Science, Technology, Engineering and Mathematics Workforce Needs for the U.S. Department of Defense and the U.S. Defense Industrial Base

Committee

Norman R. Augustine

Co-Chair

Norman R. Augustine (NAS/NAE) is the retired chairman and chief executive officer of the Lockheed Martin Corporation, the nation’s largest defense contractor, and a former under secretary of the Army. He is often compared to Microsoft chairman Bill Gates and former Intel CEO Craig Barrett for his national leadership in technology. He is a longtime proponent for ensuring the place of science and engineering on the nation’s list of priorities.

Augustine currently served 16 years as a member of the President's Council of Advisors on Science and Technology and is currently on the U.S. Department of Homeland Security's Advisory Council. He was among several individuals who testified to Congress regarding the National Academy of Sciences (NAS) report that was released on October 12, 2005 entitled, Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future. Augustine chaired the NAS panel that conducted the study, which was requested by Congress. The report recommends ways to strengthen research and education in science and technology

Among Augustine’s many honors are the National Medal of Technology and the U.S. Department of Defense's highest civilian award, the Distinguished Service Medal, given to him five times. Most recently, he was awarded the 2005 AAAS Philip Hauge Abelson Prize and the 2006 Public Welfare Medal from the National Academy of Science.

Augustine served as chairman and principal officer of the American Red Cross for nine years and as chairman of the NAE, the AUSA, the AIA, and the Defense Science Board. He is a former president of the American Institute of Aeronautics and Astronautics and the Boy Scouts of America. He is a former member of the Board of Directors of ConocoPhillips, Black and Decker, Procter & Gamble and Lockheed Martin and of the Board of Trustees of Colonial Williamsburg, a trustee emeritus of Johns Hopkins, and a former member of the Board of Trustees of Princeton and MIT. He holds 28 honorary degrees. He is the author of Augustine's Travels, The Defense Revolution, and Augustine's Laws.

Augustine is an avid outdoors enthusiast who has trekked extensively around the world, including dogsledding in the Arctic, exploring volcanoes in Antarctica, canoeing the Boundary Waters of Canada, and snorkeling on the Great Barrier Reef. He has stood on both poles of the Earth.

Born in Colorado in 1935, Augustine attended East Denver High School and graduated magna cum laude from Princeton University, where he earned bachelor's and master's degrees in engineering

C. D. (Dan) Mote, Jr.

Co-Chair

C. D. (Dan) Mote, Jr. (NAE) is Regents Professor and Glenn L. Martin Institute Professor of Engineering at the University of Maryland where he was president of the university from 1998 to 2010. Under his leadership, academic programs flourished leading the university to a 36th in the world ranking by the Academic Ranking of World Universities. Dr. Mote is a leader in the national dialogue on higher education and his analyses of shifting funding models have been featured in local and national media. He has testified on major educational issues before Congress, representing the University and higher education associations on the problem of visa barriers for international students and scholars, global competitiveness and on deemed export control issues. He has served and currently serves on NRC committees that work to identify challenges to United States leadership in key areas of science and technology. He chaired the 2010 NRC study S&T Strategies of Six Countries and their Implications to the United States, served as vice chair of the Department of Defense Basic Research Committee, is a member and officer of the National Academy of Engineering, co-chairs the Government-University-Industry Research Roundtable, and serves on the Governing Board of the National Research Council. In 2004-2005, he served as President of the Atlantic Coast Conference. In its last ranking in 2002, "Washington Business Forward" magazine counted him among the top 20 most influential leaders in the region.

Prior to assuming the Presidency at Maryland, Dr. Mote served on the University of California, Berkeley faculty for 31 years. From 1991 to 1998, he was Vice Chancellor at Berkeley, held an endowed chair in Mechanical Systems and was President of the UC Berkeley Foundation. He led a comprehensive capital campaign for Berkeley that ultimately raised $1.4 B. He earlier served as chair of Berkeley's Department of Mechanical Engineering and led the department to its number one ranking in the National Research Council review of graduate program effectiveness.

Dr. Mote's is internationally recognized for his research on the dynamics of gyroscopic systems and the biomechanics of snow skiing, and has produced more than 300 publications He also holds patents in the U.S., Norway, Finland and Sweden, and has mentored 58 Ph.D. students. President Mote has received numerous awards and honors, including the Humboldt Prize awarded by the Federal Republic of Germany. He is a recipient of the Berkeley Citation from the University of California, and was named Distinguished Engineering Alumnus. He has received three honorary doctorates, is a member of the U.S. National Academy of Engineering, a Fellow of the American Academy of Arts and Sciences, an Honorary Member of the ASME International, and is a Fellow of the International Academy of Wood Science, the Acoustical Society of America, and the American Association for the Advancement of Science. In Spring 2005, he was named recipient of the J. P. Den Hartog award by the ASME International to honor his lifelong contribution to the teaching and/or practice of vibration and sound. He received the 2005 Founders Award from the National Academy of Engineering in recognition of his comprehensive body of work on the dynamics of moving flexible structures and for leadership in academia. He received the B.S., M.S. and Ph.D. in mechanical engineering from the University of California, Berkeley.

