The National Academies of
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Protecting Critical Technologies for National Security in an Era of Openness and Competition
Meeting #4

Workshop on Microelectronics

Speaker Biographies

William Chappell is the CTO of Azure Global. He is currently bootstrapping efforts for Microsoft in Space, Critical Infrastructure, and Secure Hardware Design. He was formerly the director of the Defense Advanced Research Projects Agency (DARPA) Microsystems Technology Office (MTO). Serving in this position, he focused the office on three key thrusts important to National Security. These thrusts included ensuring unfettered use of the electromagnetic spectrum, building an alternative business model for acquiring advanced DoD electronics that feature built-in trust, and developing circuit architectures for next-generation machine learning. He created and kicked off the Electronics Resurgence Initiative (ERI), the nation's largest investment in the foundation of electronics. Also, as office director, he helped structure and authorize the Spectrum Collaboration Challenge (SC2), the first DARPA RF grand challenge, continuing his focus on adaptive and collaborative RF systems. As a program manager at DARPA, he led efforts on adaptive and high-performance RF systems. He developed the arrays at commercial timescales (ACT) and managed the Adaptive RF Technologies (ART) portfolio. These activities led to next generation RF components and systems, such as the RF FPGA, and ultra-high-speed digitizers for direct RF sampling.

Prior to his DARPA appointment, Dr. Chappell served as a professor in the Electrical and Computer Engineering Department of Purdue University, where he led the Integrated Design of Electromagnetically Applied Systems (IDEAS) Laboratory. Dr. Chappell's research focused on high-frequency components, specifically the unique integration of RF and microwave components based on electromagnetic analysis.

Dr. Chappell is the recipient of numerous research and teaching awards. He received his Bachelor of Science (summa cum laude), Master of Science, and Doctor of Philosophy degrees in Electrical Engineering, all from the University of Michigan.

Kenneth Flamm serves as professor and the Dean Rusk Chair in the LBJ School of Public Affairs at the University of Texas at Austin. He is an applied microeconomist and expert on the economics of the semiconductor, computer and telecommunications industries. Dr. Flamm was principal deputy assistant secretary of defense for economic security and special assistant for dual-use technology policy to the deputy secretary of defense, from 1993 to 1995, receiving the Department of Defense's Distinguished Public Service Medal from the secretary of defense. Dr. Flamm has served as senior fellow in foreign policy studies at the Brookings Institution and as an economics professor at the Instituto Tecnológico Autónomo de México, the University of Massachusetts at Amherst, and George Washington University.

Dr. Flamm holds a PhD in Economics from MIT and a BA (with Distinction) in Economics (Honors) from Stanford. He was elected in 2016 to the Conference on Research in Income and Wealth. He previously was appointed chair or vice chair of two National Research Council panels and served as a member of its Science, Technology and Economic Policy Board. He has been a member of five other National Academies panels, and chair of the NATO Science Committee's Science and Technology Policy and Organization panel. He served on the Federal Networking Council Advisory Committee, on the OECD's Expert Working Party on High Performance Computers and Communications, on various federal advisory committees and as a consultant to government agencies, international organizations, and private corporations.

Dr. Flamm has authored numerous articles and books on global competition in high technology industries. His current research agenda focuses on public policies affecting competition, adoption, and use in the broadband services industry, the economics of competition and innovation in maturing semiconductor and computer industries, and more generally, data-driven public policy—the application of modern data science tools to analysis of significant policy issues using near real-time datasets. In 2021, he led a team of LBJ School graduate students to a second place finish in the Microsoft-ODI Education Open Data Challenge, an international competition organized on the XPRIZE online platform.

Darío Gil is Senior Vice President and Director of IBM Research. As a technology and business leader, Dr. Gil is responsible for IBM Research, one of the world's largest and most influential corporate research labs, with over 3,000 researchers. He is the 12th Director in its 76-year history. Dr. Gil leads the technology roadmap and the technical community of IBM, directing innovation strategies in areas including hybrid cloud, AI, quantum computing, and exploratory science. He is also responsible for IBM's intellectual property strategy and business.

