-25425-4.

4. **RAUCH, E.**; VICKERY, A.R.; BROWN, C.A.; MATT, D.T.: SME Requirements and Guidelines for the Design of Smart and Highly Adaptable Manufacturing Systems. In Dominik T. Matt, Vladimir Modrak, Helmut Zsifkovits (Eds.). Industry 4.0 for SMEs Challenges, Opportunities and Requirements. Basingstoke: Palgrave Macmillan, in press, 2020, ISBN: 978-3-030-25425-4.

5. GUALTIERI, L.; ROJAS, R.; RUIZ GARCIA, M.A.; **RAUCH, E.**; VIDONI, R.: Implementation of a Laboratory Case Study for Intuitive Collaboration between Man and Machine in SME Assembly. In Dominik T. Matt, Vladimir Modrak, Helmut Zsifkovits (Eds.). Industry 4.0 for SMEs Challenges, Opportunities and Requirements. Basingstoke: Palgrave Macmillan, in press, 2020, ISBN: 978-3-030-25425-4.

6. MATT, D.T.; ORZES, G.; PEDRINI; G.; BELTRAME, M.; **RAUCH, E.**: Mensch und digitale Technologie: Eine Roadmap für die digitale Transformation einer Alpenregion. In: Spath, D.; Spanner-Ulmer, B. (Ed.). Digitale Transformation – Gutes Arbeiten und Qualifizierung aktiv gestalten, GITO Verlag, 2019, pp. 187-204, ISBN 978-3-95545-309-1.

7. MORANDELL, F.; MARK, B.G.; **RAUCH, E.**; MATT, D.T.: Engineering Education 4.0: Herausforderungen und Empfehlungen für eine zukunftsorientierte Gestaltung der Ausbildung von Fachkräften und Ingenieuren. In: Spath, D.; Spanner-Ulmer, B. (Ed.). Digitale Transformation – Gutes Arbeiten und Qualifizierung aktiv gestalten, GITO Verlag, 2019, pp. 273-298, ISBN 978-3-95545-309-1.

8. MATT, D.T.; UNTERHOFER, M.; **RAUCH, E.**; RIEDL, M.; BROZZI, R.: Industrie 4.0 Assessment - Bewertungsmodell zur Identifikation und Priorisierung von Industrie 4.0 Umsetzungsmaßnahmen in KMUs. In: Matt, D.T. (Ed.). KMU 4.0 – Digitale Transformation in kleinen und mittelständischen Unternehmen, GITO Verlag, 2018, pp. 93-112, ISBN 978-3-95545-267-4.

9. MATT, D.T.; **RAUCH, E.**; RIEDL, M.: Knowledge transfer of Industry 4.0 principles to SMEs: A Five-Step Methodology to Introduce Industry 4.0. In: Thornton, R.-B.; Martínez, F. (Eds.). Analyzing the Impacts of Industry 4.0 in Modern Business Environments, IGI Global, 2018, ISBN 9781522534686. DOI: 10.4018/978-1-5225-3468-6.ch013.

10. **RAUCH, E.**; DALLASEGA, P.: Sustainability in Manufacturing and Supply Chains through Distributed Manufacturing Systems and Networks. In: Abraham, M.A. (Ed.).

Encyclopedia of Sustainable Technologies. Elsevier, 2017 pp. 429–438, ISBN 9780128046777.

11. MATT, D.T; **RAUCH, E.**: Designing assembly lines for mass customization production systems. In: Modrák, V. (Eds.). Mass Customized Manufacturing: Theoretical Concepts and Practical Findings. CRC Press Francis & Taylor, 2017, pp. 15-35, ISBN 9781498755450.

12. RIEDL, M.; GARCIA, D.; **RAUCH, E.**; MATT, D.T.: Industrie 4.0 – Wissenstransfer von der Forschung in die Praxis (Industry 4.0 – Knowledge transfer from research to practice). In: Schlick, C. M. (Ed.). Megatrend Digitalisierung – Potenziale der Arbeits- und Betriebsorganisation (Megatrend Digitization - potentials of work and company organization). Gito Verlag, 2016, pp. 111-129, ISBN: 978-3-95545-185-1.

13. MATT, D.T; **RAUCH, E.**: Design and Implementation Approach for Distributed Manufacturing Networks using Axiomatic Design. In: Farid, A. M.; Suh, N. P. (Eds.) Axiomatic Design in Large Systems - Complex Products, Buildings and Manufacturing Systems. Springer International Publishing, 2016, pp. 225-250, ISBN: 978-3-319-32387-9, DOI: 10.1007/978-3-319-32388-6.

