

Curriculum Vitae

Personal information

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Education

- 2019: **National Scientific Habilitation (ASN)** for Assoc. Prof. level in the scientific sector ING-IND/16 (Manufacturing 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 (TUM), Germany.
- 2001-2004: **B.Sc., Bachelor of Science in Production and Logistics**, Politecnico di Torino / Free University of Bolzano, Italy.
- 1996-2001: **Technical High-School degree** in Mechanical Engineering, Bolzano, Italy.

Appointment

- **Since 10/2022 Associate Professor in Manufacturing Systems and Technologies (SSD ING-IND/16)** – Free University of Bolzano, Faculty of Science and Technology, Industrial Engineering and Automation (IEA)
- **2014-2022 Assistant Professor in Manufacturing Systems and Technologies (SSD ING-IND/16)** – 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 – <https://smartminifactory.it/>
- **2016-2022 Second Member (Vice-Director) of the study course council for the Master in Industrial Mechanical Engineering (LM-33)**, coordination of the international Double Degree program with Otto v. Guericke University of Magdeburg (Germany)
- **Member of the Ph.D. Collegium** in "Sustainable Energy and Technologies" (2014/15 – 2018/19) and "Advanced Systems Engineering" (since 2019/20), Faculty of Science and Technology, unibz.
- **Advisory Board Member** Fraunhofer Italia Research.
- **Scientific Committee Member** of the International Association of Learning Factories (IALF)
- **Executive Committee Member and Publication Committee Chair** of the International Association of Axiomatic Design (IAAD)

Professional experience

- **Steering Board Member** and coordinator of research projects of EPIEM (European Professors of Industrial and Engineering Management)
- **Editor in Chief** of the Journal Production & Manufacturing Research (Taylor & Francis – Q1 in Scopus)
- 2018–today: **Contract Professor – Management Center Innsbruck (Austria)**, lecturer in the in the course “Production Engineering and Operations III” and “Systems Engineering” (in English), Master in Industrial Engineering.
- 2017–2018: **Contract Professor – International School of Management (Germany)**, lecturer in the course “International Operational Management” (in English), Master in International Management, Campus Munich (Germany).
- 2013–2014: **Contract Professor - Free University of Bolzano (Italy)**, lecturer in the course “Production Planning and Control”, Bachelor in Industrial and Mechanical Engineering.
- 2012–2017: **Associate Partner at Matt & Partner Management Consulting** in Bolzano (Italy).
- 2007–2012: **Consultant at Matt & Partner Management Consulting** in Bolzano (Italy) - international consulting projects in manufacturing systems planning, factory planning, lean and operations management, logistics and supply chain management, production planning and control.

Experience in academic teaching

Main courses at Free University of Bolzano

- Lecturer in **AI Applications in Industry**, Free University of Bolzano, Master in Industrial Mechanical Engineering, 5 ECTS, Language: English.
- Lecturer in **Digital Manufacturing and Simulation**, Free University of Bolzano, Master in Industrial Mechanical Engineering, 5 ECTS, Language: English.
- Lecturer in **Digital Production Planning and Quality Assurance**, Free University of Bolzano, Bachelor in Industrial and Mechanical Engineering, 8 ECTS, Language: German.
- Lecturer in **Production Systems and Industrial Logistics**, Free University of Bolzano, Bachelor in Industrial Mechanical Engineering, 10 ECTS, Exercises and laboratory, Language: German.

Courses as Contract Professor

- Since 2022 Contract professor in **Systems Engineering**, Management Center Innsbruck (MCI) (Austria), Master in Industrial Engineering, 5 ECTS, Language: English.
- 2018-2022 Contract professor in **Production Engineering and Operations III**, Management Center Innsbruck (MCI) (Austria), Master in Industrial Engineering, 2,5 ECTS, Language: English.

Other courses, summer schools and seminars

- Yearly **Summer School in “Systems Engineering and Design of Complex Systems”**, 2 ECTS, 20 hours lecture, in collaboration with the International Association for Axiomatic Design (IAAD). Language: English.
- 2021-22 Guest lecturer in **Industry 4.0 and Smart Manufacturing**, Purdue University Fort Wayne (IN, USA), Master level, 2 hours online guest lecture in the course Systems Engineering of Prof. David Cochran, Language: English.
- 2021-22 **EUCLIDES International Week: Digital Manufacturing –**

Technologies and Management, 14-18 March, 2022, at Free University of Bolzano.

- 2020-21 Lecturer in the course **Digital Transformation Expert**, organized by UMIT the private university of Tirol, executive course, 14 hours guest lecture in Industry 4.0 and Digital Process Innovation, Language: German.
- 2020-21 Guest lecturer for **Industry 4.0 in Supply Chains and Organizations**, Worcester Polytechnic Institute (MA, USA), Master in Supply Chain Management, 2 hours online guest lecture in the course Supply Chain Management of Prof. Joseph Sarkis, Language: English.
- 2020-21 Guest lecturer for **Digital Business Transformation**, Financial University Moscow under the Government of the Russian Federation, Management and Innovation, 8 hours online guest lecture, Language: English.
- 2020-21 Lecturer at the **EUCLIDES International Week Industry 4.0: Technologies and Management**, 8-12 March, 2021, at Free University of Bolzano.
- 2019-20 Guest Lecturer in the **TU Austria Summer School Doc+**, Summer School of Doctoral Students from Austrian Technical Universities, September 21-25 2020, 8 hours lecture in Axiomatic Design and Systems Engineering, Language: English.
- 2019-20 Lecturer in the **Tutorial for Axiomatic Design**, 4th Annual Meeting 2020 SME 4.0 – Industry 4.0 for SMEs, Kosice (Slovakia), February 18 2020, 4 hours lecture, Language: English.
- 2018-19 Guest lecturer for **Industry 4.0 in Supply Chains and Organizations**, Worcester Polytechnic Institute (MA, USA), Master in Supply Chain Management, 4 hours lecture in the course Supply Chain Management of Prof. Joseph Sarkis, Language: English.
- 2018-19 Guest lecturer for **Industry 4.0 in Production and Logistics**, Chiang Mai University (Thailand), Master in Industrial Engineering, 4 hours lecture, Language: English.
- 2018-19 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.

Awards in Teaching

- **Best Teacher Award 2022**, Faculty of Science and Technology, Free University of Bolzano.
- **Award for best performance in relationship with students 2018** in the graduate course "MSc. in Industrial Mechanical Engineering" (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" (awarded by the Faculty of Science and Technology, Free University of Bolzano).