Dr. Gil is a globally recognized leader of the quantum computing industry. Under his leadership, IBM was the first company in the world to build programmable quantum computers and make them universally available through the cloud. An advocate of collaborative research models, Dr. Gil co-chairs the MIT-IBM Watson AI Lab, which advances fundamental AI research to the broad benefit of industry and society. He also co-chairs the COVID-19 High-Performance Computing Consortium, which provides access to the world's most powerful high-performance computing resources in support of COVID-19 research. Dr. Gil is a member of the National Science Board, the governing body of the National Science Foundation (NSF), a member of the Board of Governors of the New York Academy of Sciences, and a trustee of the New York Hall of Science.

Dr. Gil received his Ph.D. in Electrical Engineering and Computer Science from MIT.

Britta Glennon is an Assistant Professor of Management at the Wharton School and a Faculty Research Fellow at the NBER. She has a Ph.D. in Public Policy and Management from Carnegie Mellon University, and previously received a M.P.P in Public Policy from the University of Chicago and a B.A. in Economics and East Asian Studies from Cornell University.

Glennon's research can be categorized into three (often overlapping) research streams covering themes of global strategy, skilled immigration, and innovation. The first research stream examines the changing structure of the R&D activities of multinational firms. The second examines the link between skilled immigration and firm outcomes, performance, and strategy. And the third examines the structure of scientific teams and how within-team differences by gender, occupation, field, and informal network

position influence attribution on patents and publications. Her work has been featured in media outlets such as The Economist, the Wall Street Journal, the New York Times, Forbes, and Bloomberg.

Melvin Greer is Chief Data Scientist, Americas, Intel Corporation. He is responsible for building Intel's data science platform through graph analytics, machine learning and cognitive computing to accelerate transformation of data into a strategic asset for Public Sector and commercial enterprises. His systems and software engineering experience has resulted in patented inventions in Cloud Computing, Synthetic Biology and IoT Bio-sensors for edge analytics. He functions as a principal investigator in advanced research studies, including Nanotechnology, Additive Manufacturing and Gamification. He significantly advances the body of knowledge in basic research and critical, highly advanced engineering and scientific disciplines. Dr. Greer is a member of the American Association for the Advancement of Science (AAAS) and serves on the Board of Directors, U.S. National Academy of Science, Engineering and Medicine. Dr. Greer has been appointed to Senior Advisor and Fellow at the FBI IT and Data Division. He is charged with acceleration of the FBI mission by supporting appropriate data collection, data analytics, discovery and visualization via advanced data science and AI techniques.

Dr. Greer is one of the 2018 LinkedIn Top 10 Voices in data science and analytics. He also received the Washington Exec inaugural Pinnacle Award as the 2018 Artificial Intelligence Executive of the Year. He received the 2017 BDPA Lifetime Achievement Award and the 2012 BEYA Technologist of the Year Award which recognize his outstanding technical contributions that have had a material impact and high value to society as a whole. Dr. Greer has been appointed Fellow of the National Cybersecurity Institute where he assists government, industry, military, and academic sectors meet the challenges in cyber security policy, technology and education. Dr. Greer is Professor, Master of Science in Data Science program at Southern Methodist University (SMU) and Adjunct Faculty, Advanced Academic Program at Johns Hopkins University, where he teaches the Masters of Science course "Practical Applications of Artificial Intelligence".

Brett Hamilton currently serves as the Deputy Principal Director, Microelectronics at OUSD(R&E) MOD. In that capacity he is responsible for programmatic and budgetary oversight of research development, testing, and evaluation (RDT&E) programs and analysis related to microelectronics; integration of activities among DoD, Service laboratories, and fourth estate organizations; development of policy guidance and management oversight for assigned programs; and coordination with industry, universities, and Interagency partners, and other stakeholders. Mr. Hamilton provides technical leadership and policy guidance in assigned areas. Mr. Hamilton represents OUSD(R&E) and its Microelectronics programs, strategy, and priorities to key internal and external stakeholders, including developing, overseeing, and justifying program budgets. In Oct 2017 Mr. Hamilton was promoted to the rank of Senior Scientific Technical Manager (SSTM) and assumed the duties as the DoN's Distinguished Scientist for Trusted Microelectronics. In that role Mr. Hamilton oversaw full spectrum life cycle of scientific and engineering functions in research, design, development, testing, and security evaluation of microelectronics, areas where he holds over 10 patents. He routinely advises senior leadership regarding issues involving microelectronics trust and integrity, including testimony before the House Armed Services Committee on Oversight and Investigations.

