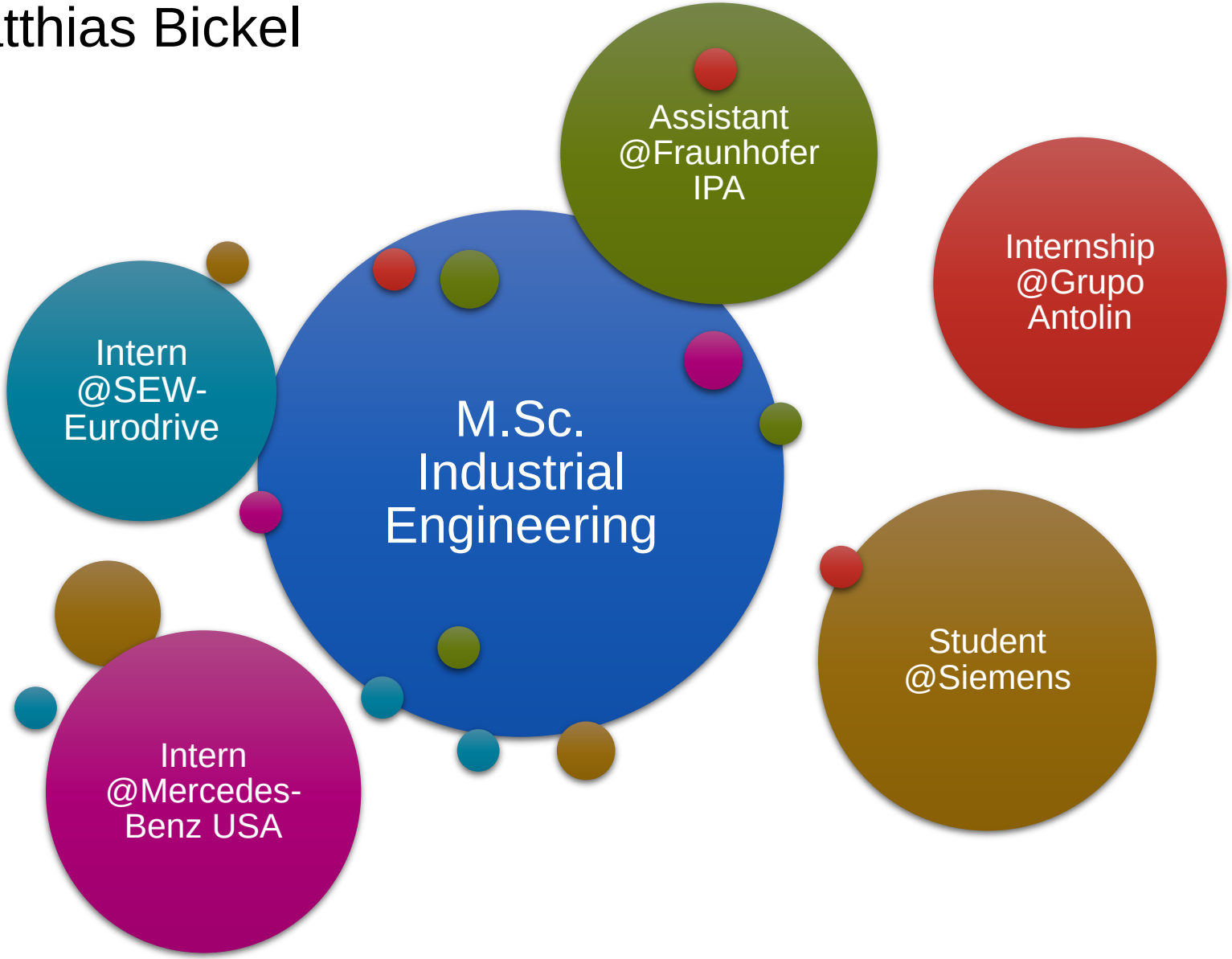
Stepping into the fascinating world of POM

Matthias Bickel & Wan Ri,Ho (who@ethz.ch)