Burt S. Barnow

Member

Burt S. Barnow, Ph.D. is the Amsterdam Professor of Public Service and Economics at the Trachtenberg School of Public policy and Public Administration at George Washington University. Dr. Barnow has over 30 years of experience as an economist in the fields of workforce investment, program evaluation, performance analysis, labor economics, welfare, poverty, child support, and fatherhood programs. Prior to coming to George Washington University, Dr. Barnow was Associate Director for Research at Johns Hopkins University's Institute for Policy Studies, where he worked for 18 years. Prior to that, he worked for 8 years at the Lewin Group and nearly 9 years at the U.S. Department of Labor, including 4 years as Director of the Office of Research and Evaluation in the Employment and Training Administration. Prior to those positions, Dr. Barnow was an assistant professor of economics at the University of Pittsburgh. He has a B.S. degree in economics from the Massachusetts Institute of Technology and M.S. and Ph.D. degrees in economics from the University of Wisconsin at Madison. Dr. Barnow has extensive experience conducting research on implementation of large government programs, and he is currently co-project director for a study for the Employment and Training Administration (ETA) to analyze states' experiences implementing workforce investment and unemployment insurance provisions of the Recovery Act. Dr. Barnow also co-directed studies for ETA on the implementation of the Workforce Investment Act (WIA) and the 1992 amendments to the Job Training Partnership Act (JTPA). His current and recent research includes an evaluation of the Center for Working Families programs for the Annie E. Casey Foundation, a project to develop and evaluate demonstrations that test innovative strategies to promote self-sufficiency for low-income families for the U.S. Department of Health and Human Services, a study for ETA to evaluate the impact of selected projects in the High Growth Job Training Initiative using nonexperimental methods, an assessment of occupational skill shortages for the Alfred P. Sloan Foundation, an evaluation of the priority of services for veterans mandate for Department of Labor programs for ETA, a project to develop cost performance standards for ETA, an evaluation of the determinants of the welfare caseload in Colorado for the State of Colorado, and an evaluation of a Department of Labor demonstration project to help youth in foster care make the transition into the labor market for Casey Family Programs. Dr. Barnow served as Vice Chairman of the National Academy of Sciences Committee on the Information Technology Work Force, and was a member of the NAS Board on Higher Education and Workforce for six years. He is currently serving on the NAS Committee on the External Evaluation of the National Institute on Disability and Rehabilitation Research and the Committee on the U.S. Mining and Energy Workforce, and he has served on five other NAS committees. He currently serves on the Baltimore Workforce Investment Board's System Effectiveness Committee, and he chaired the Maryland Governor's Workforce Investment Board's Performance Committee for four years. Dr. Barnow chairs the National Association of Schools of Public Affairs Research Committee, and he serves on the editorial boards of two journals. He is nominated for his expertise in manpower personnel, Labor markets, labor shortages, and program evaluation.

James S. Chew

Member

James S.B. Chew is L-3 Communications Holdings Director, Advanced Technologies and Concepts for the Precision Engagement Sector. Chew is responsible for leading the development and transition of disruptive precision engagement technologies to the DoD and commercial markets. He is also Chairman of the Science and Engineering Technology Division National Defense Industrial Association. Prior to joining L-3, Mr. Chew served as a propulsion engineer for Boeing Aerospace Company, senior engineer for SPARTA, program manager for Air Force Rocket Propulsion Lab, Director of Rocket Propulsion Technology Plans and Programs for the Air Force Phillips Laboratory, Assistant Staff Specialist for Weapons Technology for the Office of the Secretary of Defense, and the Deputy Director of Air and Surface Weapons Technology for the Office of Naval Research. Mr. Chew also served as Exide's Vice President for the Military and Specialty Global Business Unit, Product Marketing Consultant for the Dodge Division of Chrysler Corporation, QWIPTECH's Chief Operating Officer, General Motor's American Tuner Program Manager, T/J Technologies Chief Operating Officer, Vice President, Science and Technology, ATK, and SAIC's Vice President, Space Systems Development Division. Mr. Chew earned a lifetime California State Community College teaching credential in engineering. Mr. Chew serves on the board of ABAKAN, Inc. Mr. Chew is a graduate of the Stanford Executive Engineering Program and the Defense Systems Management College Advanced Program Management Program. He is a DoD Level 3 certified acquisition professional and a DoD Level 3 System, Planning, Development, Research and Engineering professional. He was recognized as the 2009 College of Engineering Distinguished Alumnus by his undergraduate alma mater. He earned his Bachelor of Science degree in Mechanical Engineering from the California State Polytechnic University, Pomona and a Master of Science degree in Systems Management from the University of Southern California. Mr. Chews is nominated for his expertise in defense technology and system R&D, defense systems acquisition and management, and defense strategic planning.

