# TECHNO-ÖKONOMIE KOLLOQUIUM

***Tuesday, 21.04.2026***
***10:00 – 16:30***

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# TECHNO-ÖKONOMIE KOLLOQUIUM

## *TECHNO-ECONOMICS COLLOQUIUM*

***Tuesday, 21.04.2026***
***TUtheSky, Getreidemarkt 9, 1060 TU Wien***

**Registration** **10:00**

**Opening Speech** **10:30**
*Opening Remarks - Univ.-Prof. Dr.-Ing. habil. Fazel Ansari, Chair of Production and Maintenance Management, TU Wien*
*Video Opening Speech - Prof. Dr.-Ing. Jens Schneider, Rector of TU Wien and President of TU Austria*
*Welcome Address - Univ.Prof. Dipl.-Ing. Dr.-Ing. Christian Bauer, Dean of the Faculty of Mechanical and Industrial Engineering, TU Wien*

**Concept Presentation** **11:00**
Teresa Goldenits, MSc (TU Wien)
*Data-driven Optimization Method for Sheet Metal Forming*
Supervisor: Univ.-Prof. Dr.-Ing. habil. Fazel Ansari

**Result Presentation** **11:30**
Dipl.-Ing. Marco Berger, BSc (TU Graz)
*Must-have Skills for Business-to-Business Salespeople in Europe's Technology-oriented Industries*
Supervisor: Assoc.Prof. Priv.-Doz. Dipl.-Ing. Dipl.-Ing. Dr.techn. Bernd M. Zunk

**Concept Presentation** **12:00**
Wolfgang Langeder, MSc, MA (TU Wien)
*Regulatory Capacity in Ambidexteritx: Neural Correlates of Emotion Regulation, Identity, and Attention Predicting Exploratory Behaviour in Senior Leaders*
Supervisor: Univ.-Prof. MMag. Dr. Wolfgang Güttel

**Lunch Break** **12:30**

**Concept Presentation** **13:30**
Florian Dutzler, MSc (Montanuniversität Leoben)
*Sustainable Financial Steering for Industrial Transformation: A Maturity Model for ESG-Integrated Financial Management.*
Supervisor: Univ.-Prof. Dipl.-Ing. Dr. mont. Wolfgang Posch

**Result Presentation** **14:00**
Laura Vogel, MA (TU Wien)
*Yes, we care? Eine soziomaterielle Perspektive auf Pflegearbeit und Technologie*
Supervisor: Univ.-Prof. Mag. Dr. Sabine T. Köszegi

**Result Presentation** **14:30**
Susanne Kerschbaumer, M.A. MSc (TU Wien)
*From Binary to Belonging: Empirical Insights on Identity and Inclusion at Work*
Supervisor: Dr. Martina Hartner-Tiefenthaler

**Coffee Break** **15:00**

**Concept Presentation** **15:15**
Andreas Muth, MSc (TU Wien)
*Identification and Impact Assessment of Information for Lithium-Ion Traction Battery Recycling*
Supervisor: Univ.-Prof. Dr.-Ing. Dipl.-Ing. Sebastian Schlund

**Result Presentation** **15:45**
Dipl.-Ing. Reinhard Kletter (TU Wien)
*„I've Got Nothing to Hide": Operationalizing Value Sensitive Design for Privacy-Aware AI and Robotic Technologies in Elderly Care*
Supervisor: Univ.-Prof. Mag. Dr. Sabine T. Köszegi

**Final Remarks** **16:15**

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# Data-driven Optimization Method for Sheet Metal Forming - A dynamic approach for complex straightening processes in the metal industry

***Teresa Goldenits***

Teresa Goldenits has started her PhD at TU Wien, Chair of Production and Maintenance Management (Univ-Prof. Fazel Ansari), in 2025. She holds a Master of Science in Engineering in Business Analytics from the Technical University of Denmark and a Bachelor of Science in Technical Mathematics from TU Wien. Her current work as a research associate at Fraunhofer Austria focuses on data analytics, data-driven process control, and scheduling, using optimization and modeling techniques such as machine learning and mathematical programming.

