Leveraging the Future Research and Development Ecosystem for the Intelligence Community

Committee

Frederick R. Chang

Chair

FREDERICK R. CHANG (NAE) is the Chair of the Computer Science Department in the Lyle School of Engineering at Southern Methodist University (SMU). He is also the Bobby B. Lyle Endowed Centennial Distinguished Chair in Cyber Security and Professor in the Department of Computer Science. He is the Founding Director of the Darwin Deason Institute for Cyber Security and is a Senior Fellow in the John Goodwin Tower Center for Public Policy and International Affairs in SMU's Dedman College. Additionally, Chang's career spans service in the private sector and in government including as the former Director of Research at the National Security Agency. Dr. Chang was elected as a member of the United States National Academy of Engineering in 2016. He is currently the Co-Chair of the Intelligence Community Studies Board of the National Academies of Sciences, Engineering and Medicine and he is also a member of the Army Research Laboratory Technical Assessment Board of the National Academies. He has served as a member of the Computer Science and Telecommunications Board of the National Academies and as a member of the Commission on Cybersecurity for the 44th Presidency. He is the lead inventor on two U.S. patents and has appeared before Congress as a cybersecurity expert witness on multiple occasions. Dr. Chang received his B.A. degree from the University of California, San Diego and his M.A. and Ph.D. degrees from the University of Oregon. He has also completed the Program for Senior Executives at the Sloan School of Management at the Massachusetts Institute of Technology. He has been awarded the National Security Agency Director's Distinguished Service Medal.

Michael A. Marletta

Vice Chair

MICHAEL A. MARLETTA (NAS/NAM) is professor of chemistry, professor of molecular and cell biology, and the CH and Annie Li Chair in the Molecular Biology of Diseases at the University of California, Berkeley (UCB). After an A.B. degree in biology and chemistry from SUNY Fredonia in 1973, he received a Ph.D. in 1978 from University of California, San Francisco (UCSF) followed by a two year postdoctoral appointment at the Massachusetts Institute of Technology (MIT). In 1980, Dr. Marletta joined the faculty at MIT. In 1987, he moved to the University of Michigan and in 1991 was appointed to the John G. Searle Professor of Medicinal Chemistry Chair. In 1997, he became an investigator in the Howard Hughes Medical Institute. Dr. Marletta moved to UCB in 2001, where he assumed the positions of professor of chemistry, Department of Chemistry and professor of biochemistry and molecular biology, Department of Molecular and Cell Biology. He was appointed the Aldo DeBenedictis Distinguished Professor of Chemistry in 2002. He served as chair of the Department of Chemistry at UCB from 2005-2010. In July 2011, he joined the faculty of the Scripps Research Institute and was named president-elect. He assumed the presidency in January 2012. He returned to Berkeley in 2015.

