DOD Engagement with Its Manufacturing USA MIIs Phase 2 Study

Committee

William B. Bonvillian

Co-Chair

WILLIAM B. BONVILLIAN is a lecturer at the Massachusetts Institute of Technology in the Science Technology and Society and Political Science Departments and senior director of Special Projects at MIT's Office of Digital Learning, directing a research project on workforce education. He began teaching science and technology policy MIT in 2007, and has also taught a course on innovation policy since 2017. Prior to this position, from 2006-17, he was director of the MIT’s Washington, D.C. Office, reporting to MIT’s President. In this position he worked to support MIT’s strong and historic relations with federal R&D agencies, and its role on national science policy. He has assisted with major MIT technology policy initiatives, on energy technology, the “convergence” of life, engineering and physical sciences, advanced manufacturing, online higher education and its "innovation orchard" project on startup scale-up. Prior to that position, he served for seventeen years as a senior policy advisor in the U.S. Senate. His legislative efforts included science and technology policy and innovation issues. He worked extensively on legislation creating the Department of Homeland Security, on Intelligence Reform, on climate change, on defense and life science R&D, and on national competitiveness and innovation legislation leading to the America Competes Act in 2007. Prior to his work on the Senate, he was a partner at a large national law firm. Early in his career, he served as the Deputy Assistant Secretary and Director of Congressional Affairs at the U.S. Department of Transportation, working on major transportation deregulation legislation. Following law school, he served as a law clerk to Hon. Jack B. Weinstein, a Federal Judge in New York. He has been a member of the Connecticut Bar, the District of Columbia Bar and the U.S. Supreme Court Bar.

Thomas M. Donnellan

Co-Chair

THOMAS M. DONNELLAN is the associate director for Materials and Manufacturing at the Applied Research Laboratory (ARL) at Pennsylvania State University. ARL is a DoD University Affiliated Research Center for the DoD and as such is tasked with providing technology solutions for emergent DoD problems. Within the Materials and Manufacturing Office at ARL, Dr. Donnellan is responsible for technology development and demonstration programs Dr. Donnellan has a 30-year career in Advanced Technology Development and has worked at government laboratories, in industry and in academia. Prior to joining ARL, Dr. Donnellan was the FBI's senior scientist for physical science, with responsibility for advising Bureau management on the technology R&D portfolio for forensic and intelligence applications. From 1991 to 1999, Dr. Donnellan worked at the Northrop Grumman Corporation where he held a number of positions and eventually became the director of Structural Sciences. Dr. Donnellan started his career at the Naval Air Development Center where he performed and directed R&D in support of Navy needs and also provided technical support to DoN for a number of Navy acquisition programs. Dr. Donnellan currently serves on the executive steering committee of the Composites Manufacturing Technology Center and on the governance board of the National Additive Manufacturing Innovation Institute. Dr. Donnellan is a graduate of Drexel University (B.S. in materials engineering) and has advanced degrees from MIT in polymerics (S.M.) and materials science (Sc.D.).

Megan Brewster

Member

MEGAN BREWSTER is the VP for Advanced Technology at Impinj. She is also a technologist and policy entrepreneur who has worked at the forefront of innovation over the last 15 years across industry, government, and academia. As VP of Advanced Technology and Impinj, Dr. Brewster is delivering the Internet of Every Thing to the product roadmap and growing the emergent RFID emergent market through technology and standards. Prior to her current role, Dr. Brewster co-created the future of mobility by crowdsourcing transportation and logistics solutions, and then bringing these ideas to life through digital manufacturing methods (such as large-scale additive manufacturing). Dr. Brewster served as the Senior Policy Analyst for Advanced Manufacturing at the White House Office of Science and Technology Policy, where she led the advanced manufacturing and semiconductors portfolio areas. During her time in the Federal Government, Dr. Brewster also served as a fellow at the Department of Energy Advanced Manufacturing Office and the Senate Committee on Energy and Natural Resources, handling portfolio areas such as critical minerals, methane emissions, and the energy-water nexus. Dr. Brewster is a materials scientist and engineer and previously worked for Applied Materials, prototyping in-line metrology solutions for next-generation lithium ion battery anodes, and at GE Global Research, investigating performance degradation mechanisms and developing next-generation chemistries for the new sodium metal halide battery business. Dr. Brewster earned her Ph.D. from the Massachusetts Institute of Technology and her B.S from the University of Washington, both in materials science and engineering, as well as a Ph.D. minor in technology and public policy from MIT.

