A Vision for the Manufacturing USA Program in 2030 and 2035

Committee

Theresa Kotanchek

Chair

Dr. Theresa Kotanchek, NAE, Chair, is the Chief Executive Officer of Evolved Analytics LLC, an augmented intelligence and predictive analytics software and solutions provider. Prior to assuming her current role, Dr. Kotanchek spent 23 years in executive and leadership positions at The Dow Chemical Company, including Vice President for Sustainable Technologies, Innovation Sourcing and Information Research. She is a member of the National Academy of Engineers and currently Chairs NASEM's National Materials and Manufacturing Board, as well as serving on numerous external boards, including NSF's Engineering Research Center for Cell Manufacturing Technologies. Dr. Kotanchek holds a PhD in Materials Science, a Master of Science in Ceramic Science, and a Bachelor of Science in Ceramic Science & Engineering from The Pennsylvania State University.

David Adler

Member

David Adler is a Contributing Editor at American Affairs magazine and a Senior Advisor at XA Investments. He is interested in finding ways to strengthen American manufacturing. For American Affairs he has written extensively about the scale-up challenges facing domestic production. His articles include, "Inside Operation Warp Speed: A New Model for Industrial Policy." XA Investments LLC (XAI) is a Chicago-based investment manager which provides investors with access to illiquid alternative investments. As Senior Advisor, David Adler focuses on the "illiquidity premium," a topic he has written about and researched for the CFA Institute Research Foundation. David Adler has an MA and BA in economics from Columbia and spent a post-graduate year studying economics at New College, Oxford on a scholarship from the Columbia University economics department. He is co-editor of the anthology, "The Productivity Puzzle: Restoring Economic Dynamism," CFA Institute Research Foundation, 2019, and author of the monograph, "Financial Frictions," CFA Institute Research Foundation, 2015. He is the author of the behavioral economics book, "Snap Judgment," Financial Times Press, 2009 and was a producer of the related PBS/NOVA documentary, "Mind Over Money." Additionally, he has written a series of articles about economic security for Foreign Policy magazine, comparing the approaches taken by the US, the European Union, and Japan. He has organized conferences related to productivity as well as economic security.

Felicia J. Benton-Johnson

Member

Dr. Felicia Benton-Johnson is the Vice President for Diversity and Inclusive Excellence at Clemson University. In her current role, she acts as senior advisor on inclusive excellence to Clemson's president and serves on the president's executive leadership team. She develops and implements strategic initiatives to advance inclusive excellence across the Clemson community. Dr. Benton-Johnson has been a Co-Principal Investigator (Co-PI) or PI on several research projects, securing more than $10 million in funding from the National Science Foundation, corporations, and foundations for initiatives that broaden participation in Science, Technology, Engineering, and Mathematics (STEM) fields. Dr. Benton-Johnson has severed on regional and national boards and committees including the National GEM Consortium Executive Board of Directors, the 50K Coalition Community Linkages Committee, and the National Association of Multicultural Engineering Program Advocates. Currently, she is a member of the National Materials and Manufacturing Board on Mathematical Sciences and Analytics, National Academies of Sciences, Engineering, and Medicine. Prior to joining Clemson University, Dr. Benton-Johnson spent over 19 years at the Georgia Institute of Technology where she served as the Assistant Dean and founding director of the Center for Engineering Education and Diversity. While at Georgia Tech, she and her team created a portfolio of successful programs related to attracting, empowering, and retaining diverse students, faculty, and staff in STEM fields. Dr. Benton-Johnson received her Bachelor of Science in Biology and Master of Education in Curriculum and Instruction from Tennessee State University in 1993 and 1996, respectfully. She received her Doctor of Education in Educational Leadership with an emphasis on diversity and inclusion from the University of Sarasota, Florida in 2005.