Lawrence J. Delaney

Member

Lawrence Delaney retired as the Executive Vice President of Operations, and President of the Advanced Systems Development Sector of Titan Corporation. Previously, he has held distinguished positions with Arete Associates, Inc.; Delaney Group, Inc.; BDM Europe; and the Environmental and Management Systems Group at IABG. He was also the Acting Secretary of the Air Force and served as the Assistant Secretary of the Air Force for acquisition, as well as the Air Force's service acquisition executive, responsible for all Air Force research, development and acquisition activities. He provided direction, guidance and supervision of all matters pertaining to the formulation, review, approval and execution of acquisition plans, policies and programs. Dr. Delaney has more than 41 years of international experience in high technology program acquisition, management and engineering, focusing on space and missile systems, information systems, propulsion systems and environmental technology. He served as a member of the National Academy of Sciences Board on Army Science and Technology (vice chair), Air Force Studies board (chair), and the Army Science Board (vice chair). Dr. Delaney is nominated for his expertise in defense technology and system R&D, defense systems acquisition and management, defense strategic planning, manpower personnel, and organizations planning and management.

Mary L. Good

Member

Mary L. Good (NAE) is Dean Emeritus and special advisor to the Chancellor at the University of Arkansas at Little Rock. She is managing member for the Fund for Arkansas' Future, LLC. (an investment fund for start-up and early stage companies), past President of the AAAS, past President of the ACS, and an elected member of the National Academy of Engineering. She presently serves on the Boards of St. Vincent Health System, and Delta Bank and Trust. Previously she served a four-year term as the Under Secretary for Technology for the Technology Administration in the Department of Commerce, a Presidentially appointed, Senate confirmed, position. In addition, she chaired the National Science and Technology Council's Committee on Technological Innovation (NSTC/CTI), and served on the NSTC Committee on National Security. Previously she served as the Senior Vice President for Technology for Allied Signal and as the Boyd Professor of Chemistry and Materials Science at Louisiana State University. She was appointed to the National Science Board by President Carter in 1980 and by President Reagan in 1986. She was the chair of that board from 1988-91, when she received an appointment by President Bush to be a member of the President's Council of Advisors on Science and Technology. She has received many awards, including the National Science Foundation's Distinguished Public Service Award, the American Institute of Chemists' Gold Medal, the Priestly Medal from the American Chemical Society, and the Vannevar Bush Award from the National Science Board, among others. Dr. Good received her bachelor's degree in Chemistry from the University of Central Arkansas and her MS and Ph.D. degrees in Inorganic Chemistry from the University of Arkansas at Fayetteville. Dr. Good is nominated for her expertise in defense technology and system R&D, manpower personnel and organizations planning and management.

Dr. Daniel E. Hastings

Member

Daniel E. Hastings is dean for undergraduate education and a professor of aeronautics and astronautics and engineering systems at the Massachusetts Institute of Technology (MIT). As professor of aeronautics and astronautics and engineering systems, Dean 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. Dean Hastings served as chief scientist to the U.S. Air Force from 1997 to 1999. In that role, he acted 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 led several influential studies advising the Air Force investment in space, global energy projection, and options for a science and technology workforce for the 21st century. His recent research has concentrated on issues of space systems and space policy and also on issues related to spacecraft environmental interactions, space propulsion, and space systems engineering. He has published many papers and a book in the field of spacecraft-environment interactions and several papers in space propulsion and space systems. He has also led several national studies on government investment in space technology. Dean Hastings is a fellow of the American Institute of Aeronautics and Astronautics, a fellow of the International Council on Systems Engineering, and a member of the International Academy of Astronautics. He served as a member of the National Science Board and the Applied Physics Lab Science and Technology Advisory Panel, as well as the chair of the Air Force Scientific Advisory Board. He is a member of the MIT Lincoln Laboratory Advisory Committee, a member of the Corporation of Draper Laboratory, and a member of the Board of Trustees for the Aerospace Corporation. He has served on several national committees on issues in the national security space. As dean for undergraduate education, Dean Hastings has broad responsibility for policy and direction in undergraduate education at MIT. He also oversees several administrative offices at MIT including the Office of Undergraduate Advising and Academic Programming, Admissions Office, Global Education and Career Development Center, Office of Experiential Learning, Office of Educational Innovation and Technology, Office of Faculty Support, Office of Minority Education, Registrar’s Office, Student Financial Services, the Teaching and Learning Laboratory and the ROTC Programs. Dean Hastings earned a B.A. in mathematics from Oxford University in England in 1976 and a Ph.D. and an S.M. from MIT in aeronautics and astronautics in 1980 and 1978, respectively. Dr. Hastings is nominated for his expertise in defense strategic planning and manpower personnel. Dr. Hastings is nominated for his expertise in defense strategic planning and manpower personnel.