Gail L. Dolan Hahn

Member

GAIL L. (DOLAN) HAHN is a Boeing Technical Fellow and the Boeing program manager for the Defense Advanced Research Projects Agency and Boeing co-funded project RApid high Performance Molding (RAPM) for Small Parts under the administration of the Army Research Office to revolutionize the cost paradigm for small composite parts enabling pervasive use in defense applications. Also a fellow in the Society for Advancement of Material and Process Engineering (SAMPE), Ms. Hahn is a highly experienced and results-oriented engineer in composite materials and processing and an experienced program manager/principal investigator for more than 14 Department of Defense related technical development programs. Ms. Hahn started her career on the F/A-18 Hornet, where in 1983, she earned a MCAIR President's Award for second source for F/A-18 and AV-8B Harrier primary structural materials, which are in use 37 years later. In the 1990s, Gail led the F/A-18 E/F Materials Development Team and the F/A-18 Material and Processes and Standards group. In 1997, Ms. Hahn joined Materials and Process Technology in the Phantom Works, where her responsibilities included the Composites Affordability Initiative (CAI). Ms. Hahn was also the Advanced Materials Integration technical focus leader for collaboration with Howard University from 2006 to 2008. Ms. Hahn represented Boeing on the advisory board for the Air Force Minority Leaders Program. She also served as the Boeing Technical Fellow assigned to Tuskegee University, Florida State University/Florida A&M University, and University of Dayton. From 2007 to 2012, her team developed a third generation of composite materials for out-of-autoclave as well as autoclave processing, earning the Phantom Works Silver Team Award in 2008. In 2012 to 2014, Ms. Hahn led Certification Methodology to Transition Innovation, a DARPA Open Manufacturing Program. She served as the closing Principal Investigator for Boeing's Human-Assisted-Manufacturing Model Library (HAMML) Instant Foundry Adaptive through Bits (iFAB) program, a DARPA sponsored program under the Adaptive Vehicle Make initiative.

Theresa Kotanchek

Member

THERESA KOTANCHEK is the chief executive officer and co-founder of Evolved Analytics LLC, a data science and system design, software and solutions provider. Prior to assuming this role, she spent 23 years in executive and leadership positions at Dow Chemical, including Vice President for Sustainable Technologies and Innovation Sourcing (2010-2013). From 2005–2010, she served as the chief technology officer of Dow Chemical China Company Limited, leading Asia Pacific R&D, including the development of Dow's state-of-the-art 1 million square foot R&D center in Shanghai, China, and the staffing of more than 1,200 scientists and engineers across the region. Over the course of her Dow tenure, she held numerous business and corporate roles, including Global Director in Dow Plastics, Dow Ventures and Corporate R&D. In 2011–2012, she served as the industrial lead and working group co-chair of President Obama's Advanced Manufacturing Partnership Initiative. In 2013-2014, she served on the U.S. National Academy of Engineers "Making Value for America" committee, and currently serves on numerous university boards, including Penn State's Department of Materials Science and Engineering and Georgia Tech's Manufacturing Institute and Materials Institute. Kotanchek holds a Ph.D. in materials science, a M.S. in ceramic science, and a B.S. in ceramic science & engineering from Pennsylvania State University. She has published over 100 technical articles, holds six US patents, and has given over 200 invited talks. She is an active member of the American Chemical Society, Materials Research Society, Council of Industrial Research, and Society of Women Engineers.

Michael Maher

Member

MICHAEL MAHER is president at Maher & Associates LLC. He provides consultation services to clients in areas concerning new material and manufacturing technologies. Mr. Maher joined DARPA as a program manager in September 2011, and managed a portfolio of programs specializing in advanced materials and manufacturing that included the Tailorable Feedstock and Forming, Materials Development for Platforms, and Open Manufacturing programs. While at DARPA his programs developed new technologies that enabled rapid qualification of new manufacturing technologies and developed revolutionary new composite technologies, novel lightweight multifunctional and specialty material systems. Mr. Maher came to DARPA from the Army Research Laboratory (ARL) where he was chief of the Composite and Hybrid Materials Branch and Materials Applications Branch. While at ARL, Mr. Maher oversaw the research and development programs in the areas of armor material, coatings, composite technologies, failure analysis, hybrid material systems, processing and material transitions. Prior to his work at ARL, Mr. Maher served in various technology and management positions over a 20-year span at companies such as Martin Marietta, AAI, and DuPont. He holds a Bachelor of Science degree in chemistry from Loyola College in Maryland.

