

# MIT Industrial Liaison Program Faculty Knowledgebase Report

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## 2021 MIT Digital Technology and Strategy Conference

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October 13, 2021 - October 14, 2021

### Day 1: October 13 (Wednesday)

9:00 AM - 9:05 AM

Welcome and Introduction

9:05 AM - 9:20 AM

MIT Innovation Ecosystem  
Karl Koster  
Executive Director, MIT Corporate Relations  
Director, Alliance Management  
MIT Office of Strategic Alliances & Technology Transfer



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Executive Director, MIT Corporate Relations  
Director, Alliance Management  
MIT Office of Strategic Alliances & Technology Transfer

Karl Koster is the Executive Director of MIT Corporate Relations. MIT Corporate Relations includes the MIT Industrial Liaison Program and MIT Startup Exchange.

In that capacity, Koster and his staff work with the leadership of MIT and senior corporate executives to design and implement strategies for fostering corporate partnerships with the Institute. Koster and his team have also worked to identify and design a number of major international programs for MIT, which have been characterized by the establishment of strong, programmatic linkages among universities, industry, and governments. Most recently these efforts have been extended to engage the surrounding innovation ecosystem, including its vibrant startup and small company community, into MIT's global corporate and university networks.

Koster is also the Director of Alliance Management in the Office of Strategic Alliances and Technology Transfer (OSATT). OSATT was launched in Fall 2019 as part of a plan to reinvent MIT's research administration infrastructure. OSATT develops agreements that facilitate MIT projects, programs and consortia with industrial, nonprofit, and international sponsors, partners and collaborators.

He is past chairman of the University-Industry Demonstration Partnership (UIDP), an organization that seeks to enhance the value of collaborative partnerships between universities and corporations.

He graduated from Brown University with a BA in geology and economics, and received an MS from MIT Sloan School of Management. Prior to returning to MIT, Koster worked as a management consultant in Europe, Latin America, and the United States on projects for private and public sector organizations.

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9:20 AM - 10:00 AM

Digital Platforms: Looking at the Past and their Future

Michael Cusumano

SMR Distinguished Professor of Management

Deputy Dean, [MIT Sloan School of Management](#)



Michael Cusumano

SMR Distinguished Professor of Management

Deputy Dean

[MIT Sloan School of Management](#)

Cusumano specializes in strategy, product development, and entrepreneurship in software, automobiles, and consumer electronics. He is a graduate of Princeton (A.B.) and Harvard (Ph.D.) as well as completed two Fulbright Fellowships and a Japan Foundation Fellowship for research in Japan and a two-year postdoctoral fellowship in Production and Operations Management at Harvard Business School. He has been a Special Vice President and Dean at Tokyo University of Science, where he founded the Tokyo Entrepreneurship & Innovation Center. At MIT Sloan, he has recently taught classes on Platform Strategy & Entrepreneurship as well as Strategy and the CEO. He has published 14 books and more than 120 articles. His latest books are *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power* (2019, with A. Gawer and D. Yoffie) and *Strategy Rules: Five Timeless Lessons from Bill Gates, Andy Grove, and Steve Jobs* (2015, with D. Yoffie, translated into 18 languages).

This talk will review and extend key findings from a recent book, **The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power** (Harper Business, 2019) by Michael A. Cusumano, Annabelle Gawer, and David B. Yoffie. Digital platforms are businesses that connect two or more market actors, with supply or demand driven at least in part by network effects. They are at the core of the most valuable technology companies in the world. The talk will explain how these digital platforms differ from conventional product or service businesses, how they differ among themselves, and why some markets produce spectacular winner-take-all-or-most outcomes while others result in financial losses. We will also consider emerging platforms powered by new enabling technologies such as artificial intelligence and machine learning, gene editing, and quantum computing.