This dissertation develops a data-driven optimization method for complex sheet metal forming processes, with a particular focus on roller leveling of steel coils. In industrial practice, these processes face significant challenges related to process complexity, non-linear parameter interdependencies, and inherent uncertainties. As a result, process control often depends heavily on operator experience, which can lead to inconsistent quality as well as avoidable rework and scrap. At the same time, purely physics-based or numerical models have proven insufficient for capturing the full scope of real-world process variability and dynamics. To overcome these limitations, this research proposes a dynamic, machine learning- based optimization approach that integrates heterogeneous data sources, including upstream process data, material characteristics, machine settings, and in-line quality measurements, to model and predict process outcomes. The method aims to provide human-in-the-loop recommendations for optimal process control, enabling adaptive parameter adjustments based on historical data and real-time feedback. The development and evaluation are guided by the Design Science Research Methodology (DSRM) and the CRISP-DM framework. Real-world production datafrom industrial partners will be used for model training and testing, and the results will be evaluated both quantitatively and through expert assessment. Overall, the dissertation aims to contribute a generalizable framework supporting the transition towards more effective, efficient and sustainable sheet metal forming processes.

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# Must-have Skills for Business-to-Business Salespeople in Europe's Technology-oriented Industries

***Marco Berger***

Marco Berger is a PhD candidate, lecturer, and researcher at the Institute of Business Economics and Industrial Sociology at Graz University of Technology. His teaching focuses on business economics, and his research interests lie in the sales of industrial goods in business-to-business markets.

Technology-oriented industries are a key pillar of European industrial value added. Their value added depends on business firms' ability to successfully commercialise the goods and services they produce. In business-to-business (B2B) markets, this commercialisation occurs through the sales function. Business firms thus depend on skilled salespeople who can successfully bring their products and services to business customers. These B2B salespeople's skills are critical determinants of their performance, which, in turn, affects the firm's overall success. Despite this, little is known about exactly how the B2B salespeople's skills affect their performance. In other words, which skills B2B salespeople must have to ensure their performance in Europe's technology-oriented industries remains unclear. As a result, business firms lack clear guidance on which skills they should prioritise when recruiting and training B2B salespeople. This research was carried out to identify must-have skills that ensure B2B salespeople's performance using an adjusted exploratory sequential mixed-methods research design. Initially, a literature review of journal articles and consulting reports, semi-structured interviews with B2B sales experts, and an analysis of job advertisements were conducted to develop a skills taxonomy that includes the full spectrum of required skills for B2B salespeople. This taxonomy then served as the measurement instrument in the subsequent quantitative survey. Afterwards, survey data were collected from 162 B2B salespeople in Europe's technology-oriented industries and analysed using Necessary Condition Analysis method to identify skills listed in the taxonomy that are must-haves for ensuring B2B salespeople's performance. The research results show that eight out of the 34 skills in the skills taxonomy are must-haves that ensure B2B salespeople's performance in Europe's technology-oriented industries, namely skills of liaising and networking, supporting others, leading and motivating, making decisions, taking a proactive approach, conducting studies, investigations, and examinations, working efficiently, and working with digital devices and applications. This research adds to the pool of literature on B2B salespeople's skills by contributing the first skills taxonomy and analysing the impact of skills on B2B salespeople's performance from a must-have perspective. The findings provide important guidance for business firms who are recruiting and training B2B salespeople working in Europe's technology-oriented industries. The findings also guide European technical higher education institutions in developing curricula that prepare students to enter a future career in B2B sales.

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# Regulatory Capacity in Ambidexterity: The Role of Metacognition, Identity and Selfregulation in Adaptive Switching between Exploration and Exploitation.

***Wolfgang Langeder***

Wolfgang Langeder is a PhD student in the Leadership & Strategy Group at TU Wien.
He spent ten years working in the Netherlands as a regional manager, management consultant and, most recently, a biopsychological researcher. He studied business administration and neuropsychology in Vienna, Glasgow and Utrecht.

Generating new ideas and capitalizing on them is at the heart of innovation. At the individual level, however, balancing exploration and exploitation can be challenging. The predictable rewards of known options pull behaviour toward exploitation, uncertain and delayed returns prevent sustained exploration (Cohen et al., 2007), and switching between both generates cognitive fatigue (Bidmon & Boe-Lillegraven, 2020). Existing work has linked personality traits, cognitive flexibility (Richner et al., 2023) and neural activation of attentional control circuits (Laureiro-Martínez et al., 2015) to exploration or exploitation behaviour. Yet the neurophysiological and cognitive-affective mechanisms that enable context-appropriate transitions between modes remain poorly understood.
This PhD project addresses this gap in senior leaders, integrating State of Mind theory (Herz et al., 2020) and metacontrol theory (Zhang et al., 2020) to account for state-dependent cognitive control, and predictive coding (Friston, 2010) with the theory of constructed emotion (Barrett, 2017) to explain how self-regulation sustains exploratory behaviour.
The empirical programme comprises three studies. Study 1 interviews senior leaders on the role of identity, emotional experience, and awareness in self-reported ambidextrous behaviour. Via neurocognitive and behavioural tasks, Study 2 discusses how the configuration of neuromodulators norepinephrine and dopamine create an adaptive window for switching during stress. Study 3 tests whether emotional- and physiological self-regulation predict capacity to sustain exploration during uncertainty. This PhD will advance the understanding of why some leaders are successful in driving innovation, while others become rigidly locked in purely executional behaviour. It will yield practical guidance on how leaders can develop awareness of their current mode, and how to tranistion into and sustain their desired mode.

