Future of Manufacturing

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Manufacturing Work of the Future: Technology, Institutions, and Possibilities

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Lecturer (Urban Studies and Planning)

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Elisabeth B. Reynolds works on issues related to systems of innovation, regional economic development and industrial competitiveness. She has focused in particular on the theory and practice of cluster development and regional innovation systems and advises several organizations in this area. Her current research focuses on the pathways that U.S. entrepreneurial firms take in scaling production-related technologies, as well as advanced manufacturing, including the globalization of the biomanufacturing industry. She is a member of the Massachusetts Advanced Manufacturing Collaborative Executive Committee.

Before coming to MIT for her Ph.D., Reynolds was the Director of the City Advisory Practice at the Initiative for a Competitive Inner City (ICIC), a non-profit founded by Professor Michael Porter focused on job and business growth in urban areas.

Reynolds has an A.B. from Harvard in Government and was the Fiske Scholar at Trinity College, Cambridge. She holds a MSc. from the University of Montreal in Economics and a Ph.D. from MIT in Urban and Regional Studies.

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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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