10:00 AM - 10:40 AM

## How to Maximize Returns from Data Monetization

Barbara Wixom  
Principal Research Scientist,  
Center for Information Systems Research



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Center for Information Systems Research

Barbara joined MIT Sloan in June 2013 to serve as a Principal Research Scientist at the MIT Sloan Center for Information Systems Research (CISR). MIT CISR was established in 1974 as a non-profit research group, and it currently is funded by 85 corporate sponsors and patrons. The center undertakes practical research on how firms generate business value from digitization. Barbara's work focuses on how organizations effectively deliver value from their information assets.

Prior to MIT CISR, Barbara was a tenured faculty member at the University of Virginia (UVA) where she taught undergraduate and graduate courses in data management, business analytics, and IT strategy. She is a two-time recipient of the UVA All-University Teaching Award (2002, 2010), which recognizes teaching excellence in professors, particularly those who inspire and motivate students. This honor is especially meaningful to Barbara because she earned her undergraduate degree at the University of Virginia.

Since the mid-90's, Barbara has deeply explored data warehousing, business intelligence, analytics, big data, and AI. Her research ranges from large-scale surveys and meta-analyses to lab experiments and in-depth case studies. Five of her cases have placed in the Society for Information Management Paper Awards competition: First American Corporation (1999), Owens and Minor (2000), Continental Airlines (2004), Sprint (2008), and BBVA (2018). Barbara is a leading academic scholar, publishing in such journals as Information Systems Research; MIT Sloan Management Review; MIS Quarterly; and MIS Quarterly Executive. She presents her work globally to academic and business audiences.

Barbara serves as associate editor of the Business Intelligence Journal, research fellow of The Data Warehousing Institute, and fellow of the Teradata University Network. In 2017, Barbara was awarded the Teradata University Network Hugh J. Watson Award for her contributions to the data and analytics academic community via the Teradata University Network. She is the author of two leading systems analysis and design textbooks, published by John Wiley & Sons, Inc. She is married and blessed with two daughters.

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Companies today are starting to walk the talk when it comes to treating data like a strategic firm asset—they are hiring chief data officers, and rolling out data literacy programs. Yet, to maximize returns from data monetization companies need their people to engage with and experience data firsthand. In this session, Dr. Wixom will share key insights from her research on data monetization to describe what data capabilities distinguish top performing firms; how they optimize data monetization initiatives; and how they motivate pervasive data use.

Learn more about [Data Monetization Strategy: Creating Value Through Data](#) online short course from the MIT Sloan School of Management, guided by renowned Faculty Director Dr. Barbara Wixom.

10:40 AM - 10:50 AM

MIT Professional Education

10:50 AM - 11:20 AM

Networking Break

11:20 AM - 12:00 PM

Teaching Predictive Multiscale Materials Design  
Markus Buehler  
McAfee Professor, Civil and Environmental Engineering



Markus Buehler  
McAfee Professor, Civil and Environmental Engineering

Markus J. Buehler is the McAfee Professor of Engineering at MIT and leads MIT's Laboratory for Atomistic and Molecular Mechanics. His primary research interests focus on the structure and mechanical properties of biological and bio-inspired materials, to characterize, model and create materials with architectural features from the nano- to the macro-scale. Much of his research deals with protein materials – the basic constituent of all life – rendering complex materials such as cells, blood vessels, but also spider silk and viruses. Using an array of theoretical, computational and experimental methods, his work seeks to understand the means by which nature creates materials, with applications in bio-inspired engineering. His most recent book, Biomateriomics, presents a new design paradigm for the analysis of biomaterials using a categorization approach that translates insights from disparate fields.

Buehler is the recipient of many awards including the Harold E. Edgerton Faculty Achievement Award, the Alfred Noble Prize, the Feynman Prize in Nanotechnology, the Leonardo da Vinci Award, and the Thomas J.R. Hughes Young Investigator Award. He is a recipient of the National Science Foundation CAREER award, the United States Air Force Young Investigator Award, the Navy Young Investigator Award, and the Defense Advanced Research Projects Agency (DARPA) Young Faculty Award, as well as the Presidential Early Career Award for Scientists and Engineers (PECASE). In 2018, Buehler was selected as a Highly Cited Researcher by Clarivate Analytics. In 2019, he received the Materials Horizons Outstanding Paper Prize, and his work was recognized as a highly cited author by the Royal Society of Chemistry. A frequent collaborator with artists, he is a member of the MIT Center for Art, Science and Technology (CAST) Executive Committee.