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# Sustainable Financial Steering for Industrial Transformation: A Maturity Model for ESG-Integrated Financial Management

***Florian Dutzler***

Florian Dutzler is a University Assistant at the Chair of Economics and Business Administration at Montanuniversität Leoben. His research focuses on sustainable financial steering, ESG integration, and digital innovation in management systems. Alongside his academic work, he brings extensive industry experience in financial controlling, M&A, and performance management from industrial sectors.

Despite increasing regulatory pressure and advances in ESG reporting, the integration of sustainability considerations into internal financial decision-making remains limited. Core financial steering processes (such as budgeting, investment appraisal, and performance measurement) continue to be dominated by traditional financial logic, creating a gap between ESG ambitions and operational practice in Finance.

This dissertation addresses this disconnect by introducing the concept of Sustainable Financial Steering (SFS), which focuses on the integration of ESG considerations into internal financial governance systems. Building on management control systems literature, SFS shifts the focus from external reporting toward the transformation of internal financial decision-making. The central objective is to develop a maturity model for ESG-integrated financial management, capturing how firms progress from compliance-driven approaches to strategically embedded sustainability practices across key financial steering dimensions.

Methodologically, the research follows a design science approach, combining conceptual development with empirical validation through expert interviews and quantitative analysis of industrial firms. The dissertation contributes by (1) conceptualizing SFS as an extension of management control systems, (2) providing a structured maturity model to assess ESG integration in financial steering, and (3) offering practical guidance for financial decision-makers in industrial contexts. By linking ESG strategy with financial governance, this research advances understanding of how financial systems can support sustainable industrial transformation.

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# Yes, We care? Eine soziomaterielle perspektive auf pflegearbeit und technologie

***Laura Vogel***

Laura Vogel ist Doktorandin am Department für Arbeitswissenschaft und Organisation der TU Wien. Sie studierte Soziologie und Wirtschaftswissenschaften an der Universität Basel und an der Universität Wien. Zuletzt spezialisierte sie sich im Rahmen von Forschungsaufenthalten bei der STS-b group der Universitat Autònoma de Barcelona weiter im Bereich der Science and Technology Studies.

Im öffentlichen Diskurs sind Hoffnungen allgegenwärtig, dass künstliche Intelligenz und Robotik für diese sogenannte Carel-Krise Lösungen bieten können (Dowling 2022). Die damit einhergehenden Versprechen reichen von einer höheren Qualität der Pflege für die Pflegebedürftigen bis hin zu Veränderungen der Arbeit, die durch Technologie „smarter und höher qualifiziert" werden soll (Kamp et al. 2019:1) und zugleich Kosten gesenkt werden können (Maibaum et al. 2022). Trotz großen medialen Interesses, Förderprogrammen sowie Policy-Schwerpunkten rund um das Thema Pflegerobotik, ist der tatsächliche Einsatz von Robotiktechnologien in der Pflege gering (Wright 2023). Neben der beschränkten technologischen Machbarkeit und ethischen Fragen (Hielscher 2014; van Wynesberghe 2013) werden die Herausforderungen hinsichtlich der Komplexität von Care-Arbeit und der entscheidenden Rolle der Pflegekräfte bei der Anwendung der Technologien unterschätzt, bzw. in der bisherigen Forschung nicht ausreichend berücksichtigt (Bischof 2017). Diese Dissertation hat daher zum Ziel, mit einem methodisch partizipativen Ansatz (Frauenberger et al. 2019) neben den Pflegebedürftigen auch die Beschäftigten zu involvieren, um zu beleuchten, wie sich Robotik- oder KI-basierte Technologie mit der professionellen Identität (Weick et al. 2005, Fitzgerald 2020) in Einklang bringen lässt bzw. auch, welche Konflikte auftreten. Die dem Forschungsinteresse zugrunde liegende Annahme hierbei ist, dass Technologie, die im Widerspruch zur professionellen Identität und Werten steht, Widerstände auslöst und in der Praxis weniger einsatztauglich ist (Ajslev et al. 2019). Für das Verständnis von Technologie selbst ist das Konzept von Soziomaterialität nach Orlikowski (2007) zentral. Das Konzept ermöglicht eine tiefgreifende Analyse der Verflechtung von Technik und Sozialem. Die Auswertung der qualitativen Daten (Interviews, teilnehmende Beobachtungen, partizipative Workshops) erfolgt in Anlehnung an Grounded-Theory (Charmaz 2008; Strauss und Corbin 1990). Die ethnografischen Ergebnisse zeigen, dass Pflegekräfte ‚gute Pflege' leisten wollen, trotz der von Zeitdruck geprägten Arbeitsbedingungen. Zugleich spielen vergeschlechtlichte Kompetenzzuschreibungen und Motivationen eine entscheidende Rolle. Die Analyse des Aushandlungsprozesses neuer Technologie in den partizipativen Workshops ergibt ein Bild von drei konfliktären Logiken: der instrumentellen, der professionellen und der ethischen Logik. Im Zuge eines im Projekt partizipativ entwickelten Prototyps eines KIbasierten Dokumentationsunterstützungssystems lässt sich rekonstruieren, wie diese Logiken verstärkt oder geschwächt werden und wie sie mit dem professionellen Selbstverständnis verschränkt sind. Zum einen werden Veränderungen in der Pflegebeziehung kritisch beleuchtet sowie Risiken zunehmender Überwachung in der Arbeit untersucht. Zum anderen werden Potenziale für eine Stärkung der Kompetenzen der Arbeitenden im neuen soziomateriellen Gefüge herausgearbeitet. Im Fokus stehen dabei die Perspektiven der Pflegekräfte auf die neue Technologie, auf ihr professionelles Selbstverständnis und damit auf die Zukunft des Pflegeberufs.

