Digital Transformation 2021

November 9, 2021 10:00 am - 12:00 pm

Envisioning the Future of Curated Model Collections
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Dr. Donna H. Rhodes is a principal research scientist in the Sociotechnical Systems Research Center (SSRC)within IDSS. She is the director of the MIT Systems Engineering Advancement Initiative (SEAri). Prior to joining MIT in 2003, Dr. Rhodes held senior management positions in systems engineering and enterprise practices at IBM Federal Systems, Lockheed Martin, and Lucent Technologies.

Dr. Rhodes conducts research on human-model interaction, decision-making in model-centric environments, innovative approaches and methods for architecting and design of complex systems and enterprises, including predictive indicators of performance, empirical studies of engineering systems thinking and practice, and designing for uncertain futures. Her research is driven by the desire to more predicatively architect socio-technical systems to address significant societal needs in a dynamic world. She is involved in research across multiple sectors including defense, aerospace, transportation, energy and commercial products.

Dr. Rhodes received her Ph.D. in Systems Science from the T.J. Watson School of Engineering at Binghamton University. She serves on industry and government advisory boards focused on advancement of systems practice and education, as well as on study panels for issues of national and international importance. She engages with government and industry leaders through collaborative research, consulting engagements and executive courses. She has been very involved in the evolution of the systems engineering field, including development of several university graduate programs. Dr. Rhodes is a past president and fellow of the International Council on Systems Engineering, and a recipient of INCOSE's Founders Award and several distinguished service awards. She serves on the INCOSE Systems Engineering journal editorial board.

Enterprises that design and develop complex systems are experiencing disruptive change as model-based engineering replaces document-centric practice. While models have always been used in engineering, we are now approaching a future where digital twins will co-exist with operational systems. Accordingly, models become increasingly valuable and ultimately may have even greater value than physical assets. Repositories of models, simulations and data have been used for some time, and the transformation to digital engineering is impacting their scale and importance to the enterprise. This webinar discusses several years of research on *model curation* as a formal practice for governance of an enterprise-level model collection. The return-on-investment business case for developing and maintaining enterprise model collections is not presently well-defined. What is clear is that a model collection is only worthwhile if model consumers can see evidence of model integrity, as well as have sufficient information to judge credibility in order to trust the model. This talk shares findings from our latest studies on the precursors, barriers and enablers for trust in the model curation context, and shares a vision for model discovery in support of strategic reuse of curated model collections.

Digital Transformation in Design: Will Remote Work, Models, and Startup Culture Change The Work Of Design?

Bruce Cameron
Director, MIT System Architecture Lab

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Bruce Cameron is the Director of the System Architecture Group at MIT. His research interests include technology strategy, system architecture, and the management of product platforms. Previously, Dr. Cameron ran the MIT Commonality study, a 30-firm investigation of platforming returns, which concluded that firms face systemic downward pressure on commonality, partially resulting from challenges capturing the costs of variety. Dr. Cameron has supervised over 50 graduate students and has directed research projects for Amazon, BP, Sikorsky, Nokia, Caterpillar, AMGEN, Verizon, and NASA. Current research efforts include:

- Platform management in large R&D organizations
- System architecture of complex systems
- Switching costs and retention incentives in ride-hailing firms
- Satellite mega-constellations in Lower Earth Orbit

Dr. Cameron is a co-founder of Technology Strategy Partners, a consultancy created to help firms to restructure product development organizations, build systems engineering functions, and identify new architectures. Dr. Cameron has led projects in Fortune 500 firms in high tech, medical devices, transportation, and consumer goods.

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Unicorn valuations and investor pressure have motivated a broad push for digital transformation. Although many disruptive innovation firms are unabashedly design-focused, much of the work on digital transformation has ignored how the process of design will change. This talk examines MIT research on three drivers : remote and distributed work for its impact on how we design, models and process automation for the opportunities they create in design, and the idea of startup culture inside larger firms.