Lilian Alessa

Member

LILIAN ALESSA received her PhD from the University of British Columbia in 1998 and is President’s Professor and Director of the Center for Resilient Communities at the University of Idaho. She holds a Research Affiliate position with the Bush School of Government and Public Service at Texas A&M University and has served at the Defense Intelligence Senior Level, through an Intergovernmental Personnel Act, with the Department of Defense. She was also the Deputy Chief of Global Strategies at the Department of Homeland Security, Office of Strategy, Policy and Plans, where she contributed to the Department’s strategic development and implementation of an estimated $16B budget for combined strategies. In addition to her public service she has been, or is, a member of the Board of Directors for several national initiatives such as the Arctic Research Consortium of the United States and the National Ecological Observatory Network. She served two terms on the National Science Foundation (NSF) Advisory Committee for Environmental Research and Education (AC-ERE) which reported directly to the Director of NSF. She co-authored the NSF decadal plan entitled “America’s Future: Environmental Research and Education for a Thriving Century” and together with her colleagues at Arizona State University she co-founded the Community of Modelers in Social Ecological Systems (CoMSES), an international community and cyberinfrastructure of researchers, educators and professionals dedicated to the transparency, reproducibility and best practices for advanced agent-based modeling. Based on her 25 years of experience, she continues to act as an academic advisor to senior leaders across a range of federal, state, local, tribal and territorial agencies on complex topics that bridge security, intelligence and defense with the resilience of systems, people and communities. She has led several multi-million dollar integrative science and data fusion programs working across the intelligence, law enforcement and defense communities, academia and public stakeholders particularly in the areas of all-source intelligence, natural resource security, social stability and collaborative resilience. Trained as both a social and physical scientist she has worked to ensure that appropriate technologies are evaluated and operationalized within the constructs of the sociocultural systems they serve. In addition to managing a $128M academic portfolio, publishing over 100 peer reviewed publications, an extensive number of reports and two joint Canada-United States Arctic operational capabilities: the Arctic Water Resources Vulnerability Index (AWRVI) and the Arctic Adaptation Exchange Portal (AAEP) she has also worked for two decades with remote and Indigenous communities to collectively pioneer unique, advanced, technology-enhanced capabilities that incorporate humans as an integral part of monitoring and observing systems for land, air and maritime domains, honoring the diverse strengths of local, place-based and traditional knowledge.

Tomas Diaz de la Rubia

Member

TOMAS DIAZ DE LA RUBIA is the vice president for research and partnerships at The University of Oklahoma. Prior to this, he was Senior Vice President for Strategic Initiatives and Chief Scientific Officer at Purdue University. Prior to joining Purdue, he was the innovation leader and a director in the energy and resources industry practice at Deloitte Consulting LLP. Prior to joining Deloitte in 2013, Dr. Díaz de la Rubia served as the chief research officer (CRO, 2008-2012) and deputy director for science and technology (DDST, 2010-2012) at the Lawrence Livermore National Laboratory (LLNL), where he was the top executive responsible for the science and technology foundations of the laboratory's $1.6 billion program of national and nuclear security research. Reporting to the laboratory director, his role was to translate the director's executive vision and mission priorities into the research function of the laboratory. Dr. Díaz de la Rubia participated in many high-priority basic science, energy, defense and other government technology programs and conducted business with the Department of Energy, Department of Defense, Department of Homeland Security, and the intelligence community. He is a consultant to the Defense Science Board. He holds both a B.S. degree (summa cum laude) and a Ph.D. in physics from The State University of New York, Albany.

Vishva M. Dixit

Member

VISHVA DIXIT (NAS/NAM) is Vice President of Early Discovery Research at Genentech, Inc., Additionally, he serves on the scientific advisory board of the Howard Hughes Medical Institute and the Gates Foundation. He has made many contributions to biomedicine and his early work on cell death is prominent in introductory textbooks of biology and medicine [for a historical perspective see Nature (2008, 453:271-273) and Cell Death & Differentiation (2019, 26: 597–604].

Donald Duncan

Member

DONALD DUNCAN joined the Johns Hopkins Applied Physics Laboratory in July 2004. He currently serves as Senior Advisor in the Asymmetric Operations Sector. In this role, Don focuses on development of Cyber /Information Operations Capabilities and Systems. Duncan has an extensive background in systems engineering, development and R&D management for telecommunications and computer communications systems/networks. He retired from AT&T as Multi-Service Data Network Development VP in May 2002, after 29 years of service. From May 2002 until July 2004, he served as Fellow, Technology Strategy for the IBM/Openwave Alliance. He also served as a Reserve Officer in the U.S. Army Ordnance Corps, retiring with 28 years of service in 1997 with the rank of Lt. Col. Duncan has numerous publications on space-time physics and electron scattering. He is a member of the American Physical Society, the Military Operations Research Society, and the Armed Forces Communications Electronics Association (AFCEA). Duncan attended North Carolina State University and received a B.S. in Physics. He then attended the University of Texas at Austin, where he received an M.A. and Ph.D. in Physics. He has also attended numerous U.S. Army Service Schools during his time as an Army Reserve Officer.