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# From Binary to Belonging: Empirical Insights on Identity and Inclusion at Work

***Susanne Kerschbaumer***

PhD candidate at the Vienna University of Technology (TU Wien) in the Department of Management Sciences, within the Research Group on Industrial Engineering and Organization. She holds degrees in Psychology (BSc, MSc), Romance Studies/Linguistics (BA, MA), and Physics (BSc). Her research interests lie in the areas of diversity and inclusion, quantitative research methods, and open science.

Hybrid work, defined as a combination of remote and in-office work (Vartiainen, 2024), has fundamentally changed how employees interact and collaborate, introducing new challenges for fostering workplace inclusion. Inclusion, understood as the experience of being a valued team member while being able to be authentic (Jansen et al., 2014), is associated with key organizational outcomes such as engagement, trust, and team functioning (e.g., Brimhall et al., 2014; Mor Barak et al., 2016; Nishii, 2013). However, the increased variability in interaction frequency, modality, and access to social cues in hybrid work (Fiol & O'Connor, 2005) suggests that the processes underlying inclusion may operate differently than in traditional settings, while systematic, largescale evidence in hybrid contexts remains scarce.

Existing research is mostly based on qualitative designs or focuses on a limited set of predictors, making it difficult to assess which factors matter most in shaping inclusion in these complex environments. In addition, gender is typically measured using broad categories, which overlooks substantial variation within groups and limits more nuanced analyses of how gender relates to inclusion. Finally, findings in this area are rarely examined for their sensitivity to analytical decisions, leaving questions of robustness and boundary conditions underexplored. Following a systematic review of the literature on inclusion in flexible work settings, this dissertation provides a large-scale, data-driven examination of inclusion in hybrid teams, with a particular focus on gender and innovative analytical approaches. It identifies key factors fostering inclusion, illustrates the potential of more nuanced gender conceptualizations, and uses a continuous measure of gender to examine how gender shapes inclusion in modern workplaces. Study 1 applies a machin learning approach in a large sample of employees in hybrid teams (N > 1200) to identify key predictors of inclusion. Results show that inclusion is shaped by both established relational factors, such as trust and justice, and factors specific to hybrid work, including shared mental models and rules for hybrid collaboration. Importantly, the findings reveal that non-linear relationships and interactions between predictors are prevalent, underscoring the complexity of inclusion processes in hybrid teams. Studies 2 and 3 draw on a large Austrian organizational dataset (N > 800) to examine gender and inclusion using a continuous measure of gender identity (femininity and masculinity). Results from Study 2 show substantial within-category variation in gender identity and demonstrate that femininity and masculinity are not simply opposite ends of a single dimension, enabling more nuanced analyses of gendered team dynamics and person–team (mis)fit. Building on this, Study 3 applies a multiverse analysis and shows that there is no single robust effect of gender on inclusion. Instead, results depend on how gender is operationalized, with continuous measures providing the most informative insights. In addition, gender (mis)fit becomes particularly relevant in specific team settings, especially in male-dominated and scientific teams, where deviations in masculinity are most strongly associated with inclusion, while such effects are largely absent in other team contexts. Overall, the findings extend existing models of inclusion to hybrid work contexts while demonstrating the importance of more nuanced gender conceptualizations and addressing the role of analytical choices in shaping conclusions about gender and inclusion. Practically, they provide guidance for organizations on which factors are most relevant for fostering inclusion in hybrid teams and highlight when and where gender-related dynamics are most likely to emerge, offering direction for both more inclusive research practices and evidence-based management.

