

# MIT Industrial Liaison Program Faculty Knowledgebase Report

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2025 MIT Europe Conference in Vienna

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## March 26, 2025 - March 27, 2025

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Day 1: 26 March, 2025 (all times CET)

8:15 AM	Registration and Check-in
9:00 AM	Welcome & Introduction
9:30 AM	<p>Risk, Innovation and the New Manufacturing Pioneers</p> <p>Ben Armstrong Executive Director <a href="#">MIT Industrial Performance Center</a></p> <p>Despite fears that new technologies will displace workers, the most common outcome is for new technologies to transform the jobs we do and how we do them. The question is: how can we use technologies to make jobs more enjoyable and more productive? With historical examples and recent data, MIT's Ben Armstrong will identify strategies and opportunities for "positive-sum automation" that benefits firms and workers alike.</p>
10:05 AM	<p>New Lean - The New Production System Paradigm for the Automotive Industry</p> <p>Thomas Bauernhansl</p> <p>With approx. 800,000 direct employees and a volume of 580 billion USD in 2023, the automotive industry is the largest and most important industry in Germany. In this decade, the automotive industry is faced by multiple disruptive changes such as the electrification of the powertrain, new forms of mobility, software defined cars and production processes.</p> <p>This presentation highlights the necessary characteristics for production systems of the future while going into detail on the corresponding building blocks from digital transformation and artificial intelligence, including practical examples from industry. The presentation closes with findings from the "New Lean" initiative, aiming to develop a new and innovative holistic production system approach that envisions environmentally neutral production at 100% higher productivity by 2035. This initiative is backed by an industrial consortium that includes the COOs of Mercedes-Benz, Porsche, BMW, Siemens, and the CEO of Dürr.</p>
10:40 AM	Networking Break
11:00 AM	<p>Investing in the Future of Manufacturing: Practical Applications of AI and Analytics for Competitive Advantage</p> <p>Bruce Lawler Managing Director <a href="#">MIT Machine Intelligence for Manufacturing and Operations (MIMO)</a></p> <p>Explore practical and successful applications of analytics and AI in manufacturing across small, medium, and large enterprises in the U.S. Learn where to invest to start and sustain a digital transformation journey, drawing on research and best practices from MIT and McKinsey. Discover impactful uses of Generative AI currently shaping the industry that will drive future investment.</p>

11:35 AM	<p>Transforming Biomanufacturing to Empower the Bioeconomy</p> <p>J. Christopher Love  Raymond A. (1921) And Helen E. St. Laurent Professor  <a href="#">MIT Department of Chemical Engineering</a></p> <p>Biomanufacturing will change the food we eat, energy we use, and how we cure diseases. It has the potential to drastically reduce our reliance on greenhouse gases. But there are enormous challenges to getting promising advances from labs to the market. Standing up a large-scale manufacturing facility can run to \$2 billion, the field is full of regulatory hurdles, and workers need advanced training. We'll look ahead at promising biomanufacturing solutions, and what it will take to scale them.</p>
12:10 PM	<p>Manufacturing-Integrated Design from the Desktop to Deep-sea: novel robots and construction materials</p> <p>Kaitlyn Becker</p> <p>To design a product is to design the process by which it is made, and approaching problems at the interface of design and manufacturing offers opportunities for disruptive change. Navigating design, manufacturing, and material spaces in parallel becomes increasingly relevant as we address modern challenges with materials or environments that bring both unique and beneficial attributes while simultaneously imposing stringent restrictions on design and manufacturing. I'll discuss how taking an integrated approach to design and manufacturing has improved the reliability and extended the reach of soft robots, enabling deep-sea exploration and biological sampling. I will also touch on how the Fabrication-Integrated Design Lab at MIT is applying a similar approach to soft robotic assistive devices and 3D printing with recycled glass to create structural masonry that is also recyclable.</p>
12:45 PM	<p>Networking Lunch</p>
1:45 PM	<p>Capitalizing on Change: Financing Manufacturing in the 21st Century</p> <p>Hiram Samel  Senior Lecturer  <a href="#">MIT Sloan School of Management</a></p> <p>Automation, AI, and the global drive for carbon reduction are transforming manufacturing, yet capital market allocation remains misaligned with the sector's evolving needs. The U.S. and Europe take distinct approaches: both deploy industrial policies to achieve strategic autonomy, with the U.S. leveraging larger pools of private capital alongside public incentives, and Europe prioritizing sustainability-focused funding as a key pillar of its industrial strategy. However, the tension between institutional investors' preference for efficient, asset-light models and the significant capital expenditures required for transformative manufacturing presents a substantial challenge. Engaging capital market investors early, supported by innovative business models, refined narratives, and industrial policy, is essential to mobilizing larger funding pools of capital that advance strategic priorities.</p>
2:20 PM	<p>Educating Manufacturing Technologists to be Future Shop Floor Leaders</p> <p>John Liu  Director &amp; Principal Investigator  <a href="#">MIT Learning Engineering and Practice Group (LEAP)</a></p> <p>Successful technology adoption will change the nature of manufacturing work and drive demand for new competencies. How do we understand the roles that can best support advanced manufacturing? A new program from MIT aims to give shop-floor workers a ladder to become shop-floor leaders — "technologists" who bridge the gap between technicians and engineers.</p>
2:55 PM	<p>Networking Break</p>