Gerald L. Epstein

Member

GERALD EPSTEIN joined National Defense University’s Center for the Study of Weapons of Mass Destruction in July 2018 as a Distinguished Research Fellow. In that capacity he addresses challenges posed by nuclear, chemical, and biological weapons, particularly including the security implications of advanced life sciences, biotechnologies, and other emerging and converging technologies. Prior to arriving at National Defense University (NDU), he was Assistant Director for Biosecurity and Emerging Technologies at the White House Office of Science and Technology Policy (OSTP), where he served on detail from his position as Deputy Assistant Secretary for Chemical, Biological, Radiological, and Nuclear Policy at the Department of Homeland Security. Before returning to government service in 2012, Dr. Epstein directed the Center for Science, Technology, and Security Policy at the American Association for the Advancement of Science (AAAS), which he joined in 2009. Dr. Epstein is a fellow of the AAAS and the American Physical Society and currently serves on the Academies’ Board on Life Sciences. He received S.B. degrees in physics and in electrical engineering from MIT and a Ph.D. in physics from the University of California at Berkeley.

James R. Gosler

Member

JAMES GOSLER is a Senior Fellow at the Johns Hopkins Applied Physics Laboratory, where he provides strategic advice to the Laboratory's senior leadership. His current and prior service also includes membership on various Intelligence Community and Department of Defense Boards - including the Defense Science Board. He is a former member of the NASEM Naval Studies Board. Jim's previous professional experiences include a thirty three year career at Sandia National Laboratories. In 1996, Jim entered the Senior Intelligence Service at CIA as the first Director of the Clandestine Information Technology Office (CITO). This office was formed to establish Information Operations as a core and focused CIA discipline. Through the innovative integration of targeting, analysis, technology development, technical operations and human operations, CITO's operational capability significantly augmented and complemented CIA's core operational competencies. Jim earned a B.S. degree in Physics and Mathematics and a M.S. degree in Mathematics

Laura M. Haas

Member

LAURA HAAS (NAE) is Dean of the College of Information and Computer Sciences at University of Massachusetts Amherst. Her research explores the integration of data in the service of accelerating new discoveries from data. Prior to joining UMass, Dr. Haas spent 36 years at IBM, where she was rose to the level of IBM Fellow. Within IBM, she served as Director of the Accelerated Discovery Lab (2011-2017); she was Director of Computer Science at IBM's Almaden research center from 2005 to 2011, and had worldwide responsibility for IBM Research's exploratory science program from 2009 through 2013. From 2001-2005, she led the Information Integration Solutions architecture and development teams in IBM's Software Group. Dr. Haas received numerous IBM awards for her contributions. Before joining IBM, Dr. Haas studied Applied Mathematics and Computer Science at Harvard University, and Computer Science at the University of Texas at Austin, where she received her Ph.D. in 1981. Dr. Haas is an ACM Fellow and a Fellow of the American Academy of Arts and Sciences, a member of the National Academy of Engineering, on the NRC's Computer Science and Telecommunications Board (CSTB) and past Vice-Chair of the board of the Computing Research Association.

Robert F. Hale

Member

ROBERT HALE is currently a Senior Executive Advisor at Booz Allen Hamilton, where he does international consulting on financial management issues.. From 2009 until 2014 Mr. Hale served as Comptroller and Chief Financial Officer at the Department of Defense. During those years he managed $600 billion budgets in time of war, made significant improvements in defense financial management, and oversaw efforts by the Department to minimize the problems caused by sequestration and a government shutdown. From 1994 to 2001 Mr. Hale served as the head of Air Force financial management. Mr. Hale also spent 12 years as head of the defense group at the Congressional Budget Office. Early in his career he served as a Navy officer. Mr. Hale served as a Commissioner on the recent National Commission on the Future of the Army and is a past member of the Defense Business Board. Since 2001 he has been a Fellow in the National Academy of Public Administration where he has participated in several studies. He is Level 3 certified in Defense Financial Management and is a Certified Defense Financial Manager (with acquisition specialty) He has received numerous awards from the Department of Defense and the federal government for distinguished public service Mr. Hale holds a B.S. from Stanford University in statistics, an M.S. from Stanford in operations Research, and an M.B.A. from the George Washington University.