Robert J. Hermann

Member

Robert J. Hermann (NAE) is a private consultant. Previously he served as a Senior Partner at Global Technology Partners, LLC. He retired as Senior Vice President for Science and Technology of the United Technologies Corporation in March 1998. He is a former Director of the Defense Department's National Reconnaissance Office and a former senior official at the National Security Agency. Dr. Hermann served as a member of the President's Foreign Intelligence Advisory Board during the William Jefferson Clinton Administration (1993-1995). In 1998, Dr. Hermann retired from United Technologies Corporation where he held the position of senior vice president of science and technology. In this role, he was responsible for assuring the development of technical resources and the full exploitation of science and technology by the corporation. He was also responsible for the United Technologies Research Center. Dr. Hermann joined the company in 1982 as vice-president of systems technology in the electronics sector and later served in a series of assignments in the defense and space systems groups prior to being named vice-president of science and technology. Dr. Robert J. Hermann concluded his tenure as Immediate Past Chairman of the American National Standards Institute (ANSI) Board of Directors at the end of 2002 following a two-year term; he had served as chairman of the ANSI Board of Directors during 1999 and 2000 and as a member of the ANSI Board since 1993. Prior to joining UTC, Dr. Hermann served 20 years with the National Security Agency with assignments in research and development, operations and NATO. In 1977, he was appointed principal Deputy Assistant Secretary of Defense for Communications, Command, Control and Intelligence. In 1979, he was named Assistant Secretary of the Air Force for research, development and logistics and in parallel was Director of the National Reconnaissance Office. He received B.S., M.S. and Ph.D. degrees in electrical engineering from Iowa State University. Dr. Hermann was chosen for this committee for his expertise in defense technology and system R&D, defense systems acquisition and management, and defense strategic planning.

J. C. Herz

Member

J.C. Herz is the CEO of Batchtags, Inc. She is a technologist with a background in biological systems and computer game design. Her specialty is massively multiplayer systems that leverage social network effects, whether on the web, mobile devices, or more exotic high-end or grubby low-end hardware. She currently serves as a White House Special Consultant to the Office of the Secretary of Defense (Networks and Information Integration). Defense projects range from aerospace systems to a computer-game derived interface for next generation unmanned air systems. J.C. is one of the three co-authors of OSD's Open Technology Development roadmap. Ms. Herz serves on the Federal Advisory Committee for the National Science Foundation's education directorate. In that capacity, she is helping NSF harness emerging technologies to drive United States competitiveness in math and science. J.C. was a member of the National Research Council's committee on IT and Creative Practice, and is currently a Fellow of Columbia University's American Assembly, where she is on the leadership team of the Assembly's Next Generation Project. In 2002, she was designated a Global Leader for Tomorrow by the World Economic Forum. She is a member of the Global Business Network, and is a founding member of the IEEE Task Force on Game Technologies. J.C. is a term member of the Council on Foreign Relations. She is on the advisory board of Carnegie Mellon's ETC Press. J.C. graduated from Harvard with a B.A. in Biology and Environmental Studies, magna cum laude, in 1993. J.C. is the author of two books, Surfing on the Internet (Little Brown, 1994), an ethnography of cyberspace before the web, and Joystick Nation: How Videogames Ate Our Quarters, Won Our Hearts, and Rewired Our Minds (Little Brown, 1997), a history of videogames which traces the cultural and technological evolution of the first medium that was born digital, and how it shaped the minds of a generation weaned on Nintendo. Her books have been translated into seven languages. As a New York Times columnist, J.C. published 100 essays on the grammar and syntax of game design between 1998-2000. She has also contributed to Esther Dyson's Release 1.0, Rolling Stone, Wired, GQ, and the Calgary Philatelist. Ms. Herz is nominated for her expertise in defense technology and system R&D, defense systems acquisition and management, and innovation strategy.