14. MATT, D.T; **RAUCH, E.**: Chancen zur Bewältigung des Fachkräftemangels in KMU durch die Urbane Produktion von morgen (Opportunities to resolve the lack of qualified staff in SMEs by the urban production of tomorrow). In: Lödding, H.; Kersten, W.; Koller, H. (Eds.). Industrie 4.0 – Wie intelligente Vernetzung und kognitive Systeme unsere Arbeit verändern (Industry 4.0 – How intelligent networks and cognitive systems are changing our work). Hamburg, Gito Verlag, 2014, pp. 155-176, ISBN: 978-3955450830.

15. MATT, D.T.; **RAUCH, E.**: Implementing Lean in Engineer-to-order manufacturing - experiences from a facade manufacturer. In: Modrák, V.; Semančo, P. (Eds.). Handbook of Research on Design and Management of Lean Production Systems. Hershey, IG Global, 2014, pp. 148-172, ISBN: 978-1-4666-5039-8, DOI: 10.4018/978-1-4666-5039-8. Scopus indexed.

16. MATT, D.T; **RAUCH, E.**: Moderne Formen für die dezentrale und geographisch verteilte Produktion von morgen (Modern forms for decentralized and geographically distributed production of tomorrow). In: Lödding, H.; Friedewald, A. (Eds.). Produzieren in Deutschland - Wettbewerbsfähigkeit im 21. Jahrhundert (Production in Germany - Competitiveness in the 21st Century), Hamburg, Gito Verlag, 2013 pp. 143-166, ISBN: 978-3-95545-046-5.

17. **RAUCH, E.**: Konzept eines wandlungsfähigen und modularen Produktionssystems für Franchising-Modelle (Concept of a changeable and modular production system for franchising models). Stuttgart: Fraunhofer Verlag, 2013, Dissertation. ISBN 978-3-8396-0585-1.

Journal articles

18. GUALTIERI, L.; **RAUCH, E.**; VIDONI, R.: Emerging Research Fields in Safety and Ergonomics in Industrial Collaborative Robotics: a Systematic Literature Review. Robotics and Computer-Integrated Manufacturing, submitted paper. Scopus indexed (Quartile 1).

19. **RAUCH, E.**; BROZZI, R.; RIEDL, M.; MATT, D.T.: Industry 4.0 Roadmap for SMEs: Validation of Moderation Techniques for Creativity Workshops. Advances in Production Engineering & Management, under review. Scopus indexed (Quartile 1).

20. MATT, D.T.; RIEDL, M.; **RAUCH, E.**: Die Natur als Inspiration - Rolle der biologischen Transformation zur zukünftigen Gestaltung von Produktionssystemen (Nature as inspiration - the role of biological transformation in the future design of production systems). Zeitschrift für wirtschaftlichen Fabrikbetrieb ZWF, Vol. 115, No. 1-2, 2020. Scopus indexed (Quartile 2).

21. **RAUCH, E.**; MATT, D.T.; LINDER, C.: Lean Management in Hospitality: Methods, Applications and Future Directions. International Journal of Service and Operations Management, in press, 2020. Scopus indexed (Quartile 2).

22. **RAUCH, E.**; VICKERY, A.R.: Systematic Analysis of Needs and Requirements for the Design of Smart Manufacturing Systems in SMEs. Journal of Computational Design and Engineering, in press, 2019. Scopus indexed (Quartile 1).

23. MARK, B.G.; HOFMAYER, S.; **RAUCH, E.**; MATT, D.T.: Inclusion of Workers with Disabilities in Production 4.0: Legal Foundations in Europe and Potentials Through Worker Assistance Systems. Sustainability, 2019, 11(21), 5978. DOI: 10.3390/su11215978 Scopus indexed (Quartile 2).

24. MATT, D.T.; ORZES, G.; PEDRINI, G.; BELTRAMI, M.; **RAUCH, E.**: Roadmap in eine Digitale Welt: Auf dem Weg in eine Digitale Welt – Die Digitale Roadmap für die Makroregion Tirol-Veneto (Roadmap into a Digital World: On the Way to a Digital World - The Digital Roadmap for the Tyrol-Veneto Macroregion). Zeitschrift für wirtschaftlichen Fabrikbetrieb ZWF, Vol. 114, No. 9, in press, 2019. Scopus indexed (Quartile 2).

25. **RAUCH, E.**; UNTERHOFER, M.; NAKKIEW, W.; BAISUKHAN, A.; MATT, D.T.: Potential of the Application of Additive Manufacturing Technology in European SMEs. Chiang Mai University Journal of Natural Sciences, in press, 2019. Scopus indexed (Quartile 3).

26. ROJAS, R.; **RAUCH, E.**; MATT, D.T.: Research Fields and Challenges to implement Cyber-Physical Production Systems in SMEs: a Literature Review. Chiang Mai University Journal of Natural Sciences, in press, 2019. Scopus indexed (Quartile 3).

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