Daniel E. Hastings

Member

DANIEL HASTINGS (NAE) is Department Head, Department of Aeronautics and Astronautics and a professor of Aeronautics and Astronautics at the Massachusetts Institute of Technology (MIT). Dr. Hastings, who earned a Ph.D. and an S.M, from MIT in Aeronautics and Astronautics in 1980 and 1978 respectively, received a B.A. in Mathematics from Oxford University in England in 1976. He joined the MIT faculty as an assistant professor in 1985, advancing to associate professor in 1988 and full professor in 1993. As professor of aeronautics and astronautics and engineering systems, Dr. Hastings has taught courses and seminars in plasma physics, rocket propulsion, advanced space power and propulsion systems, aerospace policy, technology and policy, and space systems engineering. Dr. Hastings served as chief scientist to the U.S. Air Force from 1997 to 1999. In that role, he served as chief scientific adviser to the chief of staff and the secretary and provided assessments on a wide range of scientific and technical issues affecting the Air Force mission. He was the chair of the Air Force Scientific Advisory Board from 2002-2005. He led several influential studies on where the Air Force should invest in space, global energy projection, and options for a science and technology workforce for the 21st century. He is a member of the NAE and a fellow of the American Institute of Aeronautics and Astronautics (AIAA), International Astronautical Federation (IAF), and International Council on Systems Engineering (INCOSE).

Frances S. Ligler

Member

FRANCES LIGLER (NAE) is the Ross Lampe Distinguished Professor of Biomedical Engineering in the Joint Department of Biomedical Engineering in the College of Engineering at North Carolina State University and School of Medicine at the University of North Carolina at Chapel Hill. Until 2013, she was the Senior Scientist for Biosensors and Biomaterials at the U.S. Naval Research Laboratory in Washington, D.C. Currently working in the fields of biosensors and regenerative medicine she has also performed research in biochemistry, immunology, microfluidics and analytical chemistry. She has over 400 full-length publications and patents, which have led to eleven commercial biosensor products. Elected an SPIE Fellow in 2000, a fellow of AIMBE in 2011, and a fellow of AAAS in 2013, she also serves on the organizing committee for the World Biosensors Congress and the permanent steering committee for Europt(r)odes, the European Conference on Optical Sensors. Dr. Ligler has been recognized by the NAE with its Simon Ramo Founders Award. Dr. Ligler, a member of NAE since 2005, is being recognized “for the invention and development of portable optical biosensors, service to the nation and profession, and educating the next, more diverse generation of engineers.” She is also a member of National Academies’ Committee on Science, Engineering and Medicine in Public Policy (COSEMPUP). Dr. Ligler earned a B.S. in biology-chemistry from Furman University in 1972 and both a D.Phil. in biochemistry in 1977 and a D.Sc. in biosensor technology in 2000 from Oxford University. She was awarded honorary doctorates by the Agricultural University of Athens (Greece) in 2014 and Furman University (South Carolina) in 2018.

Bernard S. Meyerson

Member

BERNARD S. MEYERSON (NAE), an IBM Fellow, after a 40 year career culminating as IBM’s first Chief Innovation Officer, remains engaged as IBM's Chief Innovation Officer Emeritus. In 1980, Dr. Meyerson joined IBM Research, leading the development of high performance silicon:germanium communications technology. He founded and led IBM’s highly successful Analog and Mixed Signal business, ultimately leading IBM’s global semiconductor development. In 2006, he assumed leadership of strategic alliances for the Systems and Technology Group. Dr. Meyerson is a Fellow of the American Physical Society, the Institute of Electrical and Electronics Engineers, and a member of NAE. His technical and business awards include: the Materials Research Society Medal, the Electrochemical Society Electronics Division Award, the IEEE Ernst Weber Award, , the 2007 Lifetime Achievement Award from SEMI, and the 2011 Pake Prize of the American Physical Society (recognizing his combined original scientific research and subsequent business leadership). His volunteer work with Singapore led to the awarding of their National Medal for Public Service in 2015. He holds a Ph.D. in physics from the City University of New York.