Areas of scientific interest

Planning, Design and Management of Smart and Sustainable Factories

The overarching aim includes the investigation of methods and technologies for the planning, design and management of production systems following the concept of twin transition towards a digitalized and sustainable factory. Especially small and medium sized enterprises need specific tools and methods for mastering the digital transformation and to manage the step from a smart factory (using IoT, MES etc.) towards an intelligent factory (using digital twin, AI etc.). In addition new

technologies like human-robot collaboration and worker assistance systems empower a new level of flexible and human-centred manufacturing system design. Digital technologies act as enabler for the sustainability transition towards ecological as well as social sustainability of manufacturing enterprises. Decarbonization and circular manufacturing strategies play a major role. Furthermore, manufacturing systems and factories are complex socio-technical systems, which is why complex system design methods are helpful and valuable. A particular concern is also the development of modern concepts of engineering education and learning factories.

Industry 4.0 and Smart Manufacturing for SMEs

- Analysis of specific needs and challenges of SMEs
- Implementation of Industry 4.0 in SMEs
- Design guidelines and roadmaps for introducing Industry 4.0
- Industry 4.0 assessment for SMEs

Digitalization in Production and Intelligent Manufacturing

- Industrial IoT, connectivity and interoperability in cyber-physical production systems
- Digital twin modelling/simulation in digital manufacturing
- Application of artificial intelligence and machine learning in manufacturing

Flexible Industrial Human-Robot Collaborative Assembly Systems

- Design guidelines for human-robot collaborative workspaces
- Safety and (physical/cognitive) ergonomics in human-robot collaboration
- Design for collaborative assembly (DfCA)

Empowering the Human through Worker Assistance Systems

- Work 4.0 and Operator 4.0
- Human-centered / anthropocentric manufacturing
- Smart assistance systems in manufacturing and assembly

Sustainability and Ethics in Manufacturing

- Ecological sustainability through distributed manufacturing
- Social sustainability, integration of the human and ethics
- (Human) value sensitive design of socio-technical systems
- Biological transformation in manufacturing

Complex Systems Design

- Systems Engineering and Ontology Modelling
- Design of complex systems with Axiomatic Design
- Application for healthcare and sustainable enterprise design

Engineering Education 4.0

- Industry 4.0 learning factories
- Qualification and training of employees
- Didactic concepts for HEI and VET

Experience in research projects

The undersigned is/was involved in the role of PI, Co-Investigator or team member in many research projects on international/European, national and regional level. Total acquired volume for unibz in 40 projects is 3.5 mio. € (2.75 mio. € for international/national research projects, 0.5 mio. € for internal grants and 0.25 mio. € for projects with industry. Third party funding rate of >85%.

International/European Grants (10 projects):

2023 – 2026 SME 5.0 – A Strategic Roadmap Towards the Next Level of Intelligent, Sustainable and Human-Centred SMEs

Role: Co-I unibz and Project Manager
Duration: 01.01.2023 – 31.12.2026
Funding Body: HORIZON-MSCA-2021-SE-01
Budget unibz: € 248.400,00 (total budget € 1.168.400,00)
Research consortium with 16 international partners.

2022 – 2025 SESTO SENSO - Physical Cognition for Intelligent Control and Safe Human-Robot Interaction

Role: Co-Investigator for unibz
Duration: 01.09.2022 – 31.08.2025
Funding Body: Horizon Europe (RIA)
Budget unibz: € 300.000,00 (total budget € 5.619.026,00)
Consortium with other 13 European partners.

2022 – 2024 SMF4INFRA - Smart Mobile Factory for Infrastructure Projects

Role: team member
Duration: 01.01.2022 – 31.12.2024
Funding Body: Autonomous Province Bolzano - Joint Projects Switzerland (SNF)
Budget unibz: € 266.403,00 (total budget € 934.572,00)
Joint project with ETH Zürich and Eurotube Hyperloop.

2020 – 2023 ETAT - Education & Training for Automation 4.0 in Thailand

Role: PI unibz
Duration: 15.01.2020 – 14.01.2023
Funding Body: Erasmus+ KA 2-3
Budget unibz: € 63.966,00 (total budget € 997.757,00)
Research consortium with 13 international partners.

2019 – 2022 ICARUS - An Innovative Higher Education Institution Training Toolbox to Effectively Address the European Industry 4.0 Skills Gap and Mismatches

Role: PI unibz
Duration: 01.09.2019 – 28.02.2022
Funding Body: Erasmus+ KA 2-3
Budget unibz: € 62.000,00 (total budget € 325.000,00)
Research consortium with 4 partners.

2017 – 2021 SME 4.0 – Industry 4.0 for SMEs

Role: Co-I unibz and Project Manager
Duration: 01.01.2017 – 31.12.2021
Funding Body: H2020 MSCA RISE 2016
Budget unibz: € 311.500,00 (total budget € 783.000,00)
Research consortium with 8 international partners.

2019 – 2020 WIRECOBOTS - Wire harness assembly using collaborative robots to increase efficiency and ergonomics

Role: team member
Duration: 15.04.2019 – 14.12.2020
Funding Body: ESMERA – EU Cascade funding
Budget unibz: € 100.000,00 (total budget € 200.000,00)

Research project and pilot implementation with the company Carretta srl.

- 2019 – 2020** **CoHoMe - Comparison and Homogenization Of Safety Measurements**
Role: team member
Duration: 15.06.2019 – 14.03.2020
Funding Body: COVR – EU Cascade funding
Budget unibz: € 20.000,00 (total budget € 100.000,00)
Research project with Joanneum Research and Technical University Graz.
- 2018 – 2021** **E-EDU 4.0 - Engineering Education 4.0**
Role: Co-Investigator
Duration: 01.05.2018 – 30.04.2021
Funding Body: European Regional Development Fund (ERDF) - Interreg Italy-Austria
Budget unibz: € 180.000,00 (total budget € 1.150.000,00)
Research consortium with 5 partners.
- 2018 – 2019** **A21 - A21DIGITAL TYROL VENETO**
Role: team member
Duration: 01.03.2018 - 31.12.2019
Funding Body: European Regional Development Fund (ERDF) - Interreg Italy-Austria
Budget unibz: € 155.000,00 (total budget € 300.000,00)
Research consortium with A21-Austria and University of Verona.
- National/Regional Grants (8 projects):
- 2022-2023** **ASSIST4RESILIENCE – Increasing Resilience in Manufacturing - Development of a Digital Twin Based Worker Assistance**
Role: PI
Duration: 01.01.2022 – 31.12.2023
Funding Body: Autonomous Province of Bolzano – Mobility Fund
Budget unibz: € 169.500,00
- 2022-2023** **SEQP – Smart Enterprise Qualification Program**
Role: Principal Investigator
Duration: 01.02.2022 – 31.03.2023
Funding Body: European Social Fund (ESF)
Budget unibz: € 56.729,00
- 2020-2022** **SUSTAINABLE SMEs 4.0 – Development of a Methodology for the Long-Term Sustainable Introduction of Industry 4.0 in SMEs**
Role: PI
Duration: 26.04.2020 – 24.10.2022
Funding Body: Autonomous Province of Bolzano – mobility fund
Budget unibz: € 28.625,00
- 2021-2022** **CAMP-2022 - Digital and Technology Summer Camp 2022**
Role: PI

Duration: 14.10.2021 – 31.08.2022
Funding Body: European Social Funding (ESF)
Budget unibz: € 35.716,80
Project for technology transfer to schools.