Ray O. Johnson

Member

Dr. Ray O Johnson, a global executive focused on innovation and diversity, is the Senior Vice President and Chief Technology Officer of the Lockheed Martin Corporation. As an Officer of the Corporation and a member of the executive leadership team, Dr. Johnson guides the Corporation’s technology vision and provides corporate leadership in the strategic areas of technology and engineering, which include more than 65,000 people working on more than 4,000 programs that provide some of the nation’s most vital security systems. He has a proven track record in managing large P&L organizations, strategic planning, program development, program management, and venture capital funding.

Dr. Johnson currently serves as a member of the Sandia Corporation, National Math and Science Initiative, and Hispanic College Fund Boards of Directors. He is a member of the Governing Board of the Indo-US Science and Technology Forum and a sponsor of the DST-Lockheed Martin India Innovation Growth Program. Dr. Johnson is on the US National Institute of Standards and Technology (NIST) Technology Innovation Program Advisory Board. He is on the Board of Directors of the Northern Virginia Technology Council and the Virginia Center for Innovative Technology. He is also a member of the Virginia Innovation and Entrepreneurship Investment Authority and the Maryland Federal Facilities Advisory Board. He is a member of the Board o f Visitors for the A. James Clark School of Engineering at the University of Maryland, on the Dean’s Advisory Council for the College of Engineering at Carnegie Mellon University, and a member of the Board of Affiliates of the Rice University Professional Science Master's Program. He is also the chairman of the USA Science and Engineering Festival's Advisory Board, which held their inaugural event in October 2010 on the Nation’s Mall in Washington, DC and was attended by over one-million people. He is a Full Academician of the International Academy of Astronautics (IAA), a Fellow of the International Society for Optical Engineering (SPIE), the American Institute of Aeronautics and Astronautics (AIAA), and the Institute of Electri cal and Electronics Engineers (IEEE). He is a member of Eta Kappa Nu, Tau Beta Pi, and Phi Kappa Phi. Dr. Johnson also chairs the US Council on Competitiveness Technology Leadership and Strategy Initiative. Dr. Johnson holds B.S., M.S., and Ph.D. degrees in Electrical Engineering. Dr. Johnson is nominated for his expertise in defense technology and system R&D, defense systems acquisition and management, defense strategic planning, and organizations planning and management.

Anita K. Jones

Member

Anita K. Jones (NAE) is a University Professor Emerita in the University of Virginia and a Professor of Computer Science in the School of Engineering and Applied Science, previously having served as chair of the Department of Computer Science. The Honorable Anita K. Jones was sworn in as the Director of Defense Research and Engineering for the U.S. Department of Defense in June 1993. In that position she was responsible for the management of the DoD science and technology program. This included responsibility for the Defense Advanced Research Projects Agency, oversight of the DoD laboratories, as well as being the principal advisor to the Secretary of Defense for defense-related scientific and technical matters. Professor Jones is past vice-chair of the National Science Board, which advises the President on science, engineering, and education as well as oversees the National Science Foundation. She is a senior fellow of the Defense Science Board and a member of the Charles Stark Draper Laboratory Corporation and a past member of the MIT Corporation Executive Committee. She has co-chaired the Commonwealth of Virginia Research and Technology Advisory Commission and has served on other government advisory boards and scientific panels for NASA, the National Academies, the Department of Energy, and the National Science Foundation. She is a member of the National Academy of Engineering, the American Philosophical Society and a Fellow of the Association for Computing Research Association’s Service Award, the Air Force Meritorious Civilian Service Award, the Department of Defense Award for Distinguished Public Service, and the IEEE Founders Award. The U.S. Navy named a seamount in the North Pacific Ocean for her.She is currently a member of the Board of Directors of Science Applications International Corporation, ATS Corporation and a trustee of In-Q-Tel. Other private sector experience includes serving as a trustee of the MITRE Corporation. Duke University, Carnegie Mellon University and the University of Southern California have awarded her Honorary Doctorate degrees. She is a founder and Council member of the Computing Community Consortium. She has published more than 50 technical articles and two books in the area of computer software and systems, cyber-security, and science and technology policy. In fall 2010, the National Academy of Engineering gave her the Arthur M. Bueche Award for contributions to science and technology policy advancement. Dr. Jones holds an A.B. from Rice University in mathematics, a Master of Arts from the University of Texas, Austin, in literature, and a Ph.D. in computer science from Carnegie Mellon University. Dr. Jones is nominated for her expertise in defense technology and system R&D, defense systems acquisition and management, defense strategic planning, and organizations planning and management.