5th Sept 2024

Zurich, Switzerland

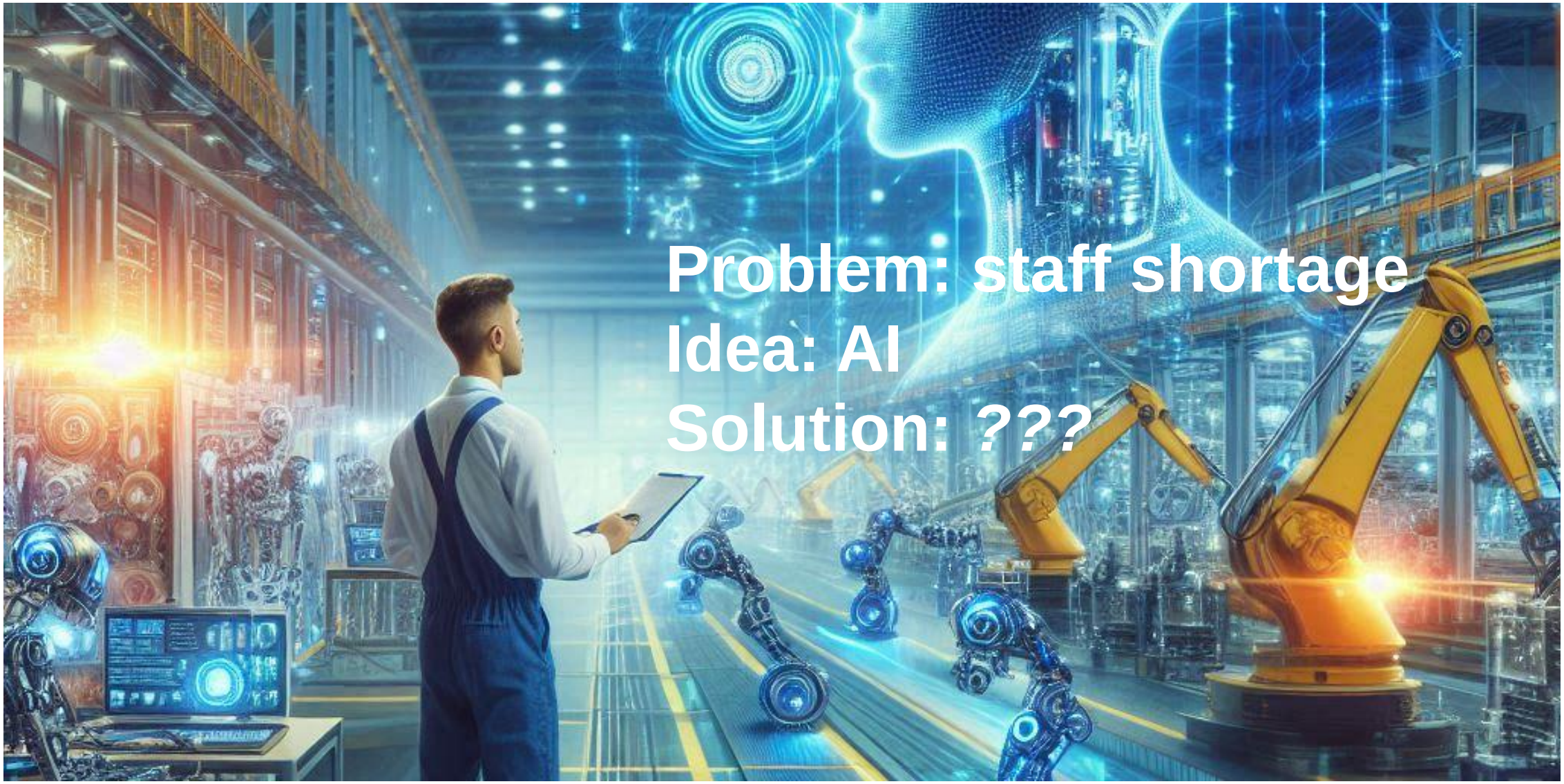
About: Me
Matthias Bickel



Graduated in 2023.
What's next?