2021-2021 **CAMP-2021 - Digital and Technology Summer Camp 2021**

Role: PI
Duration: 17.06.2021 – 31.07.2021
Funding Body: European Social Funding (ESF)
Budget unibz: € 35.825,00
Project for technology transfer to schools.

2021-2021 **PCK – Women in Construction**

Role: PI
Duration: 01.01.2021 – 30.10.2021
Funding Body: European Social Funding (ESF)
Budget unibz: € 1.600,00
Project for qualifying women in construction.

2020-2021 **BUILD UP – Costruiamo il Futuro**

Role: PI
Duration: 01.09.2020 – 30.04.2021
Funding Body: European Social Funding (ESF)
Budget unibz: € 1.600,00
Project for qualifying non-EU foreigners.

2017 – 2020 **COCKPIT - Collaborative Construction Process Management**

Role: Team member
Duration: 01.01.2017 – 31.12.2020
Funding Body: ERDF (EFRE/FESR) call 2015
Budget unibz: € 503.200,00
Interdisciplinary project with the Faculty of Computer Science and Fraunhofer Italia.

Internal unibz Grants (10 projects):

2020-2022 **SMART APP- Automated Process Planning in Cyber Physical Production Systems of Smart Factories**

Role: PI
Duration: 01.10.2020 – 30.09.2022
Funding Body: UNIBZ ID 2020 call
Budget unibz: € 130.400,00
Interdisciplinary project with the Faculty of Computer Science.

2020-2023 **MASTERMIL - Mastering the digital transformation in the family business: Getting ready for the Millennial generation**

Role: team member
Duration: 01.09.2020 – 31.08.2023
Funding Body: UNIBZ ID 2020 call
Budget unibz: € 173.000,00
Interdisciplinary project with the Faculty of Economics.

- 2019-2022** **ASSIST4WORK - Social sustainability in production through age-appropriate and disability-friendly workplace design using assistance systems**
 Role: Co-Investigator
 Duration: 15.01.2019 – 14.07.2022
 Funding Body: UNIBZ CRC 2018 call
 Budget unibz: € 98.000,00
 Project in collaboration with the social enterprise gwb Bolzano and Fraunhofer Italia.
- 2017-2021** **EYE TRACK - Expand more information panel Industrial Usability of Eye Tracking for Manufacturing and Design in SMEs**
 Role: PI (Co-I from 01.03.2019)
 Duration: 01.11.2017 – 31.01.2021
 Funding Body: UNIBZ CRC 2017 call
 Budget unibz: € 63.000,00
 Project in collaboration with 6 partners.
- 2017-2020** **SMART SHOPFLOOR - Development of a software prototype for intelligent Shop Floor Management through Industry 4.0 technologies**
 Role: Co-Investigator
 Duration: 01.01.2017 – 31.12.2020
 Funding Body: UNIBZ CRC 2016 call
 Budget unibz: € 70.000,00
 Project in collaboration with industry partners.
- 2015-2016** **DIMASY – Design of decentralized and distributed manufacturing systems and their coordination in manufacturing networks**
 Role: PI
 Duration: 01.01.2015 – 31.12.2016
 Funding Body: UNIBZ CRC 2014 call
 Budget unibz: € 34.500,00
 Project in collaboration with Fraunhofer Italia Research and industry partners.
- 2015-2017** **REBU - Business Model Reconfiguration and Innovation**
 Role: Co-Investigator
 Duration: 01.01.2015 – 31.03.2017
 Funding Body: UNIBZ CRC call 2014
 Budget unibz: € 39.050,00.
 Project with industrial partners and Fraunhofer Italia.
- 2014-2017** **Future-LPD - Experts survey to assess the transfer of lean methods from production to product development**
 Role: PI
 Duration: 01.12.2014 – 31.01.2017
 Funding Body: UNIBZ RTD call
 Budget unibz: € 4.300,00.
- 2013-2016** **FISSMEs - Field study to determine requirements for**

flexible and agile manufacturing and assembly systems for SMEs

Role: team member (PI Dr. Pasquale Russo Spena)
Duration: 01.11.2013 – 30.04.2016
Funding Body: UNIBZ CRC call 2013
Budget unibz: € 32.000,00.

2008-2011

Design of lean and agile material handling systems

Role: team member (PI Prof. Dominik Matt)
Duration: 20.11.2008 – 30.11.2011
Funding Body: UNIBZ CRC call
Budget unibz: € 21.000,00.

Commissioned Research / Industry projects (12 projects):

2023-2025

PMA-1 - Digital Twin based kinematic and mechatronic modelling for testing and optimizing the performance and energy efficiency of machines

Role: Principal Investigator
Duration: 01.01.2023 – 31.12.2025
Funding Body: LG-14
Budget unibz: € 54.000,00
Progress Group AG Brixen and Machineering GmbH Munich

2022-2022

GW-1 - Evaluation and proposal of robotic solutions for resistivity measurement and optimized layout scenarios

Role: Co-Investigator
Duration: 01.07.2022 – 31.08.2022
Funding Body: LG-14
Budget unibz: € 8.000,00
Global Wafer Co. MEMC Electronic Materials S.p.A. – Sinich

2021-2022

TTM-1 - Adaptive Production Planning and Flexible Automation

Role: Co-I (PI – Prof. Renato Vidoni)
Duration: 16.11.2021 – 31.08.2022
Funding Body: LG-14
Budget unibz: € 38.000,00
TTM - Thermo Tecno Management GmbH – Prad am Stilfser Joch

2021-2022

SAT – Development of a Sustainability Assessment Tool

Role: Principal Investigator
Duration: 15.11.2021 – 31.03.2022
Funding Body: EEN – European Enterprise Network
Budget unibz: € 11.500,00
NOI Techpark AG, Forschungsförderungsgesellschaft Österreich
FFG, Standortagentur Tirol, Oberösterreichische
Wirtschaftsagentur, Steirische Wirtschaftsförderungsgesellschaft