3:25 PM	<p>Finding the Extra Gear for Your Organization's Digital Transformation</p> <p>John Carrier Senior Lecturer, System Dynamics <a href="#">MIT Sloan School of Management</a></p> <p>Despite having access to the same technologies, some organizations consistently realize value more quickly than their competitors, with a smaller financial investment. In this session, we will discuss the technological, organizational, and psychological factors behind this phenomenon, and how an understanding of System Dynamics and Lean Operations (developed at MIT) can help you accelerate your organization's successful transition to a digital future through Organizational Leverage.</p>
4:00 PM	<p>XR in Manufacturing: Building the Factories of Tomorrow</p> <p>Sara Scheffer PostDoc Scientist <a href="#">Technische Universität Wien</a></p> <p>XR is reshaping manufacturing by revolutionizing how we design, produce, and maintain. From immersive training for complex tasks to enhancing collaboration and precision on the factory floor, XR has the potential to transform industries. Yet, challenges like scaling adoption, workforce readiness, and integration remain. This keynote will explore promising XR applications, their role in creating efficient, sustainable manufacturing systems, and the roadmap for overcoming barriers to unlock their full potential.</p>
4:35 PM	<p>Globalization Retreats, Manufacturing Resurges</p> <p>Suzanne Berger Institute Professor <a href="#">MIT Department of Political Science</a></p> <p>In a world advancing towards globalization, strong competitive pressures force companies to operate as if there were a single world market with the same prices for goods, capital, and labor. After decades in which the costs of distance declined and countries lowered the border-level barriers to trade, globalization has now reversed and global markets are fragmenting. There are three main causes for this shift: political unrest blamed on globalization; supply chain failures during COVID, which reinforced the value of resilience and domestic production; and above all, national security concerns with war in Europe and US-China tensions. New border-level barriers include tariffs, export controls, import controls, and immigration restrictions. In such a world each state tries to ensure the production of vital goods and services at home or in allies through "friend-sourcing." Supporting domestic manufacturing ---which was dismissed as unimportant only a decade ago ---has now become a key objective in all major countries.</p>
5:10 PM	<p>Day 1 Closing Remarks with Evening Reception</p>

## Day 2: 27 March, 2025 (all times CET) | Deep-Dive Workshops

	<p><b>Deep-Dives</b> An instructional program with hands-on learning activities and specific takeaways from the MIT faculty. A limited number of participants. There are 8 Deep-Dives sessions in 4 different tracks available:  <b>Track 1:</b> Manufacturing Policy  <b>Track 2:</b> Innovation and Workforce Development  <b>Track 3:</b> Strategy and Investment  <b>Track 4:</b> Manufacturing Technology</p>
8:30 AM	<p>Registration for Deep-Dives</p> <p>Track 1 - Manufacturing Policy (Room 1)</p>

9:00 AM - 9:45 AM

Scaling New Technologies That Improve Work  
Ben Armstrong  
Executive Director, [MIT Industrial Performance Center](#)



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Executive Director  
[MIT Industrial Performance Center](#)

Ben Armstrong is the executive director of MIT's Industrial Performance Center, where he co-leads the Work of the Future initiative. His research examines how workers, firms, and regions adapt to technological change. His current projects include a working group on generative AI, as well as a book on American manufacturing competitiveness. His work has been published or featured in academic and popular outlets including the New York Times, Harvard Business Review, Forbes, Sloan Management Review, Times Higher Education, the Boston Review, Daedalus, and Economic Development Quarterly. He received his PhD from MIT and formerly worked at Google Inc.

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9:45 AM - 10:30 AM

How Can We Transform Manufacturing?

Suzanne Berger

Manufacturing today in the United States (and in those European countries about which I know something), has low productivity gains, relatively low-paid and insecure jobs, and contributes to climate change. The majority of firms are very slow to adopt new technology. Only 10% of all U.S. manufacturing firms have even one robot. As new national industrial policies invest massively in domestic production, there is the risk that we will end up with more manufacturing –but more of same. How can we inflect the future? A group of MIT engineers and social scientists have been meeting to analyze the causes of stagnation and strategies for overcoming them. Together with participants in the Deep Dive session, we will compare national experiences in manufacturing, new ideas about optimal firm structures, verticalization, and technology adoption.

Track 2 - Innovation and Workforce Development (Room 2)

9:00 AM - 9:45 AM

Corporate Innovation and Ecosystem Engagement

Phil Budden  
Senior Lecturer, Technological Innovation, Entrepreneurship, and Strategic Management  
[MIT Sloan School of Management](#)

Corporate enterprises often struggle to innovate and adopt new technologies, in contrast to start-ups and entrepreneurs in 'innovation ecosystems' beyond their walls. Dr. Phil will share MIT's approach to innovation, and how corporations (and other large organizations, including trade associations and the public sector) can accelerate their own internal efforts at innovation (such as training their workers, which the next session will cover) by systematically engaging external ecosystems.