Sharon G. Levin

Member

Sharon Levin is Professor Emeritus and Research Professor of Economics at the University of Missouri-St. Louis. Professor Levin has been studying issues concerning the science and engineering workforce for more than twenty-five years. She has co-authored the book, Striking the Mother Lode in Science: The Importance of Age, Place, and Time (Oxford, 1992) and her work related to the science and engineering workforce has been published in such prominent journals as the American Economic Review, The Review of Economics and Statistics, Growth and Change, Science, Social Studies of Science, and Management Science, for example. Her research on the careers of scientists and engineers has also been the focus of articles in The Economist, Science, The Scientist and various newspapers and magazines in the United States and abroad. In 1993 she was awarded the Chancellor's Award for Excellence in Research and Creativity by the University of Missouri-St. Louis. Dr. Levin's research currently focuses on the effects that the diffusion of information technology has had on the publishing productivity of academic scientists. Levin's research has been supported by The Alfred P. Sloan Foundation, the Exxon Educational Foundation, the Andrew W. Mellon Foundation, the National Science Foundation, the National Bureau of Economic Research, and the University of Missouri. Dr. Levin graduated from the Bronx High School of Science, the City College of New York (Phi Beta Kappa, Magna Cum Laude)) with a B.A. in Economics and earned both her M.A. and Ph.D. in Economics from the University of Michigan. Dr. Levin is nominated for her expertise in STEM Labor Force Issues; Foreign Born Scientists and Engineers.

Frances S. Ligler

Member

Frances S. Ligler (NAE) is the Navy's Senior Scientist for Biosensors and Biomaterials and a past chair of the Bioengineering Section of the NAE. Currently working in the fields of biosensors and microfluidics, she has also performed research in biochemistry, immunology, and proteomics. She has over 350 full-length publications and patents, which have led to eleven commercial biosensor products and have been cited over 7500 times. She is the winner of the Navy Superior Civilian Service Medal, the National Drug Control Policy Technology Transfer Award, the Chemical Society Hillebrand Award, the Navy Merit Award, the Naval Research Laboratory (NRL) Technology Transfer Award, three NRL Edison Awards for Patent of the Year, the Furman University Bell Tower and Distinguished Alumni of the 20th Century Awards, and the national Women in Science and Engineering (WISE) Outstanding Achievement in Science Award. She serves as an Associate Editor of Analytical Chemistry and on editorial/advisory boards for Biosensors & Bioelectronics, Analytical Bioanalytical Chemistry, Sensors, Open Optics, and Applied Biochemistry and Biotechnology. Elected an SPIE Fellow in 2000 and a Fellow of AIMBE in 2011, 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. In 2003, she was awarded the Homeland Security Award (Biological, Radiological, Nuclear Field) by the Christopher Columbus Foundation and the Presidential Rank of Distinguished Senior Professional by President Bush. She earned a B.S. from Furman University and both a D.Phil. and a D.Sc. from Oxford University. Dr. Ligler is nominated for her expertise in defense technology and system R&D, defense strategic planning, and organizations planning and management.

Aaron Lindenberg

Member

Aaron Lindenberg is an assistant professor of materials science and engineering at Stanford University where his current research is focused on the dynamics of phase transitions, ultrafast properties of nanoscale materials, photoelectrochemical charge transfer dynamics, and THz nonlinear spectroscopy. Prior to his current position he served as a staff scientist at the Stanford Synchrotron Radiation Laboratory. Previous to that assignment he was a post-doctoral faculty fellow at the University of California, Berkeley. In 2010 he was named a DARPA young faculty awardee for functional materials - all-optical control of nanoelectronic devices. From 2007 to 2009 he was a Stanford Terman Fellow. He won the Alfred Moritz Michaelis Prize in Physics from Columbia University as well as being the I.I. Rabi Scholar while at Columbia. Dr. Lindenberg is nominated for his expertise in defense technology and system R&D.

Paul D. Nielsen

Member

Paul D. Nielsen (NAE) is Director and Chief Executive Officer of the Software Engineering Institute (SEI), a Federally Funded Research and Development Center operated by Carnegie Mellon University. The SEI advances software engineering and cyber security principles and practices through focused research and development, which is transitioned to the broad software engineering community. Prior to his arrival as SEI Director, Nielsen served in the U.S. Air Force, retiring as a major general after 32 years of distinguished service. As commander of the Air Force Research Laboratory at Wright-Patterson Air Force Base in Ohio for more than four years, he managed the Air Force's science and technology budget of more than $3 billion annually. He also served as the Air Force's technology executive officer, determining the investment strategy for the full spectrum of Air Force science and technology activities. Nielsen is a member of the U. S. National Academy of Engineering (NAE). He is a Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and a Fellow of the Institute of Electrical and Electronic Engineers (IEEE). He served as the AIAA President from 2007-2008 and was on the AIAA board from 2006-2009. Nielsen has served on several technical advisory committees and boards including the Air Force Scientific Advisory Board. He is a member of the Board of Directors for the Hertz Foundation, a non-profit that awards graduate school fellowships in the applied sciences. Dr Nielson received a Bachelor of Science in physics and mathematics from the U.S. Air Force Academy; a Master of Science in applied science from the University of California, Davis; a Master of Business Administration from the University of New Mexico and a Doctor of philosophy in plasma physics from the University of California, Davis. Dr. Nielsen is nominated for his expertise in defense technology and system R&D, and defense systems acquisition and management.