2021-2021

DIGIFAP – Digital factory planning and optimization for electric mobility component manufacturing

Role: Co-I (PI Dr. Patrick Dallasega)
Duration: 18.08.2021 – 31.10.2021
Funding Body: NOI-Lab Bonus

Budget unibz: € 11.100,00
Intercable - Bruneck

2021-2021

DMI-1 – Industry 4.0 Assessment

Role: PI
Duration: 01.06.2021 – 31.07.2021
Funding Body: NOI-Lab Bonus
Budget unibz: € 6.000,00
Doppelmayr Italia – Lana

2021-2021

DURST-1 – Automation concept for the production of a special nozzle

Role: PI
Duration: 01.02.2021 – 30.06.2021
Funding Body: LG-14
Budget unibz: € 55.000,00
Durst Phototechnik – Brixen

2020-2021

SH-1 – Material flow simulation for warehouse automation

Role: PI
Duration: 01.12.2020 – 21.04.2021
Funding Body: LG-14
Budget unibz: € 7.200,00
Sarner Holz – Sarnthein

2020-2021

ALPITRONIC-1 – Analysis of the Potential for Using Industry 4.0 Worker Assistance Systems in the Charging Station Assembly

Role: PI
Duration: 15.09.2020 – 28.02.2021
Funding Body: LG-14
Budget unibz: € 20.000,00
Alpitronic - Bozen

2021-2021

SIM-EH-BZ II – Simulation Study of the Emergency Department in the Hospital of Bolzano

Role: PI
Duration: 30.07.2021 – 29.09.2021
Funding Body: /
Budget unibz: € 5.000,00
Südtiroler Sanitätsbetrieb (SABES), Azienda Sanitaria dell'Alto Adige (ASDAA)

2019-2019

SIM-EH-BZ – Simulation Study of the Emergency Department in the Hospital of Bolzano

Role: Co-I (PI Prof. Dominik Matt)
Duration: 01.07.2019 – 24.11.2019
Funding Body: /
Budget unibz: € 20.000,00
Südtiroler Sanitätsbetrieb (SABES), Azienda Sanitaria dell'Alto Adige (ASDAA)

2018-2019 PROSTAHL – Collaborative robotics for the production of individual stainless steel furniture

Role: PI

Duration: 01.12.2018 – 31.05.2019

Funding Body: LG-14

Budget unibz: € 12.000,00

Prostahl GmbH - Kaltern

Research stays abroad

- 06/2019-09/2019 **Visiting Research Scholar** in the EU project SME 4.0 – **Worcester Polytechnic Institute (WPI)**, Worcester Massachusetts (USA). Collaboration with Prof. Chris Brown and Prof. Joseph Sarkis (WPI) as well as Prof. Sang Gook Kim of Massachusetts Institute of Technology (MIT).
- 06/2018 and 06/2019 **Visiting Research Scholar** in the EU project SME 4.0 – **ELCOM sro**, Presov, Slovakia. Collaboration with Prof. Vladimir Modrak and Prof. Jan Pitel from Technical University of Kosice in case study research with the company Elcom.
- 11/2017-02/2018 **Visiting Research Scholar** in the EU project SME 4.0 at **Chiang Mai University and Bangkok Science Park** (Thailand). Collaboration with Prof. Korrakot Tippayawong, Prof. Wasawat Nakkiew and Dr. Nirut Naksuk from National Science and Technology Development Agency in Bangkok.
- 09/2017-11/2017 **Visiting Research Scholar** in the EU project SME 4.0 – **Worcester Polytechnic Institute (WPI)**, Worcester Massachusetts (USA). Collaboration with Prof. Chris Brown and Prof. Joseph Sarkis (WPI) as well as Prof. Sang Gook Kim of Massachusetts Institute of Technology (MIT).

**Key Note/
Panel
speeches**

- **Panel Chair and speaker at IEOM 2022** – Panel chair and speaker in the panel session on “Transition to Human-Centric and Resilient Manufacturing”, July 27, 2022, Rome, Italy.
- **Panel speaker at the event Cusanus.Dialog – Climate Neutral Europe: How Industry is Meeting the Challenge** – panel discussion presenting first results of a sustainability assessment for industry, May 19, 2022.
- **Panel speaker at the event Trend Dialog in the project Talentregion Dolomit Live** – panel discussion on the future of industrial production, January 18, 2022.
- **Panel speaker at the World Manufacturing Forum 2021** – presentation of the White Paper on “AI as an enabler for long-term resilience in manufacturing”, October 20, 2021, Cernobbio, Italy.
- **Panel Chair and speaker at IEOM 2021** – panel chair and speaker in the session on Industry 4.0, August 4, 2021, online, Rome, Italy.
- **Panel speaker at ISPIM Innovation Conference 2021** – panel speaker in the session on Industry 5.0 – The Next Frontier, June 21, 2021, online, Berlin, Germany.
- **Panel speaker at EU Tech Chamber Advanced Manufacturing Council** – panel speaker in the session on Importance of Big Data in Advanced Manufacturing, April 9, 2021.
- **Panel-Speaker at the 11th International Conference on Industrial Engineering and Operations Management (IEOM 2021)** – panel speaker in the session on Global Engineering Education with a talk and panel-discussion about learning factories for teaching Industry 4.0, March 9, 2021, online, Singapore.
- **Key Note Speaker at TED´s 2020** – Key note presentation with the title

"The second phase of Industry 4.0: the role of artificial and biological intelligence in manufacturing", Conference on Technology & Entrepreneurship in Digital Society, November 10, 2020, Moscow, Russia.

- **Panel Speaker at ESOF EuroScience Open Forum 2020** – panel presentation at largest interdisciplinary meeting on science and innovation in Europe in Trieste titled "Transfer of Industry 4.0 to Small and Medium Sized Enterprises", September 2-6, 2020, Trieste, Italy.
- **Key Note Speaker at DSMIE 2020** – Key note 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.