G. Dan Hutcheson is CEO and Chairman of VLSIresearch inc. He is a recognized authority on the semiconductor industry, winning SEMI's Sales and Marketing Excellence Award in 2012 for "empowering

executives with tremendous strategic and tactical marketing value" through his e-letter, *The Chip Insider®;* his book *Maxims of Hi-Tech,* and his many interviews of executives.

He is thought of as “the marketing voice and expert for the industry.” “Dan has methodically captured the essence of the industry and produced it in such a way for all to benefit … He has been such an integral part of the industry for so long, it is difficult to imagine the industry without his contributions.”

Hutcheson’s public work on the industry has often focused on challenging predictions of the demise of Moore’s Law that date back decades by demonstrating how doomsayers have been outpaced by emergent behavior through the innate ability of technologists to innovate. This has included invited articles for *Scientific American*, the *SIA*, and the Plenary at the *SPIE Advanced Lithography Conference*.

John L. Manferdelli is currently Confidential Computing Incubation Leader, VMware where he leads security innovation projects in the Office of the CTO. (October, 2020 – present). Before that, he was Professor of the Practice and Executive Director of the Cyber Security and Privacy Institute at Northeastern University. Immediately prior to that he was Engineering Director for Production Security Development at Google.

Prior to Google, John was a Senior Principal Engineer at Intel Corporation and co-PI (with David Wagner) for the Intel Science and Technology Center for Secure Computing at the University of California at Berkeley. Prior to Intel, John Manferdelli was a distinguished engineer at Microsoft and was an affiliate faculty member in computer science at the University of Washington. At Microsoft, John also worked as a senior researcher, software architect, product unit manager, general manager at Microsoft and was responsible for the development of the next-generation secure computing base technologies and the rights management capabilities currently integrated into Windows, for which he was the original architect. He joined Microsoft in February 1995 when it acquired his company, Natural Language Inc., based in Berkeley, Calif. Manferdelli was the founder of Natural Language, Inc., and, at various times, vice president of research and development and CEO. Other positions he has held include staff engineer at TRW Inc., computer scientist and mathematician at Lawrence Livermore National Laboratory, and principal investigator at Bell Labs. He was also an adjunct associate professor at Stevens Institute of Technology.

Manferdelli’s professional interests include cryptography and cryptographic mathematics, combinatorial mathematics, operating systems, and computer security. He is author of many papers of computer security, high performance computing, cryptography, has given invited talks on high performance computing quantum computing and computer security and signal processing and has been awarded many patents. He continues to consult on computer security, mathematics and IoT technology.

Manferdelli has a bachelor’s degree in physics from Cooper Union for the Advancement of Science and Art and a Ph.D. in mathematics from the University of California, Berkeley. He is a member of the National Academy of Sciences Cyber Resilience Forum.

Lisa J. Porter is the Co-Founder and Co-President of LogiQ, Inc., a company providing high-end management, scientific, and technical consulting services. She was previously the Deputy Under Secretary of Defense for Research and Engineering, and in that role, she shared responsibility with the Under Secretary for the research, development, and prototyping activities across the Department of

Defense. In prior roles she served as Executive Vice President of In-Q-Tel (IQT) and Director of IQT Labs, the President of Teledyne Scientific & Imaging, the first Director of the Intelligence Advanced Research Projects Activity (IARPA) in the Office of the Director of National Intelligence (ODNI), the Associate Administrator for the Aeronautics Research Mission Directorate at NASA, and as a program manager and senior scientist at the Defense Advanced Research Projects Agency (DARPA). She holds a bachelor's degree in nuclear engineering from the Massachusetts Institute of Technology and a doctorate in applied physics from Stanford University. She received the Office of the Secretary of Defense Medal for Exceptional Public Service, the NASA Outstanding Leadership Medal, the National Intelligence Distinguished Service Medal, the Presidential Meritorious Rank Award, and the Department of Defense Medal for Distinguished Public Service.

Thurman John "T.J." Rodgers is a Silicon Valley entrepreneur. He was a founder of Cypress Semiconductor Corporation and served 34 years as the Company's CEO. Rodgers received 20 U.S. patents and has been inducted into the Silicon Valley Hall of Fame.

Dr. Rodgers was Chairman of solar power stalwart SunPower at its IPO, when the company was still a Cypress subsidiary. He also serves currently on the board of several high-technology companies in the areas of high-performance residential solar systems, utility-scale solar power plants, solar energy electronics, gallium nitride power transistors, advanced lithium-ion batteries, and precision agriculture.