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MIT Startup Exchange actively promotes collaboration and partnerships between over 1,500 MIT-connected startups and over 230 corporates that are members of MIT's Industrial Liaison Program (ILP). We host a robust schedule of events and facilitate networking and introduction opportunities year round. Qualified startups are those founded and/or led by MIT faculty, staff, or alumni, or are based on MIT-licensed technology. MIT Startup Exchange and ILP are integrated programs of MIT Corporate Relations. STEX25 is a startup accelerator within MIT Startup Exchange, featuring 25 "industry-ready" startups that have proven to be exceptional with early use cases, clients, demos, or partnerships, and are poised for significant growth.

- 1) [Mobi Systems](#): Solving seemingly intractable human problems for travel, transport and hospitality
- 2) [Manus Robotics](#): Wearable technologies for empowering independent and functional living
- 3) [Cerebri AI](#) : Powering the personalized enterprise from real-time data to insights to actions
- 4) [Everactive](#): Always on sensing, no batteries required
- 5) [Meter](#): Low cost industrial computed tomography
- 6) [Leela AI](#): Machine vision that understands what it sees
- 7) [Riff Analytics](#): AI feedback for conversational & collaborative dynamics
- 8) [keyTango](#): The easiest way to generate interest on digital assets
- 9) [Fathom Data](#): Simplifying access to bioprocessing data
- 10) [Jaxon](#): Automating the process of training AI

Peng Yu  
CTO  
[Mobi Systems](#)

Faye Wu  
CTO and co-founder  
[Manus Robotics](#)

Alain Briancon  
CTO  
[Cerebri AI](#)

John Greenfield  
VP, Business Development and Partnerships  
[Everactive](#)

Eduardo Torrealba  
Co-founder and CEO  
[Meter](#)

Cyrus Shaoul  
Co-founder and CEO  
[Leela AI](#)

Beth Porter  
Cofounder & CEO  
[Riff Analytics](#)

Dan Danay  
CEO  
[keyTango](#)

Elisabeth Maida  
Co-founder and CEO  
[Fathom Data](#)

Scott Cohen  
CEO  
[Jaxon](#)

12:50 PM - 1:50 PM

Lunch with Startup Exhibit

1) [Mobi Systems](#); 2) [Manus Robotics](#); 3) [Cerebri AI](#); 4) [Everactive](#); 5) [Meter](#); 6) [Leela AI](#); 7) [Riff Analytics](#); 8) [keyTango](#); 9) [Fathom Data](#); 10) [Jaxon](#);

**Exhibit Only**

- 11) Kebotix: New chemicals development at unprecedented speed
- 12) Coding Dojo: Transforming lives through digital literacy

1:50 PM - 2:30 PM

Machine Learning and Data Science in Process Automation, Beyond Robotics

Brian Anthony

Associate Director, MIT.nano

Faculty Lead, Industry Immersion Program in Mechanical Engineering



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Associate Director, MIT.nano

Faculty Lead, Industry Immersion Program in Mechanical Engineering

Dr. Anthony has over 25 years of commercial, research, and teaching experience in product realization and information enabled manufacturing. He has extensive experience in market driven technology innovation, product realization, and business entrepreneurship and commercialization at the intersection between information technology and advanced manufacturing. His research and product development interests cross the boundaries of manufacturing and design, medical imaging, computer vision, acoustic and ultrasonic imaging, large-scale computation and simulation, optimization, metrology, autonomous systems, and robotics. His teaching interests include the modeling of large-scale systems in a wide variety of decision-making domains and the development of optimization algorithms and software for analyzing and designing such systems. He teaches on-line and on-campus professional programs in Smart Manufacturing and sensory systems Beyond IoT.