Invited talks

- **Invited Speaker at Digital Day 2022**, presentation with the title „Digitalization as enabler for sustainable production“, October 21, 2022, Bolzano, Italy. Organized by Chamber of Commerce Bolzano.
- **Invited Speaker at IPEC 2022 (International Production Environmental Community)**, presentation with the title „AI as an enabler for long term resilience and sustainability in manufacturing“, March 8, 2022, Nürnberg, Germany. Organized by IHK Nürnberg and Institute for Sustainability.
- **Invited Speaker at the Annual Meeting of the Italian Association of Ceramics 2021**, presentation with the title „Dual Transformation - the digital and sustainable transformation in manufacturing“, December 10, 2021, online, Italy.
- **Invited Speaker at SCET-NET event - Senza Confini Education and Training Network**, presentation with the title "Digital technologies and university skills", April 22, 2021.
- **Invited Speaker at Webinar - New skills and professionalism to support the digitalization process of SMEs** organized by the Chamber of Commerce Treviso- Belluno, presentation with the title "Evolution of the processes of digitalization of SMEs", April 20, 2021.
- **Invited Speaker at Online Event - DIGITAL COMPETENCIES: How the roles and approaches of trainers and teachers are changing** organized by t2i - trasferimento tecnologico e innovazione, presentation with the title "Engineering Education Training Activities at unibz", March 29, 2021.
- **Invited Speaker at the Annual Meeting of the Italian Association of Ceramics 2020**, presentation with the title „Industry 4.0+ - the next challenge for industry“, September 14, 2020, online, Italy.
- **Invited 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.
- **Invited Speaker at Cluster Event of the European Commission**, presentation with the title "Chances of Artificial Intelligence and Machine Learning for SMEs", December 10 2019, Brussel, Belgium.
- **Invited Speaker and Workshop Leader "Collaborative Robotics and Workplaces" - Digital Talent Day 2019**, Chamber of Commerce Bolzano, December 9 2019.
- **Invited Speaker at Workshop on Industry 4.0**, October 25 2019, presentation with the title "Industry 4.0 nella produzione e logistica" organised by Confindustria Macerata.
- **Invited 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”.

- **Invited 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”.

Awards and Recognitions in Research

- **Outstanding Paper Award**, International Symposium on Industrial Engineering (ISIEA 2022).
- **Top 100 Industry 4.0 Thought Leader** in the 2021 Onalytica Who's Who report on Industry 4.0 (<https://onalytica.com/wp-content/uploads/2021/06/Whos-Who-In-Industry-4.0.pdf>).
- **Expert for the World Manufacturing Foundation (WMF) Report 2020** on the topic “Manufacturing in the Age of Artificial Intelligence.
- **Outstanding Professor in Industry 4.0 Award 2021 – 4th European**

Industrial Engineering and Operations Management Conference (IEOM 2021). Rome, Italy, August 2-5, 2021

- **ADRF Park's Prize 2019-20** sponsored by the Axiomatic Design Research Foundation (ADRF).
- **South Tyrolean Research Award 2019**, 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.

Membership

- **AITEM** – Regular member of Associazione Italiana di Tecnologie Manifatturiere (Italian Association of Manufacturing Technologies, Ing-Ind/16 sector).
- **EuroScience** – Associate Member of European Association for the Advancement of Science and Technology, organizer of ESOF Euro Science Open Forum as the largest biennial interdisciplinary meeting on science and innovation in Europe. Session coordination at ESOF 2020 in Udine, Italy.
- **World Manufacturing Foundation** – Member of the expert group in the World Manufacturing Forum 2020 Report and focus group leader for the coordination of the White Paper "AI as an enabler for long-term resilience in manufacturing" for the World Manufacturing Forum 2021.
- **International Association of Learning Factories (IALF)** – Since 2020 the Smart Mini Factory Lab is official member of the IALF network. Erwin

Rauch is member of the Scientific Committee (responsible for the scientific quality of publications and conference proceedings of IALF) and member of the following working groups: (1) Digital Assistance Systems for Assembly, (2) AI for Manufacturing Systems, (3) Human-Robot Collaboration.

- **International Association of Axiomatic Design (IAAD)** – Member of the Executive Committee and Head of the Publication Committee (responsible for scientific publications and conference proceedings).
- **European Professors of Industrial and Engineering Management (EPIEM)** – Steering Board member and coordinator of research projects in EPIEM.
- **International Association for Technological Development and Innovations (IATDI)** – Member, key note speaker in DSMIE conference in 2020 and Co-Editor of Conference Proceedings of DSMIE 2022.
- **Industrial Engineering and Operations Management (IEOM)** – Professional membership and coordinator of panels for Industry 4.0 and Engineering Education at IEOM conferences.
- **EDUNET World Association** – Regular member. Association for promoting engineering education 4.0 in automation technology.
- **Marie Curie Alumni Association (MCAA)** – Regular Member.

Editorial activity

- **Editor in Chief** of Production & Manufacturing Research (Taylor & Francis) (ISSN 2169-3277), Scopus Q1, impact factor 3.407.
- **Editorial Board member** of Scientific Reports (Nature) (ISSN 2045-2322), inaugural member of the new Mechanical Engineering division, Scopus Q1, impact factor 5.133.
- **Editorial Board member** of Sustainability (MDPI), ISSN 2071-1050, Scopus Q2, impact factor 3.251.
- **Editorial Board member** of International Journal of Technoethics (IGI Global), ISSN 1947-3451, Scopus Q2, impact factor 0.87.
- **Editorial Board member** of Proceedings on Engineering Sciences (University of Kragujevac), ISSN 2620-2832, Scopus Q4.
- **Editorial Board member** of Journal of Engineering Sciences, ISSN 2312-2498
- **Editorial Board member** of Strategic Decisions and Risk Management, ISSN 2618-947X
- **Editorial Board member** of Frontiers in Control Engineering, specialty section Control and Automation Systems, ISSN 2673-6268.

Guest Editor:

- **Guest Editor for the Special Issue "Design Methods for Mechanical and Industrial Innovation"** – Machines (MDPI), Q2, Impact Factor 2.428, ongoing, closes 31 March 2023. Guest Editors: Prof. Alessandro Giorgetti - Università degli Studi Rome, Italy; Prof. Gabriele Arcidiacono – Giuglielmo Marconi University, Italy; Prof. Christopher Brown – Worcester Polytechnic Institute, USA; Prof. Erik Puik – University of Applied Sciences Utrecht, Netherlands; Prof. Dr. Nakao Masayuki – University of Tokyo, Japan; Dr. Erwin Rauch – Free University of Bolzano, Italy.
- **Managing Guest Editor for the Special Issue "Next Generation of Smart, Sustainable and Resilient Manufacturing Systems"** – Scientific Reports (Nature), Q1, Impact Factor 5.133, ongoing, closes 31 December 2022. Guest Editors: Dr. Erwin Rauch – Free University of Bolzano, Italy; Prof. David S. Cochran – Purdue University, Fort Wayne, USA; Prof. Kerstin Johansen – Jönköping University, Sweden; Dr. Susanne Vernim – Technical

University of Munich, Germany.