Stephanie W. Butler

Member

Dr. Stephanie Watts Butler, PhD, PE is the president of WattsButler LLC, an innovation services company focused on the semiconductor and nanotechnology industries. Previously, she was a Technology Innovation Architect with Texas Instruments. Dr. Butler's expertise is silicon and wide bandgap manufacturing, technology and IC product development from research and development (R&D) through production. While at Texas Instruments, her inclusive approach to innovation creation led to 17 U.S. patents. Dr. Butler has extensive experience in leadership roles in private-public partnerships, as well as joint development programs. She has chaired or co-chaired consortia technical advisory boards at SEMATECH, Semiconductor Research Corporation (SRC), IMEC, PowerAmerica; served on university department advisory boards at the University of Texas at Austin, founded and led JEDEC and International Electroctechnical Commission (IEC) working groups. She was responsible for the largest university research portfolio within product divisions. She has led several joint development projects with equipment and material suppliers, and other semiconductor companies. She is a Fellow of the AVS, and a Senior Member of IEEE, American Institute of Chemical Engineers (AIChE), and Society of Women Engineers (SWE). SWE recognized Dr. Butler in 2016 with their highest award, the Achievement Award for Outstanding Technical Contributions, and Business Insider named Dr. Butler to their 2017 most powerful female engineers list. Dr. Butler received her bachelor's from Oklahoma State University, and her MS/Ph.D. from the University of Texas at Austin.

Jian Cao

Member

Dr. Jian Cao, NAE, is currently Cardiss Collins Professor and Director of Northwestern Initiative for Manufacturing Science and Innovation at Northwestern University. She also serves as an Associate Vice President for Research overseeing university research institutes and centers, and office for research development. Prof. Cao specializes in innovative manufacturing processes and systems, particularly in the areas of deformation-based processes and laser additive manufacturing processes. Her research has integrated analytical and numerical simulation methods, control and sensors, design methodologies, and machine learning to advance manufacturing processes and systems. Prof. Cao is an elected member of the National Academy of Engineering (NAE) and of the American Academy of Arts and Sciences (AAA&S). She is a Fellow of American Association for the Advancement of Science (AAAS), ASME, the International Academy for Production Engineering (CIRP) and SME. Cao was the Editor-in-Chief of Journal of Materials Processing Technology. Dr. Cao received her Ph.D. in mechanical engineering from Massachusetts Institute of Technology. She currently serves as a member of the National Materials and Manufacturing Board of the National Academies, a member of the Defense Materials, Manufacturing and its Infrastructure (DMMI) Standing Committee of the National Academies, Board of Directors of SME, and Board of mHUB – accelerator for hardtech innovation and manufacturing in Chicago. Dr. Cao leads a Far-term Technology Forecast Study on Additive Manufacturing sponsored by the Army Research lab (2024), and was a member of the NASEM consensus study on "Option of a National Plan for Smart Manufacturing" from 2022 to 2023, and a member of the planning committee for the NASEM "Convergent Manufacturing Platform - a Future of Additive, Subtractive and Transformative Manufacturing: A Workshop" in 2021 to 2022.

Dianne Chong

Member

Dianne Chong, PhD, NAE, FSME, FASM, FABET, was vice president in The Boeing Company's Engineering, Operations & Technology organization where she led materials and manufacturing research and development and production program integration. Chong was elected to the National Academy of Engineering (NAE) and Washington State Academy of Science in 2017. She serves on the NAE Council and co-chairs EngineerGirl. She is a member of the Governing Board of the National Research Council and a member of the National Academies of Sciences, Engineering, and Medicine's Division of Behavioral and Social Sciences and Education. She serves on the National Science Foundation Directorate for Engineering Advisory Committee. Chong is past president of ABET (formerly the Accreditation Board for Engineering and Technology, Inc.) and serves on its Inclusion, Diversity, and Equity Advisory Council. Chong is past president and Fellow of the SME (formerly the Society for Manufacturing Engineers). She is a fellow of ASM and in 2007-2008 was elected its first female president. She received an award for alumna achievement from the University of Illinois in 2019 and has received numerous technical and diversity awards. She was inducted into the first class of the Women in Manufacturing Hall of Fame. Chong received bachelor's degrees in biology and psychology, and master's degrees in physiology and metallurgical engineering. Chong received her doctorate in metallurgical engineering from the University of Illinois. She has an Executive Master of Manufacturing Management degree from Washington University and a green belt in Six Sigma. Chong is a member of The Minerals, Metals & Materials Society (TMS), American Institute of Aeronautics and Astronautics (AAIA), ASM International (formerly the American Society for Metals, Society of Women Engineers (SWE), Beta Gamma Sigma, and Tau Beta Pi.