Research, applied in context

My research: AI-powered Knowledge Management



About me

Curious to find solutions to real world issues

Nestle, Kuala Lumpur, Malaysia 2018

Netball team, Cambridge, UK 2020

MIT, Cambridge, US 2024

Research: When manufacturers come to the rescue

science stories

WHEN MANUFACTURERS COME TO THE RESCUE

by Gabrielle Attinger / 31.03.2022 / 1.83k

IN THE FIRST MONTHS OF THE COVID-19 PANDEMIC, MANY COMPANIES SWITCHED PART OF THEIR PRODUCTION TO URGENTLY NEEDED FACE MASKS, PROTECTIVE SHIELDS OR VENTILATORS. IN THE HORIZON 2020 PROJECT EUR3KA, TORBJØRN NETLAND, PROFESSOR OF PRODUCTION AND OPERATIONS MANAGEMENT AT ETH ZURICH, IS STUDYING WHAT IT TAKES TO IMPLEMENT SUCH REPURPOSING QUICKLY AND EFFICIENTLY: A CONVERSATION ABOUT CAPABILITIES, NEW VALUE CHAINS AND PHILANTHROPY.

Torbjørn Netland, you are involved in Eur3ka, a European research project that was launched in response to the pandemic. How did this project come about?

Eur3ka is a project funded by a special call for coronavirus studies in EU's Horizon 2020 research programme. In essence, the project aims to develop models and platform technologies that enable fast repurposing and supply of critical products for future pandemics. We are 24 partners, a mix of industrial associations, research centres and universities, small and medium-sized enterprises and global companies. In the early stage of application preparation, I was contacted by the coordinators who wanted us to be part of it.

Because of your expert knowledge about repurposing?

Perhaps. There are several background stories to it: First, let's rewind to the discussions during the early days of the pandemic. Suddenly, all countries experienced a skyrocketing demand for many healthcare products. Surgical face masks, for example, were out of stock everywhere –and those that were ordered couldn't be shipped due to the grounding of planes. So many companies in related businesses started to produce them to help out or to catch at a business opportunity. The scale of such manufacturing repurposing was unprecedented.

And second?

The ventilator shortage. Because Covid-19 is a respiratory disease, the need for medical ventilators surged. As for face masks, many companies wanted to manufacture ventilators – and went public with these plans. There was plenty of media coverage for firms who wanted to make them. However, making face masks and making ventilators are two very, very different undertakings. As a professor of production and operations management, I knew the world would be better served with another approach – or at least in addition to all these initiatives. So, I wrote an article about it for the World Economic Forum. «A better response for the ventilator shortage». I suggested that we should accelerate existing ventilator supply chains and use their technology instead of trying to come up with something new. This article caught quite some attention and was also read by the early Eur3ka consortium.

There were efforts within ETH Zurich as well to produce healthcare equipment.

Yes, and that's in fact my third background story. I was personally involved in a manufacturing repurposing initiative, led by helpfulETH – a bottom-up community-led initiative by ETH students and staff. In March 2020, helpfulETH started to 3D-print face shields using the open-sourced product design by the Czech 3D printer company Prusa Research. I read about this honourable initiative in the ETH news and – again – I knew there was a more productive way to produce them.

«I SUGGESTED THAT WE SHOULD ACCELERATE EXISTING VENTILATOR SUPPLY CHAINS AND USE THEIR TECHNOLOGY INSTEAD OF TRYING TO COME UP WITH SOMETHING NEW. THIS ARTICLE CAUGHT QUITE SOME ATTENTION.»

So, I joined helpfulETH and contacted Hubert Britschgi from Geberit in Jona, who jumped at the idea and committed to mass-produce head frames for face shields using their injection moulding machines. Within weeks, Geberit designed and produced more than 12,000 frames. helpfulETH also found a plastic producer for the transparent shields, SwissPrimePack. ETH Zurich's Student Project House assembled and shipped the face shields, which we offered for free to doctors, dentists or other people who would need them. There were many challenging issues in this venture, particularly on the legal side, but we all learned a lot and we are proud of the achievements we made.