- **Guest Editor for the Special Issue** "Modern Automation Technologies and Virtual Engineering for Sustainable Manufacturing" – International Journal of Reliability, Quality & Safety Engineering (IJRQSE), Q3, ongoing, closes 1 August 2022. Guest Editors: Prof. Brian Prasad – Knowledge Solution, USA; Prof. J. Paulo Davim – University of Aveiro, Portugal; Dr. Erwin Rauch – Free University of Bolzano, Italy and Dr. Tao Peng – Zhejiang University, China.
- **Managing Guest Editor for the Special Issue** "Design for Sustainability—Axiomatic Design Science and Applications" – Sustainability (MDPI), Q2, Impact Factor 3.251, ongoing, closes 30 September 2022. Guest Editors: Dr. Erwin Rauch and Prof. Dominik Matt – Free University of Bolzano, Italy; Prof. Nam Suh – MIT Massachusetts Institute of Technology, USA; Prof. Miguel Cavique – Nova University Lisbon, Portugal; Prof. Christopher Brown – Worcester Polytechnic Institute, USA; Prof. Gabriele Arcidiacono – Giuglielmo Marconi University, Italy.
- **Managing Guest Editor for the Special Issue** "Industry 4.0 for SMEs - Smart Manufacturing and Logistics for SMEs" – Sustainability (MDPI), Q2, Impact Factor 3.251, closed 31 March 2020. Guest Editors: Dr. Erwin Rauch – Free University of Bolzano, Italy and Dr. Manuel Woschank – Montanuniversität Leoben, Austria.

Book Editing:

- **Book Co-Editor** of the book "Managing and Implementing the Digital Transformation", Lecture Notes in Networks and Systems (Springer), to be published in September 2022, ISSN 2367-3370.
- **Book Co-Editor** of the book "Advances in Design, Simulation and Manufacturing - Manufacturing and Materials Engineering" (Springer), published in 2022, ISBN 978-3-031-06025-0.
- **Book Co-Editor** of the book "Industry 4.0 for SMEs - Smart Manufacturing and Logistics for SMEs" (MDPI), published in 2020, ISBN 978-3-03936-567-8.

Reviewer activity for funding agencies

- **European Commission** in the evaluation of grant applications in the call TWIN-TRANSITION (Green and Digital).
- **National Research Council (NRC) Canada** for validation of research projects regarding Smart Factories and Cyber-Physical Production Systems.
- **Dutch Research Council (NWO)** for validation of research projects regarding Industry 4.0 and Smart Manufacturing.
- **Australian Research Council (ARC)** for validation of research projects regarding Industry 4.0 and Smart Manufacturing.
- **National Research and Development Agency Chile** for validation of research projects regarding Digitalization in Manufacturing.
- **Portuguese Foundation for Science and Technology (FCT)** in the exploratory projects call of the Massachusetts Institute of Technology (MIT) Portugal program; for validation of research projects in the field of Digital Transformation in Manufacturing.
- **KU Leuven (University of Leuven, Belgium)** for validation of research projects regarding sustainable and human-centred manufacturing.
- **Technical University of Graz (Austria)** for validation of study curricula regarding sustainable and smart manufacturing.
- **Italian digital register of independent scientific experts** for the scientific evaluation of Italian research.
- **Finpiemonte (Italy)** for validation of research projects regarding Industry 4.0 (FESR 2014-2020)

- **Regione Marche** (Italy) for validation of research projects regarding Sustainable Production (FESR 2014-2020).

Organization of workshops and conferences

Local conferences and events:

- Co-Chair of the **1st International Symposium on Industrial Engineering and Automation (ISIEA 2022)**, June 21-22, 2022 including a Special Session on Innovative Higher Education for Industry 4.0.
- Co-Chair of the **Bilateral Workshop on Smart and Sustainable Engineering Technologies**, November 11, 2021. Organized by the Free University of Bolzano and the Chiang Mai University in Bolzano.
- Co-Chair of the **Bilateral Workshop on Design of Smart Manufacturing Systems**, September 30, 2021. Organized by the Free University of Bolzano and Purdue University Fort Wayne, IN (online Workshop).
- Member of the **Organizing Committee of TFC21, The 21st ETRIA World Conference TRIZ FUTURE 2021**, Bolzano, Italy, September 22-24, 2021.
- Co-Chair of the **Summer School „Design of Complex Systems and AI in Design”** hosted by Free University of Bolzano with guest lecturers from Massachusetts Institute of Technologies (MIT) and Worcester Polytechnic Institute (WPI), July 13-15, 2021.
- Co-Chair and speaker at the **Online workshop "Introduction of Industry 4.0 in SMEs: Tools and potentials"** for local SMEs within the project SME 4.0.
- Member of the Organizing Committee and lecturer at the **EUCLIDES International Week Industry 4.0: Technologies and Management**, 8-12 March, 2021, online, at Free University of Bolzano.
- Chair and organization of the international **"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.
- Chair of the **1st International Online Summer School on Axiomatic Design** hosted by Free University of Bolzano and 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 Event 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.
- Organizing committee member of the **yearly meeting of Wissenschaftliche Gesellschaft für Arbeits- und Betriebsorganisation (WGAB) 2018** hosted at Bolzano, Italy, September 14-15 2018.
- Organizing committee member of the **yearly annual meeting of Associazione Italiana Tecnologie Manifatturiere (AITEM) 2018** hosted at Bolzano, Italy, September 9-11 2018.
- Organizing committee member and speaker at the **Summer School on**

- **Axiomatic Design** hosted at Bolzano, Italy, July 17-19 2018.
- Organizing committee member 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.
- 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.