Daniel Oliver

Member

Daniel T. Oliver USN (Vice Admiral, Ret.) is the President of the Naval Postgraduate School. Commissioned in 1966 through the Naval Reserve Officer Training Corps program at the University of Virginia, he became a Naval Aviator and piloted the Navy's P-3 Maritime Patrol Aircraft, specializing in detecting and tracking submarines. He completed eight operational deployments around the world during the Cold War with the Soviet Union, commanding Patrol Squadron Sixteen and Patrol Wing Two. As a Flag Officer, he served as Commander, Fleet Air Forces Mediterranean, and commanded coalition air operations in support of the United Nations' embargo of the former Republic of Yugoslavia. Vice Admiral Oliver served on the personal staffs of two Chiefs of Naval Operation. In his first Flag assignment as director, Total Forces Training and Education Division, he supervised mobilization of naval reservists called to active duty during Operation Desert Storm. He later served sequentially as director of the OPNAV Assessment Division, Fleet Liaison Division and Programming Division. In these capacities, he was instrumental in shaping a balanced investment program for all Navy resources during the post-Cold War drawdown. In September 1996, Vice Admiral Oliver became the Chief of Naval Personnel and Deputy Chief of Naval Operations for Manpower and Personnel. He was the primary advocate for sailors, both officer and enlisted, from recruitment through retirement. In this position, he formulated and instituted personnel policies that guided the Navy through a critical transition from a post-Cold War drawdown to a steady state force. After retiring from active duty in February 2000, he was active in the private sector as a senior executive and board member of a number of companies and civic organizations, mostly involved with government contracting in the Information Technology sector. Vice Admiral Oliver holds a Bachelor's and a Master's degree from the University of Virginia where he also served as an associate professor of Naval Science. Vice Admiral Oliver is a graduate of the Harvard Business School Advanced Management Program and was a White House Fellow. Vice Admiral Oliver is nominated for his expertise in manpower personnel and organizations planning and management.

C. Kumar N. Patel

Member

C. Kumar N. Patel (NAS/NAE) is the founder, president and CEO of Pranalytica, Inc., a Santa Monica based company that is the leader in quantum cascade laser technology for defense and homeland security applications. He is also a professor of physics & astronomy, electrical engineering, and chemistry al the University of California. Los Angeles. He served as vice chancellor for research al UCLA from 1993•1999. Prior to joining UCLA in March 1993, he was the executive director of the Research, Materials Science, Engineering and Academic Affairs Division lit AT&T Bell Laboratories, Murray Hill, New Jersey. He joined Bell Laboratories in 1961 where he began his career by carrying out research in the field of gas lasers. He is the inventor of the carbon dioxide and many other molecular gas lasers that ushered in the era of high power sources of coherent optical radiation. In 1996, Dr. Patel was awarded the National Medal of Science by the President of the United States of America. His other awards include the Ballantine Medal of the Franklin Institute, the Zworykin Award of the National Academy of Engineering, the Lamme Medal of the Institute of Electronic and Electrical Engineers, the Texas Instruments Foundation Founders' Prize, the Charles Hard Townes Award of the Optical Society of America, the Arthur H. Schawlow A ward of the Laser Institute of America, the George E. Pake Prize of the American Physical Society, the Medal of Honor of the Institute of Electrical and Electronics Engineers, the Frederic Ives Medal of the Optical Society of America and the William T. Ennor Manufacturing Technology Award or the American Society of Mechanical Engineers.

He is a member of the Board of Directors of Newport Corporation. He served on the Board of Trustees of the Aerospace Corporation from 1979 to 1989. He is a member of the National Academy of Sciences (NAS) and the National Academy of Engineering (NAE). He has served on several NRC committees including The NRC Committee on the Navy's Needs in Space for providing Future Capabilities, NRC's Air Force Studies Board, NRC Panel on Sensors and Electron Devices, congressionally mandated NRC Committee on An Assessment of Concepts and Systems for U.S. Boost Phase Missile Defense in Comparison with Other Alternatives. He is currently co-chairing an NRC committee to Review the Quality of Science and Engineering Research at the National Security Labs. In 1988, he was awarded an honorary Doctor of Science degree from the New Jersey Institute of Technology Dr. Patel holds a B.E. in Telecommunications from the College of Engineering in Poona, India, and received his M.S. and Ph.D. in Electrical Engineering from Stanford University. Dr. Patel is nominated for his expertise in defense technology and system R&D and defense strategic planning.