Stephen R. Forrest

Member

Stephen R. Forrest, NAS/NAE, is the Peter A. Franken Distinguished University Professor and Paul G. Goebel Professor of Electrical Engineering, Physics and Materials Science and Engineering at the University of Michigan. Education: B. A. Physics, 1972, University of California, MSc and PhD Physics in 1974 and 1979, University of Michigan. In 1985, Prof. Forrest joined the Electrical Engineering and Materials Science Departments at USC. In 1992, Prof. Forrest became the James S. McDonnell Distinguished University Professor of Electrical Engineering at Princeton University where he chaired the department from 1997 to 2001. In 2006, he rejoined the University of Michigan as Vice President for Research where he served until 2014. He is a Fellow of the APS, IEEE and OSA and a member of the National Academy of Engineering, the National Academy of Sciences, the American Academy of Arts and Sciences, and the National Academy of Inventors. He is co-founder or founding participant of Sensors Unlimited, Epitaxx, Inc., NanoFlex Power Corp., Universal Display Corp. (NASDAQ: OLED), Heat2Power, and Apogee Photonics, Inc., and has served on the Board of Directors and the Growth Technology Advisory Board of Applied Materials. He is past Chairman of the Board of the University Musical Society, from 2009-2012 was Chairman of the Board of Ann Arbor SPARK, and serves on the Board of Governors of the Technion – Israel Institute of Technology where he holds an honorary doctorate.

Thomas R. Kurfess

Member

Thomas R. Kurfess, NAE, is the Chief Manufacturing Officer of the Georgia Institute of Technology, and the Executive Director of the Georgia Tech Manufacturing Institute. At Georgia Tech he is the HUSCO/Ramirez Distinguished Chair in Fluid Power and Motion Control and Regents' Professor of Mechanical Engineering at Georgia Tech. He also serves as the Chief Technology Officer at the National Center for Manufacturing Sciences. During 2019-2021 he was on leave serving as the Chief Manufacturing Officer at Oak Ridge National Laboratory (ORNL), where he was responsible for strategic planning for ORNL in advanced manufacturing. He was also the Founding Director for the Manufacturing Science Division at ORNL. During 2012-2013 he served as the Assistant Director for Advanced Manufacturing at the Office of Science and Technology Policy in the Executive Office of the President of the United States of America, where he was responsible for coordinating Federal advanced manufacturing R&D. He served as the President of the American Society of Mechanical Engineers (ASME) in 2023-2024 and was President of the Society of Manufacturing Engineers in 2018. His research focuses on the design and development of advanced manufacturing systems targeting secure digital manufacturing, additive and subtractive processes, and large-scale production enterprises. He is an elected member of the National Academy of Engineering and is a Fellow of ASME, American Association for the Advancement of Science (AAAS), and SME (formerly the Society of Manufacturing Engineers). He received his S.B., S.M. and Ph.D. degrees in mechanical engineering from the Massachusetts Institute of Technology (M.I.T.) in 1986, 1987 and 1989, respectively. He also received an S.M. degree from M.I.T. in electrical engineering and computer science in 1988. Dr. Kurfess serves on the Executive Council for Manufacturing times Digital (MxD), on the Board of Directors for the Parent Company of America Makes, Manufacturing Technology Deployment Group, Inc. (MTDG), and serves as the Chief Manufacturing and Energy Officer of the Cybersecurity Manufacturing Innovation Institute (CyManII).