Dr. Anthony spent the first part of his career as an entrepreneur. He developed and directed the development of products and solutions for the industrial and scientific video markets. His products fueled corporate growth from startup to dominant market leader. He has been awarded 20 patents, published over 100 peer reviewed articles, and won an Emmy from the Academy of Television Arts and Sciences for innovations in sports broadcast technical innovation.

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2:30 PM - 3:20 PM

Industry Panel  
Leslie Ann Owens  
Senior Lecturer, Information Technology  
Executive Director, Center for Information Systems Research (CISR)



Leslie Ann Owens  
Senior Lecturer, Information Technology  
Executive Director, Center for Information Systems Research (CISR)

Leslie Owens is a Senior Lecturer in the Information Technology group and is also the Executive Director of the MIT Center for Information Systems Research (CISR).

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Brian Anthony  
Associate Director, MIT.nano  
Faculty Lead, Industry Immersion Program in Mechanical Engineering



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Associate Director, MIT.nano  
Faculty Lead, Industry Immersion Program in Mechanical Engineering

Dr. Anthony has over 25 years of commercial, research, and teaching experience in product realization and information enabled manufacturing. He has extensive experience in market driven technology innovation, product realization, and business entrepreneurship and commercialization at the intersection between information technology and advanced manufacturing. His research and product development interests cross the boundaries of manufacturing and design, medical imaging, computer vision, acoustic and ultrasonic imaging, large-scale computation and simulation, optimization, metrology, autonomous systems, and robotics. His teaching interests include the modeling of large-scale systems in a wide variety of decision-making domains and the development of optimization algorithms and software for analyzing and designing such systems. He teaches on-line and on-campus professional programs in Smart Manufacturing and sensory systems Beyond IoT.

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Kumar Parakala  
President  
[GHD Digital](#)

Paola Lucetti  
CIO and IT Vice President, Global Grooming  
[Procter & Gamble](#)

3:20 PM - 3:30 PM

MIT Sloan Executive Education

3:30 PM - 4:00 PM

Networking Break

4:00 PM - 4:40 PM

BodyCompass: Monitoring Sleep Posture with Wireless Signals  
Dina Katabi  
Andrew and Erna Viterbi Professor  
MacArthur Fellow  
Leader of NETMIT Research Group  
Director of the MIT Center for Wireless Networks and Mobile Computing



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Andrew and Erna Viterbi Professor  
MacArthur Fellow  
Leader of NETMIT Research Group  
Director of the MIT Center for Wireless Networks and Mobile Computing

Dina Katabi is the Andrew & Erna Viterbi Professor of Electrical Engineering and Computer Science, and the director of MIT's Center for Wireless Networks and Mobile Computing (Wireless@MIT). Katabi is also a MacArthur Fellow and a Member of the National Academy of Engineering. She received her PhD and MS from MIT and her BS from Damascus University. Katabi has received the ACM Grace Murray Hopper Award, the Faculty Research Innovation Fellowship, the Sloan Fellowship, the NBX Career Development chair, and the NSF CAREER award. Katabi's doctoral dissertation won an ACM Honorable Mention award and a Sprows award for academic excellence. Further, her work was recognized by the IEEE William R. Bennett prize, three ACM SIGCOMM Best Paper awards, an NSDI Best Paper award, the SIGCOMM Test-of-Time award, and a TR10 award for her work on the sparse Fourier transform. Several start-ups have been spun out of Katabi's lab, such as PiCharging and Emerald.