9:45 AM - 10:30 AM	<p>Development and Training of Manufacturing Workers</p> <p>John Liu</p> <p>John Carrier Senior Lecturer, System Dynamics <a href="#">MIT Sloan School of Management</a></p> <p>Industries need manufacturing workforces that are competent, empowered, and diverse. Attracting and educating this base – ranging from operators and technicians to technologists and engineers – poses unique challenges and opportunities. This workshop will offer innovations and best practices in manufacturing workforce development. We will cover recent advances in manufacturing pedagogy and AR/VR technologies to upskill and empower new and incumbent workers for in-demand jobs. We will share current work to improve industry-academia dialogue in identifying critical, future engineering competencies for curriculum development.</p> <p>We will also examine the critical role provided by internal leadership to accelerate the adoption and use of human-centric technologies, in preventing organizational friction from derailing the digital transformation, and supporting workforce development. The impact of GenAI on the coordination and communication layer of the organization will be discussed. The concepts will be demonstrated with a brief 'hands on' exercise.</p>
10:30 AM - 11:00 AM	<p>Networking Break</p> <p>Track 3 - Strategy and Investment (Room 1)</p>
11:00 AM - 11:45 AM	<p>Preparing the Corporation for Machine Learning</p> <p>Bruce Lawler</p> <p>Learn how to perform an analysis of your company's digital maturity and generate an action plan to improve the corporation's digitization and AI implementation success. Learn how to identify the right potential AI use cases for your corporation. Discuss how to select and implement an AI pilot project.</p>
11:45 AM - 12:30 PM	<p>Reimagining Manufacturing: Business Model and Capital Structure Innovation in a Post-Global World</p> <p>Hiram Samel</p> <p>Manufacturing is undergoing a rapid transformation driven by new and emerging technologies, such as AI, robotics, additive manufacturing, and advanced automation, alongside evolving geopolitical and energy dynamics. These forces are not only reshaping traditional strategies but also driving business model innovation, as companies rethink vertical integration, regionalization, and supply chain configurations. This workshop examines how these innovations influence capital structure decisions—such as equity, debt, and hybrid instruments—potentially making companies more attractive to investors by aligning with emerging market opportunities and government priorities. With insights from U.S. and European markets, this session provides practical frameworks to integrate business model innovation with financing strategies, enabling resilience and sustained growth in a rapidly changing global environment.</p> <p>Track 4 - Manufacturing Technology (Room 2)</p>
11:00 AM - 11:45 AM	<p>Workshop on Innovations in Biomanufacturing for European Bioeconomy</p> <p>J. Christopher Love</p> <p>This workshop will consider the drivers and enablers for advancing biomanufacturing in Europe. The interactive session will seek to dialogue on the unique challenges in building a robust and sustainable ecosystem in Europe for circular economies, including critical questions for technologies, policies, and regulatory matters, including gaps in science to accelerate development.</p>

11:45 AM - 12:30 PM	<p>Manufacturing, Mens, et Manus: hands on engineering education and evaluation</p> <p>Kaitlyn Becker</p> <p>This workshop will be a discourse on preparing and evaluating the upcoming generation of manufacturing engineers, establishing fundamental skills and principles and discussing what it means to add value as an engineer in the age of AI. This pertains both to assessment in the classroom as well as in technical interviews. We will open the floor to successful strategies as well as shortcomings in the current preparation and assessment of new hires. As an example of how the motto <i>Mens et Manus</i> is embodied in undergraduate education at MIT, we'll start with a view into the evolving flipped classroom structure in which MIT undergraduates studying mechanical engineering are introduced to fundamental principles of manufacturing. This is a course in which students are introduced to scalable manufacturing, discuss how the design of a product is inherently linked to its manufacturing process, and consider the implications of the manufacturing-integrated design decisions. Teams of student start from plastic pellets, CAD, and a block of aluminum and, through an exercise in design for scale, tolerancing, and troubleshooting, end the semester with one-hundred yo-yos. We'll share recent experiments in creating assessments that are authentic to how student will later apply material in their careers, tailoring classroom activities to strengthen independence and troubleshooting, and motivating student engagement beyond the traditional grading system.</p>
12:30 PM - 1:15 PM	<p>Light Lunch with Networking Break</p> <p>Track 5 - Innovation Map (Room 1)</p>
1:15 PM - 2:15 PM	<p>Shaping the Future of Manufacturing with the Innovation Map</p> <p>Marie-Therese Barth Teamlead Innovation Map <a href="#">Austrian Federal Economic Chamber</a></p> <p>Using the Innovation Map, participants will engage in a dynamic, hands-on learning experience, exploring cutting-edge manufacturing technologies, and addressing emerging challenges. This interactive session introduces an innovative foresight tool through engaging activities, empowering participants to identify transformative opportunities and craft ideas for tomorrow's manufacturing landscape. Shape the future of manufacturing with creativity, strategic thinking, and collaboration—together.</p> <p>More about the Innovation Map: <a href="http://www.innovationmap.at">www.innovationmap.at</a></p>
2:15 PM	<p>Adjournment</p>