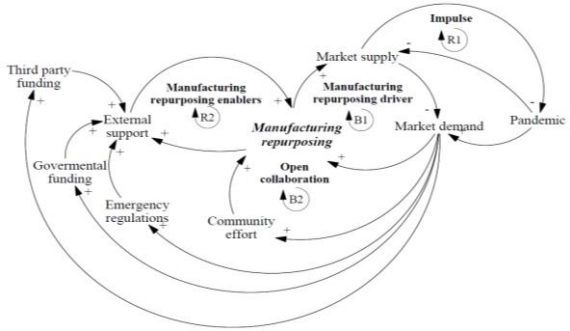
TORBJØRN NETLAND

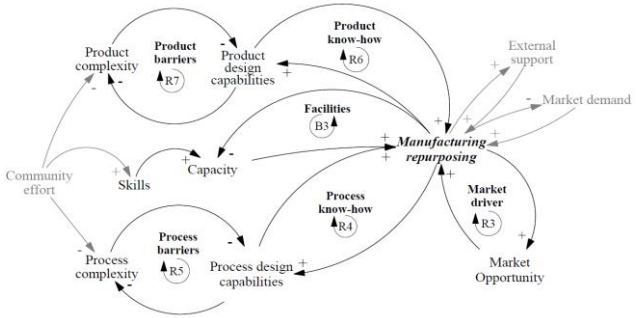
Torbjørn Netland joined ETH Zurich in 2016 as Assistant Professor of Production and Operations Management (POM). The Chair of POM at the Department of Management, Technology, and Economics focuses on smart manufacturing, behavioural operations, global operations, and operational excellence. Netland conducts his research in close cooperation with companies. Born in Norway in 1980, he studied industrial engineering and management at the Norwegian University of Science and Technology (NTNU), Trondheim. He is a Member of the World Economic Forum's Global Future Council on Advanced Manufacturing and Value Chains and a Fellow of the European Academy of Industrial Management. Torbjørn Netland is married and father of three small children.

How?

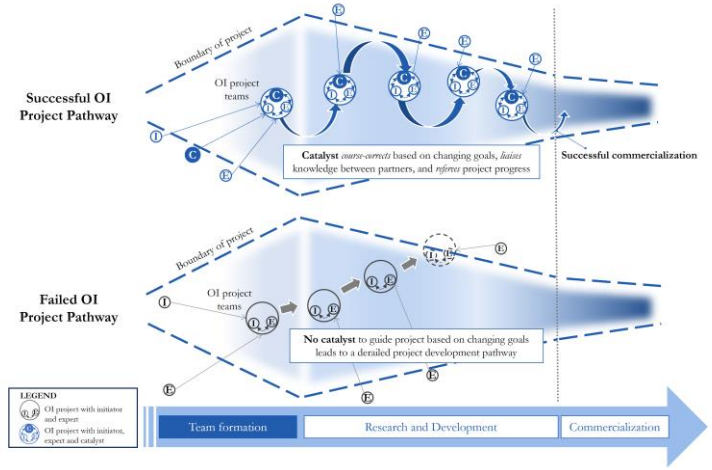
Field research to understand real-world issues

Findings Project 1:



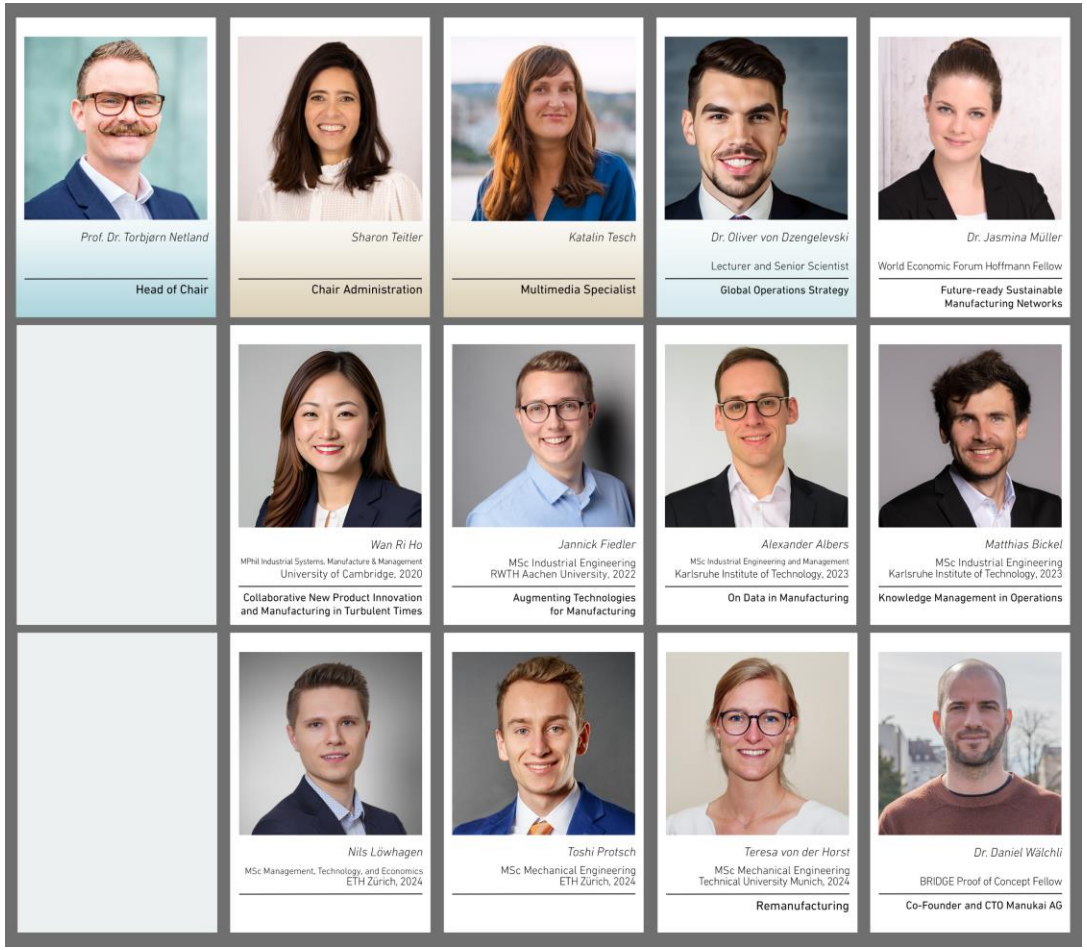


Findings Project 2:



EU Project, Eur3ka (7.4 million Euros)

The POM Team


Prof. Dr. Torbjørn Netland
Head of Chair
Sharon Teitler
Chair Administration
Katalin Tesch
Multimedia Specialist
Dr. Oliver von Dzengelevski
Lecturer and Senior Scientist
Global Operations Strategy
Dr. Jasmina Müller
World Economic Forum Hoffmann Fellow
Future-ready Sustainable Manufacturing Networks
Wan Ri Ho
MPhil Industrial Systems, Manufacture & Management
University of Cambridge, 2020
Collaborative New Product Innovation and Manufacturing in Turbulent Times
Jannick Fiedler
MSc Industrial Engineering
RWTH Aachen University, 2022
Augmenting Technologies for Manufacturing
Alexander Albers
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Karlsruhe Institute of Technology, 2023
On Data in Manufacturing
Matthias Bickel
MSc Industrial Engineering
Karlsruhe Institute of Technology, 2023
Knowledge Management in Operations
Nils Löwhagen
MSc Management, Technology, and Economics
ETH Zürich, 2024
Toshi Protsch
MSc Mechanical Engineering
ETH Zürich, 2024
Teresa von der Horst
MSc Mechanical Engineering
Technical University Munich, 2024
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Dr. Daniel Wälchli
BRIDGE Proof of Concept Fellow
Co-Founder and CTO Manukai AG


AI
Product life extension
New technologies
SMART MANUFACTURING
Remanufacturing
Digitalization
SUSTAINABLE MANUFACTURING
Resilience
OPERATIONAL EXCELLENCE
GLOBAL OPERATIONS
Lean
Production footprint
Industrial engineering
Network coordination

Current research and collaboration

ABB
GEBERIT
HILTI
e·on
SIEMENS
KVÆRNER™
RWTH AACHEN UNIVERSITY
Carlson School of Management
University of Minnesota
Georgetown University
World Economic Forum
MIT
Harvard Business School
IDEA League
Università degli Studi di Padova
University of Cambridge
青山学院大学 Aoyama Gakuin University
SINTEF
University of St.Gallen
HEC Montréal
University of Bath

POM B.Sc and M.Sc collaboration

POM students have won the **MAS Excellence Award**, the **Willi Studer Price**, and the **ETH Medal**

Matthias Bickel & Wan Ri Ho
Research Associate
Chair of POM
D-MTEC, ETH Zurich
Group of Prof. Torbjørn Netland

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