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4:40 PM - 5:30 PM

The First Law of Digital Innovation  
George Westerman  
Senior Lecturer, MIT Sloan School of Management  
Principal Research Scientist, Workforce Learning,  
MIT Jameel World Education Lab



George Westerman  
Senior Lecturer, MIT Sloan School of Management  
Principal Research Scientist, Workforce Learning,  
MIT Jameel World Education Lab

Dr. George Westerman works at the dynamic intersection of executive leadership and technology strategy. During more than 17 years with MIT Sloan School of Management, he has written three award-winning books, including *Leading Digital: Turning Technology Into Business Transformation*. As a pioneering researcher on digital transformation, George has published papers in *Harvard Business Review*, *Sloan Management Review*, and other top journals. He is now focused on helping employers, educators, and other groups to rethink the process of workforce learning around the world.

George is co-chair of the MIT Sloan CIO Leadership Awards, a member of the Digital Strategy Roundtable for the US Library of Congress, and faculty director for two executive courses at MIT Sloan. He works frequently with senior management teams and industry groups around the world. Prior to earning a Doctorate from Harvard Business School, he gained more than 13 years of experience in product development and technology leadership roles.

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## Day 2: October 14 (Thursday)

9:00 AM - 9:10 AM

Welcome and Introduction

9:10 AM - 9:50 AM

Quantum Computing  
William Oliver  
Professor of Electrical Engineering and Computer Science (EECS)  
Professor of Physics  
MIT Lincoln Laboratory Fellow  
Director, MIT Center for Quantum Engineering (CQE)  
Associate Director, MIT Research Laboratory of Electronics (RLE)



William Oliver  
Professor of Electrical Engineering and Computer Science (EECS)  
Professor of Physics  
MIT Lincoln Laboratory Fellow  
Director, MIT Center for Quantum Engineering (CQE)  
Associate Director, MIT Research Laboratory of Electronics (RLE)

William D. Oliver is a Principal Investigator in the Engineering Quantum Systems Group (MIT campus) and the Quantum Information and Integrated Nanosystems Group (MIT Lincoln Laboratory). He provides programmatic and technical leadership targeting the development of quantum and classical high-performance computing technologies. Will's research interests include the materials growth, fabrication, design, and measurement of superconducting qubits, as well as the development of cryogenic packaging and control electronics involving cryogenic CMOS and single-flux quantum digital logic. Will is a Fellow of the American Physical Society; serves on the National Quantum Initiative Advisory Committee and the US Committee for Superconducting Electronics; is an IEEE Applied Superconductivity Conference (ASC) Board Member; and is a member of IEEE, APS, Sigma Xi, Phi Beta Kappa, and Tau Beta Pi.

Will received his PhD in Electrical Engineering from the Stanford University, the SM in Electrical Engineering and Computer Science from MIT, and a BS in Electrical Engineering and BA in Japanese from the University of Rochester (NY).

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9:50 AM - 10:30 AM

Quantum Information and Integrated Nanosystem

John Chiaverini  
Senior Staff Member in the Quantum Information and Integrated Nanosystems Group  
[MIT Lincoln Laboratory](#)

10:30 AM - 11:00 AM

Networking Break

11:00 AM - 11:40 AM

AI and drones (TBC)  
Nicholas Roy  
Bisplinghoff Professor, Aeronautics & Astronautics  
Director of Quest Systems Engineering, MIT Quest for Intelligence



Nicholas Roy  
Bisplinghoff Professor, Aeronautics & Astronautics  
Director of Quest Systems Engineering, MIT Quest for Intelligence

Nicholas Roy is the Bisplinghoff Professor of Aeronautics & Astronautics and a member of the Computer Science and Artificial Intelligence Laboratory (CSAIL) at the Massachusetts Institute of Technology. He has a B.Sc. in Physics and Cognitive Science and an M.Sc. in Computer Science, both from McGill University. He received his Ph. D. in Robotics from Carnegie Mellon University in 2003. He has made research contributions to planning under uncertainty, machine learning, human-computer interaction and aerial robotics. He founded and led Project Wing at Google [X] from 2012-2014. He is currently the Director of Quest Systems Engineering in MIT's Quest for Intelligence.

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Improving Design Reuse Decisions using formal Models  
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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