International conferences and events:

- Member of the program committee at the **6th International Conference on Design, Simulation, Manufacturing: The Innovation Exchange**, June 6-9 2023, High Tatras, Ukraine.
- Member of the program committee at the **6th Experiment@ International Conference 2023**, June 5-7 2023, Évora, Portugal.
- Program Co-Chair of the **International EDUNET World Conference (IEWC 2023)**, 1-3 March, 2023 organized by EDUNET World Association.
- Member of the International Scientific Committee of the **International Conference on Innovation and Transformation in the Digital Age**, 28-30 November, 2022 organized by University College London, UK.
- Member of the International Program Committee of the **3rd International Conference on Networks & IOT (NeTIOT 2022)**, November 12 ~ 13, 2022, Chennai, India.
- Member of the International Program Committee of the **3rd International Conference on Industry 4.0 and Smart Manufacturing (ISM)**, 17-19 November, 2022 in Linz, Austria.
- Member of the International Program Committee of the **3rd International Conference on Innovative Intelligent Industrial Production and Logistics (IN4PL)**, 24-26 October, 2022 in Valletta, Malta.
- Member of the Scientific Committee of **15th European Professors of Industrial Engineering and Management (EPIEM) Conference 2022**, June 1-4, 2022 in Graz, Austria.
- Member of the program committee at the **5th International Conference on Design, Simulation, Manufacturing: The Innovation Exchange**, June 7-10 2022, Poznan, Poland.
- Member of the Scientific Committee of **3rd International (virtual) Conference on Quality, Innovation and Sustainability – ICQIS2022**, May 3-4, 2022 in Aveiro, Portugal.
- Member of the International Program Committee of the **2nd International Conference on Innovative Intelligent Industrial Production and Logistics (IN4PL)**, 25-27 October, 2021 in Valletta, Malta.
- Member of the International Scientific Committee of the **7th Collaborative European Research Conference (CERC 2021)**, 9-10 September, 2021 in Cork, Ireland.
- Program Committee at **InterPartner 2021 International Conference on Advanced Manufacturing Processes**, September 7-10, 2021 in Odessa, Ukraine.
- Member of the Scientific Committee at **4th European Conference on Industrial Engineering and Operations Management (IEOM 2021)**, Rome, Italy August 2-5, 2021.
- Member of the **Organizing Committee** and **International Scientific**

Committee of "14th International Conference on Axiomatic Design (ICAD 2021), Lisbon, Portugal June 23-25, 2021.

- Member of the program committee at the **4th International Conference on Design, Simulation, Manufacturing: The Innovation Exchange**, June 8-11 2021, Lviv, Ukraine.
- Member of the Scientific Committee of **14th European Professors of Industrial Engineering and Management (EPIEM) Conference 2021**, 28 May, 2021 in Graz, Austria.
- Member of the **Expert Group of the World Manufacturing Report 2020** regarding "AI in Manufacturing", presented at the World Manufacturing Forum (WMF), Cernobbio, Lake Como, Italy, November 11-12, 2020.
- Session Coordinator and speaker in the Session "Transfer of Industry 4.0 from research to practice" at **ESOF EuroScience Open Forum 2020** in Trieste (www.esof.eu/en), September 2-6, 2020, Trieste, Italy.
- Program Committee at **"InterPartner 2020 International Conference on Advanced Manufacturing Processes"**, September 8-11, 2020 in Odessa, Ukraine.
- Member of the **International Scientific Committee at "Collaborative European Research Conference (CERC 2020)"**, Belfast, Northern-Ireland September 10-12, 2020.
- Member of the program committee and key note speaker at the **"3rd International Conference on Design, Simulation, Manufacturing: The Innovation Exchange"**, June 9-12 2020, Kharkiv, Ukraine.
- 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.
- Program Committee at **"InterPartner 2019 International Conference on Advanced Manufacturing Processes"**, September 10-13, 2019, Odessa, Ukraine.
- Program committee at the **"2nd International Conference on Design, Simulation, Manufacturing: The Innovation Exchange"**, June 11-14 2019, Lutsk, Ukraine.
- 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.
- Member of **European Academic Committee at "2nd European IEOM Conference Industrial Engineering and Operations Management"**, Paris, France, July 26-27 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.
- **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.
- **Session Chair** of numerous international conferences.

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

- **Organization of trainings and webinars for professionals from industry** in the Smart Mini Factory lab (>200 participants).
- **Organization of a trainings and webinars for High School students and teachers** in the Smart Mini Factory lab (18 schools and >180 participants).
- **Coordination of the Digital Technology Summer Camp:** summer camp of 2 week training for high school students in collaboration with Bitz Fablab.
- **Yearly workshop at the Smart Mini Factory lab** for high school students, initiative "Rendevouz mit dem Traumberuf".
- **Member of the Jury for the Digital Talent Competition** for high schools within the Interreg project Engineering Education 4.0 – coordination of the competition in South Tyrol. March 2021.
- Yearly 2 x 4 hours of **lecture in "Tools and methods in Industrial Engineering"** for 5th classes at Technical High schools (~90 participants); during Covid as online format
- Collaboration with **associations and stakeholder groups** (Chamber of Commerce Bolzano, Ivh, Innovalley, AES etc.).
- 2019: **Radio lecturer for UNI Radio** on RAI Südtirol (3 radio-lectures on Industry 4.0 in 2019). Link: <http://www.raibz.rai.it/feed.php?id=83>.
- **Lecturer in the diploma course "Praxislehrgang Digitale Transformation"** of the craftsmanship association Ivh-apa with the module "Digital Production"
- **Lecturer in the diploma course "Lehrgang Innovation und Digitalisierung"** of the Chamber of Commerce of Bolzano with the module "Change Management"
- **Lecturer in the diploma course "Lehrgang Innovationsverantwortliche"** of the Chamber of Commerce of Bolzano with the module "Innovationen strukturiert planen"
- **TV-broadcast of collaboration with industry in "Sendereihe CAMPUS", Rai Sender Bozen, December 6, 2018** (<https://www.youtube.com/watch?v=LF4tNWEJ2uc>)
- **White Papers with industry:** World Manufacturing Forum 2021 in collaboration with prestigious large international companies and innovative start-ups. White Paper 1 (undersigned in the lead): AI as an Enabler for Long-Term Resilience in Manufacturing (https://worldmanufacturing.org/wp-content/uploads/06_Rauch-1.pdf); White Paper 2 (undersigned as member of the editorial team): The Evolving Role of Competence Centres for Long Term Resilience in Manufacturing (https://worldmanufacturing.org/wp-content/uploads/04_Erdem-1.pdf). White Paper with the local company

Solunio srl from Bruneck: Der Wandel vom traditionellen Lean ShopFloor Management zum Digitalen Shopfloor Management in Echtzeit. White Paper, 2019. Electronically published:

<https://www.produktion.de/whitepaper/digitales-shopfloor-management-in-echtzeit.html>.

- **Lab demonstrations** in the Smart Mini Factory Lab during events (e.g. Open Day, LUNA,...)
- **Presentations of the engineering study courses** at local High Schools in Bozen, Schlanders, Meran, Brixen and Bruneck.
- **Co-ordination 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.
- **Newsletter Series on Industry 4.0 in cooperation with the Chamber of Commerce**, 8 newsletters with theoretical background on emerging technologies:
<https://www.handelskammer.bz.it/de/dienstleistungen/digitalisierung/praxiswissen/fachbeiträge>.
- **Newsletter Series on Best Practices on Industry 4.0**, reporting about best practice examples at local industry partners:
<https://www.handelskammer.bz.it/de/dienstleistungen/digitalisierung/praxiswissen/best-practice>.