Sujai Shivakumar

Member

Sujai Shivakumar directs Renewing American Innovation (RAI) at the Center for Strategic and International Studies (CSIS), where he also serves as a senior fellow. Dr. Shivakumar brings over two decades of experience in policy studies related to U.S. competitiveness and innovation. Previously, he directed the Innovation Policy Forum at the National Academies of Sciences, Engineering, and Medicine and led major studies of U.S. policies supporting advanced manufacturing, small business growth, workforce development, and entrepreneurship. He was also a lead contributor to a seminal National Academies study of strategies adopted by U.S. states and regions to foster entrepreneurship, drive technology transfer, and encourage regional high-tech ecosystems. He also helped prepare National Academy of Public Administration studies on laboratory technology transfer and the management of space situational awareness. Reflecting his expertise in innovation policy, Dr. Shivakumar has testified before the Senate Committee on Commerce, Science, and Transportation and has been quoted in leading publications such as the Financial Times and the Wall Street Journal. His academic background includes a doctorate in economics from George Mason University and service as an Earhart Foundation scholar at the Ostrom Workshop at Indiana University Bloomington, where he authored The Constitution of Development (Palgrave Macmillan, 2005) and coauthored with Nobel Laureate Elinor Ostrom The Samaritan’s Dilemma: The Political Economy of Development Aid (Oxford University Press, 2005). During his tenure at the National Academies, he contributed to over 50 assessments of U.S. and foreign innovation programs.

Cristina U. Thomas

Member

Cristina Urdaneta Thomas, NAE, recently retired from 3M where Cristina managed Global and Corporate Knowledge Discovery and Analytics, Electronic Lab Environments/LIMS, Global Technical Learning Academy, and R&D Data & Information Transformation. She has over 34 years of technical and leadership experience in R&D within the oil, chemical, and materials industries. Her expertise spans high-performance computing, modeling and simulation, polymer science and engineering, technology and product development, strategy, and organizational leadership. Cristina has researched, designed and commercialized products, processes, systems, and solutions for MARAVEN (Venezuelan Oil Company), IBM, and 3M. She is a co-inventor on over 28 patents. Her accolades include the 2023 American Chemical Society (ACS) Stanley C. Israel Regional Award for advancing diversity in chemical sciences, the 2019 American Institute of Chemical Engineers (AIChE) Leadership Award for pioneering computational-materials modeling, and the 2019 AIChE Management Division Award for leadership in chemical engineering. She is an ACS fellow, an ACS Polymer Science, Materials, and Engineering (PMSE) fellow, an AIChE fellow, and a member of the 2024 National Academy of Engineering (NAE) Class. She serves on the boards of Cristo Rey Jesuit Twin Cities High School, Computer Aids for Chemical Engineering (CACHE) Corporation, and Project Scientist. She is also involved with Achievement Rewards for College Scientists (ARCS), AIChE, ACS PMSE Division, Advanced Energy Technology External Council at Argonne National Laboratory (ANL), and serves on the Advanced Scientific Computing Advisory Committee (ASCAC) for the Department of Energy (DOE) Office of Science. She holds undergraduate degrees in chemistry (Universidad del Zulia) and mathematics (Universidad Nacional Abierta) in Venezuela, and a PhD in chemical engineering from University of Massachusetts, Amherst.

Carroll Thomas

Member

Carroll Thomas is the former National Institute of Standards and Technology (NIST) Acting Associate Director for Innovation and Industry Services, Director of the Hollings Manufacturing Extension Partnership (MEP), and most recently Senior Advisor for MEP. Ms. Thomas has held senior leadership experiences in government, including as the Associate Administrator for the national Small Business Development Center (SBDC) program at the Small Business Administration (SBA). She’s served in senior leadership positions in industry and was once a small business owner. Ms. Thomas currently serves on the boards of the Information Technology Innovation Foundation; SMART USA Institute (chair); MxD; Federal Laboratory Consortium; and the State Department Federal Credit Union. Ms. Thomas is a recognized catalyst for groundbreaking collaborations and partnerships across federal and state governments, with universities and community colleges, as well as with foreign governments such as Sweden, Mexico and Colombia. She has brokered partnerships with U.S. Original Equipment Manufacturers and their supply chains helping organizations to consider their local ecosystem as it relates to their national presence. She has a Bachelor of Science degree from Drexel University in Design and a Master of Business Administration from Johns Hopkins University in International Business.