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# Assessment of Transparency for Lithium-Ion Traction Battery Recycling

***Andreas Muth***

Andreas Muth, MSc, has been a Research Associate in the Logistics and Supply Chain Management business unit at Fraunhofer Austria Research GmbH since 2022. His work focuses on enhancing transparency in production and logistics and developing strategies for the End-of-Life handling of products such as batteries and magnets. Prior to joining Fraunhofer, he worked as a consultant in the automotive industry in Munich. Andreas Muth holds a Master's degree in Materials Science from TU Wien and a Bachelor's degree in Mechanical Engineering from Rosenheim Technical University.

The battery electric vehicle (BEV) market is projected to grow exponentially over the coming decades. Associated with the high level of market placement comes the challenge of the disposal of end-of-life (EoL) lithium-ion traction batteries (LITB). Recycling LITB is a multi-step process including, e.g., identification of cell chemistry for pre-sorting, dismantling and material recovery. The efficiency of these processes has a major impact on the economic profitability of recycling. However, a major barrier to increasing the efficiency of these steps is the lack of relevant information.

An example of this is the pre-sorting according to battery chemistry, which is based on imprecise (e.g. X-ray fluorescence-based) or time-consuming (e.g. wet chemical) methods for identifying the exact battery type, which require dismantling down to the cell level up to the opening of a cell. Knowledge of this information would make the identification step obsolete and enable more reliable pre-sorting with less time and risk. This makes it possible to design subsequent processes for material recovery adequately regarding the use of resources and even to eliminate redundant steps. Furthermore, product-specific information forms the basis of innovative, ecologically expedient material recovery technologies such as direct recycling. However, without knowledge of cell chemistry and stoichiometric composition, this process is not feasible – and is therefore impeded by a lack of information.

The overarching goal of this thesis is to define and evaluate the information necessary for recycling LITB. Initially, a comprehensive collection of necessary information is to be conducted, with which processes already in use as well as promising processes under development are optimally supported to enable the most efficient recycling possible. For this information, an impact evaluation methodology is developed and applied, which allows an evaluation of a respective attribute to provide decision-makers with comprehensive transparency about the influence of certain information on the process of recycling of LITB in the context of a digital product passport (DPP).

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# „I've Got Nothing to Hide“: Operationalizing Value Sensitive Design for Privacy-Aware AI and Robotic Technologies in Elderly Care

***Reinhard Kletter***

Reinhard Kletter is a member of the Research Unit for Labor Science and Organization at the Institute of Management Science, TU Wien. With a foundation in engineering and a current focus on human-centered research, he embodies a transdisciplinary approach, dedicated to advancing technology for people.

By adopting a value sensitive design (VSD) approach, privacy was identified as a
central concern in the deployment of robotic technologies and AI within care contexts. A systematic review of robotic technologies in care conceptualized privacy as a multidimensional phenomenon extending beyond mere data protection. Building on this, a framework was developed to align mitigation strategies with the different dimensions of privacy. Co-design workshops with care workers and residents in residential nursing homes highlighted a strong need for documentation support. In response, an LLM-based documentation support system (LDSS) was designed, implemented, and evaluated. Preliminary findings indicate that the LDSS can effectively extract care-relevant information from nurse-resident interactions. However, using ethnographic methods during a longitudinal deployment of the LDSS, misalignments with care workers' documentation practices were revealed. To mitigate privacy concerns within the LDSS, this work introduces a Privacy-by-Design framework grounded in Nissenbaum's theory of contextual integrity, aiming to filter sensitive information from transcripts by identifying information flows and evaluating them against contextual privacy norms to detect potential violations. The operationalized LLM-based automated privacy detection (LAPD) pipeline represents an initial step toward systematically identifying privacy-sensitive segments in care documentation. Grounded in the VSD framework and informed by co-creation methods, this research actively involves stakeholders throughout the development process. It contributes novel, privacy-aware technological solutions while critically examining their integration into—and impact on—broader sociotechnical work practices.

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