Institutional activities

- **Member of the RIS3 working group “Automation/ Automotive”**, appointment by the Autonomous Province of Bolzano.
- **Member of the Delegation of South Tyrol** to strengthen research collaboration with the Technical University of Graz.
- **Representation of unibz at Bernstein Conference 2021**, 23 September 2021, <https://www.stol.it/artikel/chronik/valentin-braitenberg-award-fuer-eve-marder>.
- **Member of the working group for the European Digital Innovation Hub** call – Work Package “Smart Manufacturing” for initiatives in “Test before Invest”, Sept 2021 - Dec 2021
- **Second member** of the study course council for the Master in Industrial Mechanical Engineering (LM-33) from 2016-2022.
- **Coordination of issues related to the Double Degree program** with Otto von Guericke University of Magdeburg (Germany) within LM-33.
- Member of the PhD program **ASE (Advanced Systems Engineering)** a.y. 2019-20 – today.
- Member of the PhD program **SET (Sustainable Energy and Technologies)** a.y. 2018-19.
- **Responsible for Safety** in the Smart Mini Factory lab.
- Member of the **AQ (Quality Assurance) commission** in the LM-33 Master in Industrial Mechanical Engineering.
- **Erasmus Mundus Design Measure** project for the development of an Erasmus Mundus Master on Digital and Sustainable Manufacturing (PI Prof. Renato Vidoni) together with other 5 European universities and a lump sum budget of 55.000 Euro.

**Language
competence**

German: mother tongue

Italian: C1 - bilingualism certificate of the Province of Bolzano, A-level

English: C1 – Cambridge CAE

I declare, pursuant to art. 76 of Presidential Decree 445/2000, that the information is true.

I authorize the processing of my personal data in accordance with Legislative Decree 30 June 2003, n. 196 "Code for the protection of personal data" and the GDPR 679/16 - "European Regulation on the protection of personal data".

Bolzano October 1, 2022

Signature

A handwritten signature in blue ink, appearing to read "Giovanni Panchi". The signature is written in a cursive style with a large initial 'G'.

Publication list - ERWIN RAUCH

Bibliometric data

Total documents in Scopus = **139**

Number of citations in Scopus = **2.327**

H-index in Scopus = **27**

Summary of scientific publications (published and accepted):

Journal articles	56
Books	4
Book chapters	19
Conference papers	108
White Papers / Reports	4
National and Trade magazines	25
TOTAL	216

Journal articles (56)

1. GUALTIERI, L.; **RAUCH, E.**; VIDONI, R.: Human-Robot Activity Allocation Algorithm for the Redesign of Manual Assembly Systems into Human-Robot Collaborative Assembly. International Journal of Computer Integrated Manufacturing, 2022. DOI: 10.1080/0951192X.2022.2083687. Scopus indexed (Quartile 1, impact factor 5.431).
2. GUALTIERI, L.; FRABONI, F.; DE MARCHI, M.; **RAUCH, E.**: Development and evaluation of design guidelines for cognitive ergonomics in human-robot collaborative assembly systems. Applied Ergonomics, 2022, 104, 103807. DOI: 10.1016/j.apergo.2022.103807. Scopus indexed (Quartile 1, impact factor 4.30).
3. MARK, B. G., **RAUCH, E.**, MATT, D. T.: Systematic selection methodology for worker assistance systems in manufacturing. Computers & Industrial Engineering, 2022, 166, 107982. DOI: 10.1016/j.cie.2022.107982. Scopus indexed (Quartile 1, impact factor 5.431).
4. GUALTIERI, L.; **RAUCH, E.**; VIDONI, R.: Development and validation of guidelines for safety in human-robot collaborative assembly systems. Computers and Industrial Engineering, 2021, 163, 107801. DOI: 10.1016/j.cie.2021.107801. **Scopus indexed** (Quartile 1, impact factor 5.431).
5. MARK, B.G.; **RAUCH, E.**; MATT, D.T.: Worker assistance systems in manufacturing: A review of the state of the art and future directions. Journal of Manufacturing Systems, 2021, 59, pp. 228-250. DOI: 10.1016/j.jmsy.2021.02.017. **Scopus indexed** (Quartile 1, impact factor 8.633).
6. MATT, D. T.; **RAUCH, E.**: Biological Transformation in Manufacturing: Overview and Fields of Application. IEEE Engineering Management Review, 2021, 49(4), pp. 115-122. DOI: 10.1109/EMR.2021.3126748. **Scopus indexed** (Quartile 3, impact factor 1.590).

7. FRANCALANZA, E.; BORG, J.; **RAUCH, E.**; PUTNIK, G. D.; ALVES, C.; LUNDGREN, M.; AMZA, C.: Specifications for a Digital Training Toolbox for Industry 4.0. *FME Transactions*, 2021, 49(4), 886-893. DOI: 10.5937/fme2104893F. **Scopus indexed** (Quartile 2, impact factor 1.77).
8. BORG, J.; FRANCALANZA, E.; **RAUCH, E.**; PUTNIK, G.; AMZA, C.; LUNDGREN, M.; ALVES, C.; ZAMMIT, M.S.; VELLA, P.: An Industry 4.0 Training Framework Addressing 'COVID-19 Type' Disruptions on Manufacturing. *Digital Manufacturing Technology*, 2021, 1(1), pp. 60-80. DOI: 10.37256/dmt.112021921.
9. 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*, 2021, 67, 101998. DOI: 10.1016/j.rcim.2020.101998. **Scopus indexed** (Quartile 1, impact factor 5.666, **listed as one of the most downloaded articles in the last 90 days**).
10. GUALTIERI, L.; **RAUCH, E.**; VIDONI, R.: Methodology for the definition of the optimal assembly cycle and calculation of the optimized assembly cycle time in human-robot collaborative assembly. *International Journal of Advanced Manufacturing Technology*, 2021, 113(7-8), pp. 2369-2384. DOI: 10.1007/s00170-021-06653-y. **Scopus indexed** (Quartile 1, impact factor 3.320).
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I declare, pursuant to art. 76 of Presidential Decree 445/2000, that the information is true.

I authorize the processing of my personal data in accordance with Legislative Decree 30 June 2003, n. 196 "Code for the protection of personal data" and the GDPR 679/16 - "European Regulation on the protection of personal data".

Bolzano October 1, 2022

Signature

A handwritten signature in blue ink, appearing to read "Geminiano", written in a cursive style.