Leif E. Peterson

Member

Leif E. Peterson is managing partner for Advanced HR Concepts and Solutions. Before retiring in December 2007, Leif Peterson was a member of the Senior Executive Service and the director of Manpower, Personnel and Services for the Air Force Materiel Command at Wright-Patterson Air Force Base in Ohio. He provided executive management of the command's nearly 80,000 military and civilian professionals throughout the United States and overseas in research facilities, test sites, universities, and at product development, logistics and specialized centers. The function of the Directorate of Manpower of Personnel and Services was to shape the AFMC workforce to deliver war-winning expeditionary capabilities and provide oversight, direction and control for all personnel activities within AFMC. Mr. Peterson entered federal service in 1971 as a labor relations specialist at the U.S. Air Force Headquarters. He held numerous positions as a civilian personnel officer, serving two tours at Eglin Air Force Base in Florida, and six years overseas. In 1983, Mr. Peterson became deputy director of civilian personnel for Air Force Systems Command at Andrews Air Force Base in Maryland. He later returned to U.S. Air Force Headquarters as chief of staffing of development and equal employment opportunity. For eight years he was director of civilian personnel at Tactical Air Command and Air Combat Command at Langley Air Force Base in Virginia. He was then assigned as director of civilian personnel and programs at AFMC. He was appointed to the Senior Executive Service in May 2004 assuming his previous position as deputy director of personnel. Mr. Peterson is nominated for his expertise in manpower personnel and organizations planning and management.

Stephen M. Robinson

Member

Stephen M. Robinson (NAE) is Professor Emeritus of Industrial and Systems Engineering and of Computer Sciences at the University of Wisconsin-Madison, on whose faculty he served during 1972-2007. Robinson also holds the rank of Colonel (Retired) in the Army of the United States. His research specialty is in variational analysis and mathematical programming: methods for making the best use of limited resources, applied in logistics, transportation, manufacturing, and many other areas. He is author, co-author, or editor of seven books and more than 100 scientific research papers, and has directed numerous funded research projects at the University. His research accomplishments have been recognized by the award of the honorary doctor's degree from the University of Zürich, Switzerland, the George B. Dantzig Prize of the Mathematical Programming Society and the Society for Industrial and Applied Mathematics, and the John K. Walker Jr. Award of the Military Operations Research Society. He is a member of the National Academy of Engineering, a National Associate of the National Research Council, a Fellow of the Institute for Operations Research and the Management Sciences (INFORMS), and a Fellow of the Society for Industrial and Applied Mathematics (SIAM). Dr. Robinson is nominated for his expertise in defense technology and system R&D and organizations planning and management.

Michael S. Teitelbaum

Member

Michael S. Teitelbaum is the Wertheim Fellow at Harvard Law School. He is also a Senior Advisor to the Alfred P. Sloan Foundation. By specialty he is a demographer, with research interests in: the causes and consequences of very low fertility rates; the drivers and implications of international migration; and science and engineering labor markets. He has written and edited 10 books and many articles on these subjects. Previously he has served as Vice President of the Sloan Foundation; faculty member at Oxford and Princeton universities; Director of the U.S. Congressional Select Committee on Population; Vice-Chair and Acting Chair of the U.S. Commission on International Migration; Member of the U.S. Commission on International Migration and Cooperative Economic Development; and Chair of the Section on Social, Economic and Political Sciences of the American Association for the Advancement of Science, of which he was later elected a Fellow. Dr. Teitelbaum was educated at Reed College and at Oxford University, where he was a Rhodes Scholar. He earned a D. Phil from Oxford University. He is nominated for his expertise in manpower personnel, demography, demographic aging, and international migration.

Ronald Williams

Member

Ronald Williams is a vice president of the College Board. Among several leadership roles, Williams is responsible for strengthening the relationship between the College Board and community colleges throughout the United States. He also provides leadership to a cluster of initiatives dealing with students' access to, and persistence in, college. Williams joined the College Board in 2007 from Prince George's Community College in Largo, Md., where he had served as president since 1999, capping an extensive career with community colleges. Williams is a member of the board of the American Association of Colleges and Universities, the American Association of Community Colleges, and the American Council on Education's Center for Policy Analysis Advisory Committee. Williams attended Lehigh University, where he earned a doctorate in literature, a master's degree in English and a bachelor's degree in History and English. A writer, Williams has published two novels, Four Saints and an Angel and A Death in Panama. Dr. Williams is nominated for his expertise in manpower personnel, and organization planning and management.