

MIT Industrial Liaison Program Faculty Knowledgebase Report

Future of Manufacturing

May 7, 2020 11:00 am - 1:00 pm

11:00am - 12:00pm

Manufacturing Work of the Future: Technology, Institutions, and Possibilities
Elisabeth B. Reynolds

Professor of the Practice, [MIT Department of Urban Studies and Planning](#)
Former Executive Director, [MIT Task Force on the Work of the Future](#) and [IPC](#)
Former Special Assistant to the President for Manufacturing and Economic Development



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Elisabeth B. Reynolds, Ph.D., is Professor of the Practice at the MIT Department of Urban Studies and Planning. She was Special Assistant to President Biden for Manufacturing and Economic Development at the National Economic Council (NEC, 2021-2022) where she helped lead the Administration's work on national manufacturing strategy, supply chain resilience, and industrial strategy. Before working at the NEC, Reynolds was a Principal Research Scientist and executive director of the MIT Industrial Performance Center (2010-2021), an interdisciplinary research center focused on systems of innovation and industrial transformation. She also co-led the MIT Task Force on the Work of the Future (2018-2021) which examined the relationship between emerging technologies and work. Reynolds' work and research focus on systems of innovation and manufacturing including growing innovative firms to scale and digital technology adoption.

Reynolds has worked on rebuilding manufacturing capabilities in the U.S. in a number of capacities including advising three Massachusetts governors. She is on the board of the non-profits, Advanced Functional Fabrics of America (AFFOA) and the Advanced Regenerative Manufacturing Institute (ARMI) as well as an advisor to the Special Competitive Studies Project, a Washington think tank focused on national security and critical technologies.

12:00pm - 1:00pm

MIT Production in the Innovation Economy Study: Lessons Learned in the Epoch of COVID-19

Olivier de Weck

Professor of Aeronautics and Astronautics and Engineering Systems
Editor-in-Chief of the journal *Systems Engineering*
Executive Director, MIT Production in the Innovation Economy (PIE) Study
Co-Director, Center for Complex Engineering Systems at KACST and MIT
Secretary and Treasurer, Council of Engineering Systems Universities (CESUN)



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Prof. de Weck is an international leader in *Systems Engineering* research. He focuses on how complex man-made systems such as aircraft, spacecraft, automobiles, printers and critical infrastructures are designed, manufactured and operated and how they evolve over time. His main emphasis is on the strategic properties of these systems that have the potential to *maximize lifecycle value*. His group has developed quantitative methods and tools that explicitly consider manufacturability, flexibility, robustness, and sustainability among other characteristics. Significant results include the *Adaptive Weighted Sum (AWS)* method for resolving tradeoffs amongst competing objectives, the *Delta-Design Structure Matrix (DDSM)* for technology infusion analysis, Time-Expanded Decision Networks (TDN) and the *SpaceNet* and *HabNet* simulation environments. These methods have impacted complex systems in space exploration (NASA, JPL), oil and gas exploration (BP) as well as sophisticated electro-mechanical products (e.g. Xerox, Pratt & Whitney, GM, DARPA). He has authored two books and about 250 peer-reviewed papers to date. He is a Fellow of INCOSE and an Associate Fellow of AIAA. Since January 2013 he serves as Editor-in-Chief of the journal *Systems Engineering*. In 2006 he received the Frank E. Perkins Award for Excellence in Graduate Advising followed by the 2010 Marion MacDonald Award for Excellence in Mentoring and Advising and a 2012 AIAA Teaching Award. From 2008-2011 he served as Associate Director of the Engineering Systems Division (ESD) at MIT. From 2011 to 2013 he served as Executive Director of the MIT Production in the Innovation Economy (PIE) project.

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