Lisa J. Porter

Member

LISA PORTER is the Co-founder and Co-President of LogiQ, Inc., a company providing high-end management, scientific, and technical consulting services. She is also a member of the Riverside Research board of trustees, a not-for-profit organization chartered to advance scientific research for the benefit of the U.S. government and in the public interest. 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, Dr. Porter 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 the National Aeronautics and Space Administration (NASA), and as a program manager and senior scientist at the Defense Advanced Research Projects Agency (DARPA). Dr. Porter 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.

Peter Schiffer

Member

PETER SCHIFFER is the Frederick W. Beinecke Professor of Applied Physics and Professor of Physics at Yale University and a Senior Fellow at the Association of American Universities. At the AAU he works on major challenges facing the research enterprise in higher education, including the impact of the pandemic on research and efforts to address foreign government interference in university research. Dr. Schiffer earned his B.S. in physics from Yale and his Ph.D. in physics from Stanford University. He undertook postdoctoral work at AT&T Bell Laboratories, before launching his faculty career at the University of Notre Dame. He later joined the faculty at Pennsylvania State University, eventually serving as associate vice president for research and director of strategic initiatives. He subsequently served as a professor of physics and vice chancellor for research at the University of Illinois at Urbana-Champaign, and then joined Yale as the inaugural vice provost for research, the first university-wide senior research officer in the institution’s history. Dr. Schiffer has also served in various leadership positions in scholarly organizations, and he has received multiple honors for his seminal research in emerging areas of the study of magnetism.

Anthony J. Vinci

Member

Anthony Vinci, PhD, is a managing director at a private equity and venture capital investment fund, an Adjunct Senior Fellow with the Technology and National Security Program at the Center for a New American Security (CNAS), a member of the Board of Trustees Technology Committee of MITRE, and a Board Member or Advisor to multiple technology companies. He was a senior intelligence official and served as the Chief Technology Officer (CTO) and Associate Director for Capabilities at the National Geospatial-Intelligence Agency (NGA). Anthony has published and spoken extensively on the subject of innovation, technology and modernization in the national security and intelligence community in Foreign Affairs, The Atlantic and other publications. He received his Ph.D. in International Relations from The London School of Economics and studied Philosophy at Reed College and the University of Oxford. Anthony is a member of the Council on Foreign Relations (CFR) and Business Executives for National Security (BENS).

Michael S. Witherell

Member

MICHAEL WITHERELL (NAS) is the Director of Lawrence Berkeley National Laboratory and Professor of Physics at UC Berkeley. Previously, he was Vice Chancellor for Research and held the Presidential Chair in Physics at the University of California, Santa Barbara. (UCSB). Dr. Witherell served as director of Fermi National Accelerator Laboratory (Fermilab), the largest particle physics laboratory in the country, from 1999 to 2005. From 1981 to 1999, he was a faculty member in the UCSB Physics Department. Dr. Witherell was elected to membership in the National Academy of Sciences in 1998 for his work in the application of new technologies that “profoundly influenced all subsequent experiments aimed at the study of heavy-quark states.” In 2004, he received the U. S. Secretary of Energy’s Gold Award, the highest honorary award of the Department of Energy. Dr. Witherell is a member of the National Academy of Sciences and a fellow of the American Physical Society, the American Association for the Advancement of Science, and the American Academy of Arts and Sciences. He currently sits on the Committee on Science, Engineering and Public Policy at the National Academies. He received his Ph.D. from the University of Wisconsin, Madison, in 1973 and his B.S. from the University of Michigan, Ann Arbor, in 1968.