Charles H. Ward

Member

Charles H. Ward is currently Senior Technical Fellow at ARCTOS Technology Solutions. Prior to this position, Dr. Ward's career spanned several research and development positions in materials, manufacturing, and propulsion systems as an active-duty officer and civilian with the US Air Force. His last position was Chief of the Manufacturing and Industrial Technologies Division of the Air Force Research Laboratory. In this position he led the Air Force's research investment in manufacturing technology and the Department of Defense's execution of the Defense Production Act Title III program. Dr. Ward is presently Editor-in-Chief of the peer-reviewed journal Integrating Materials and Manufacturing Innovation. Dr. Ward is a Fellow of ASM International and received the Distinguished Lectureship in Materials and Society Award from ASM International and The Minerals, Metals and Materials Society and the Hollomon Award for Materials and Society from Acta Materialia. Dr. Ward received his B.S. in metallurgical engineering and materials science and his M.S. and Ph.D. in materials science and engineering from Carnegie Mellon University. Dr. Ward previously served on the National Academies' committee to identify opportunities for developing new advanced technologies for gas turbines in 2019. While Chief of the Manufacturing and Industrial Technologies Division he oversaw the management of the America Makes, Advanced Robotics Manufacturing Institute, and NextFlex manufacturing institutes.

Jonlyn (Brystol) B. English

Staff Officer

William B. Bonvillian

Vice Chair

William B. Bonvillian, is a Lecturer at the Massachusetts Institute of Technology (MIT), a Senior Advisor to the Manufacturing at MIT project and teaches courses on innovation systems and science and technology policy. Previously, he was director of MIT's Washington Office, served as an advisor to MIT's major cross-campus policy initiative, "Production on the Innovation Economy," on advanced manufacturing, and was an MIT representative to the President's industry-university Advanced Manufacturing Partnership (AMP), which formed U.S. manufacturing policies in the 2011-2016 period, including the development of the Advanced Manufacturing Institute program. Prior to MIT, he worked for over 15 years on science and innovation issues as a senior advisor in the U.S. Senate, and earlier was a Deputy Assistant U.S. Secretary of Transportation. He has authored a number of books and articles on these topics, including Could an ARPA Help Resurrect US Manufacturing in Issues in Science and Technology (2025), Advanced Manufacturing – The New American Innovation Policies with Peter L. Singer (MIT Press 2018), Workforce Education: A New Roadmap with Sanjay Sarma (MIT Press 2021), Pioneering Progress – American Science Technology and Innovation Policy (MIT Press 2024), "The Technologist - a new occupational category can both create opportunities for workers and position the US to lead in advanced manufacturing" in Issues in Science and Technology (2024), and America's Advanced Manufacturing Problem – and How to Fix It with David Adler in American Affairs (2023), and other publications. He serves on the National Academies of Sciences, Engineering, and Medicine's National Board on Materials and Manufacturing and has participated on nine other National Academies committees and boards. In recent years, he chaired the standing Committee on Science and Engineering Public Policy at the American Association for the Advancement of Science (AAAS), served on the board of the Information Technology and Innovation Foundation, and is a member of the Babbage Forum at Cambridge University's Institute for Manufacturing and of the Polaris Council of advisors to the U.S. Government Accountability Office's science and technology group. He was named a AAAS Fellow in 2011 and awarded IEEE's public service award in 2007. He has degrees from Columbia, Yale and Columbia Law.