Michael F. McGrath

Member

MICHAEL MCGRATH is an independent consultant with extensive government and industry experience in technology management. As a corporate officer at Analytic Services Inc. (ANSER), he led business operations in Science and Technology, Enterprise Systems, and Operations Analysis. As chairman of the board of Advanced Technology International, he oversaw management of major research and development consortia. He previously served as the Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation, where he was a strong proponent for improvements in technology transition, modeling and simulation, and test and evaluation. In prior positions, he served as: VP for Government Business at the Sarnoff Corporation (former RCA corporate lab); Assistant Deputy Undersecretary for Dual Use and Commercial Programs in the Office of the Secretary of Defense (OSD), with responsibility for industrial base and commercial technology investment programs; Program Manager at the Defense Systems Research Projects Agency (DARPA), where he managed a portfolio of manufacturing technology programs; and Director of the DoD Computer-aided Acquisition and Logistics Support program, automating the interface between DoD and industry for technical data interchange and access. His early government career included positions in Logistics Management at Naval Air Systems Command and in Acquisition Management in OSD. He has served on Defense Science Board and National Academies studies, and is an active member of the National Defense Industrial Association (NDIA) and a participant on several university and not-for-profit advisory boards. His technology interests are in manufacturing, cybersecurity, digital technical data and data analytics. Dr. McGrath holds a BS in Space Science and Applied Physics and an MS in Aerospace Engineering from Catholic University, and a doctorate in Operations Research from George Washington University.

A. Galip Ulsoy

Member

GALIP A. ULSOY (NAE) is the C.D. Mote, Jr. Distinguished University Professor Emeritus of Mechanical Engineering and the William Clay Ford Professor Emeritus of Manufacturing at the University of Michigan, Ann Arbor. He received his Ph.D. in mechanical engineering from University of California at Berkeley (1979), his M.S. degree in mechanical engineering from Cornell University (1975), and his B.S. degree in engineering from Swarthmore College (1973). He served as chair of the Mechanical Engineering Department, founding director of the Ground Robotics Reliability Center, founding deputy director of the Engineering Research Center for Reconfigurable Manufacturing Systems, founding editor of the American Society of Mechanical Engineers (ASME) Dynamic Systems and Control Magazine, technical editor of the ASME J. Dynamic Systems, Measurement and Control, President of the American Automatic Control Council (AACC), the USA national member organization of the International Federation of Automatic Control (IFAC), and director of the Civil and Mechanical Systems Division at the National Science Foundation. Dr. Ulsoy has made basic research contributions to the mechanics of axially moving elastic systems (e.g., translating bands, rotating shafts), and to control system design (e.g., adaptive control, state derivative feedback, co-design of an artifact and its controller, time delay systems) as well as contributions to manufacturing systems (e.g., reconfigurable manufacturing, robotics, sawing, turning, milling, drilling, stamping), automotive systems (e.g., accessory drive belts, active suspensions, vehicle lateral control), and other engineering systems (e.g., disk drives, mineral processing). He is co-author of four books, over 350 articles, is a co-inventor on three USA patents, and is a member of the National Academy of Engineering.

Ben Wang

Member

BEN WANG is the Gwaltney Chair in Manufacturing Systems in the School of Industrial and Systems Engineering and Professor in the School of Materials Science and Engineering at Georgia Tech. He is executive director of the Georgia Tech Manufacturing Institute. Dr. Wang holds a Ph.D. in industrial engineering from Pennsylvania State University. Dr. Wang’s primary research interest is in applying emerging technologies to improve manufacturing competitiveness, specializing in product and process development for composite materials. Dr. Wang is a fellow of the Institute of Industrial Engineers, the Society of Manufacturing Engineers, and the Society for the Advancement of Material and Process Engineering. He has authored three books on computer aided manufacturing.

Erik B. Svedberg

Staff Officer

ERIK SVEDBERG is a senior program officer of the National Materials and Manufacturing Board at the National Academies of Science, Engineering and Medicine a position he has held since 2008. In this role, he works with experts from across the nation to develop, negotiate, and oversee scientific and technical advisory studies for federal agencies related to questions of materials science, manufacturing and engineering design. His previous and current activities at the National Academies includes work as a Study Director for; Materials Needs and R&D Strategy for Future Aerospace Propulsion Systems; Corrosion Research Grand Challenges; Opportunities in Protection Materials; Optics and Photonics, Essential Technologies for Our Nation; Review of the National Nanotechnology Initiative; Airport Passenger Screening; Frontiers of Materials Research, A decadal Survey; Participation by DOD in its Manufacturing USA Institutes; and High Performance Bolting Technology for Offshore Oil and Gas Operations. As well as overseeing workshops such as: Big Data in Materials Research and Development; Limited Affordable Low-Volume Manufacturing; Materials and Manufacturing Capabilities for Sustaining Defense Systems; New and Novel Processes that are on the Verge of Industrial Modernization; and Emerging Needs in Quantum-Enabled Systems. Dr. Svedberg has a decade of industry experience with both small and large companies in the materials science area and has been a guest researcher at NIST for several years. He has been awarded and overseen five research grants and has published over 80 scientific articles, been granted two patents and is cited over 1,600 times with an h-index of 22. His Ph.D. and masters are in materials science and he is a fellow of the American Vacuum Society (AVS) and the Washington Academy of Science (WAS) including being their 2019 leadership in material science award recipient.