S. Massoud Amin

Dr. Massoud Amin holds the Honeywell/H.W. Sweatt Chair in Technological Leadership, directs the Technological Leadership Institute (TLI), and is a full Professor of Electrical and Computer Engineering at the University of Minnesota. In addition, he serves as the director of graduate studies (DGS) for the security technologies program (2008-present), served as the DGS for the management of technology (MOT) program (2003-2009), and teaches several courses including S&T Policy, Emerging and Pivotal Technologies, Global Management of Technology, Intellectual Property Valuation and Strategy, and Critical Infrastructure Security and Protection.

His professional experiences and expertise, rooted in systems science, mathematics, and engineering, have extended to management and leadership, and include the development of national/international energy R&D initiatives, and leadership of organizations focused on enhancing security, resilience and efficiency of critical infrastructures. His research focuses on two areas:

- Global transition dynamics to enhance resilience, security and efficiency of complex dynamic systems. These systems include national critical infrastructures for interdependent energy, computer networks, communications, transportation and economic systems.

- Strategic scanning, mapping, assessment and valuation to identify new science and technology-based opportunities that meet the needs and aspirations of consumers, organizations/companies, and the broader society. This thrust builds coherence between short- and longer-term R&D opportunities and their potential impact

Professional Experience & Impact Summary:

- Prior to joining the University of Minnesota in March 2003, Dr. Amin held positions of increased responsibility including Area Manager of Infrastructure Security, Grid Operations/Planning, Markets, Risk and Policy Assessment, and head of mathematics and information sciences at the Electric Power Research Institute (EPRI) in Palo Alto.

- Dr. Amin initiated and led research and development (R&D) toward the smart self-healing electric power grids starting in 1998, and the development of more than 24 advanced technologies to enhance the security of our national critical infrastructures (1998-2003).

- In the aftermath of the tragic events of 9/11, he directed all security-related R&D at EPRI (for EPRI member companies and utilities), including the Infrastructure Security Initiative (ISI) and the Enterprise Information Security (EIS).

- Prior to October 2001, he served as manager of mathematics and information sciences at EPRI, where he created and led several initiatives including EPRI/DOD Complex Interactive Networks/Systems Initiatives (CIN/SI), consisting of 108 professors, over 240 graduate students and researchers in 28 U.S. universities, together with participants from over 50 utilities and government agencies-- DOD, DOE, and OSTP, in strategic research in modeling, simulation, optimization, and adaptive control of critical national infrastructures for energy, telecommunication, transportation, and finance.

- In the course of the CIN/SI, Dr. Amin pioneered R&D in the smart grid and self-healing infrastructures. He led the development of more than 24 technologies transferred to industry, and is considered the inventor of the smart grid.

- The area of self-healing infrastructure, pioneered by Dr. Amin, was recommended in 2005 by the White House Office of Science and Technology Policy (OSTP) and the U.S. Department of Homeland Security (DHS) as one of three thrust areas for the National Plan for research and development in support of Critical Infrastructure Protection.

- His work in the above areas has become a leading concept in sixteen ongoing programs at EPRI, NSF, DHS, DOE and DOD. The resultant initiatives that he pioneered continue to be successful and now amount to several billions per year in the electricity sector (including Intelligrid at EPRI, Gridwise/ Modern Grid/Smart Grid at the DOE). Defense applications of his work include Network-Centric Objective Force, which is now part of the Future Combat Systems.

- Dr. Amin leads world-class programs at the Technological Leadership Institute (TLI) at the University of Minnesota : His students have a very high impact on the State's economy by supplying the leadership talent pipeline in Minnesota to globally succeed. As an example, one of the courses in the management of technology (MOT) program is the capstone project undertaken by fast-tracked full-time professionals from Minnesota's high-tech companies. There are about 30-

33 Capstones projects completed each year. The dollar impact resulting from companies' increased revenues, cost savings, product or process innovations, or new products per project amount to a range of a few hundred thousand dollars to several tens of millions of dollars (2003-present).

- Prior to joining EPRI in January 1998, he held positions of associate professor of systems science and mathematics and associate director of the Center for Optimization & Semantic Control at Washington University in St. Louis, Missouri. During his twelve years at Washington University, he was one of the main contributors to several projects with United States Air Force, NASA-Ames, Rockwell International, McDonnell Douglas, Boeing, MEMC, ESCO, Systems & Electronics Inc. and United Van Lines. While at Washington University, he focused on theoretical and practical aspects of intelligent controls, on-line decision making, system optimization, and differential game theory for aerospace and transportation applications (1985-1998).
- Dr. Amin serves on the editorial boards of six academic journals. He is the author or co-author of more than 175 research papers and the editor of seven collections of manuscripts, given over 400 invited presentations and more than 68 keynote addresses during 1990-2009.
- Dr. Amin has extensive and successful collaborative leadership experience for policy formation, fundraising, and research initiatives with diverse stakeholders, including the electric power industry, EPRI and its members, National Governors' Association, Western States Governors' Association, California State Senate, PUCs, CEC, the US DOD, DOE, NSF, NRC/NAE, and the White House OSTP.
- Dr. Amin works effectively with diverse groups of stakeholders including federal and state government agencies, congressional staffers, private and public organizations, and higher education institutions, to continue make broad impacts in industry and government. Through his publications, presentations, keynote addresses, active service on advisory committees and boards he positively influences leaders in business, industry, and government. He has assisted and guided policy and technology advancement for the past 20 years.

Consulting and Professional Experience:

Electric Power Research Institute (EPRI), United States (US) Dept. of Defense, US Air Force, US Army Research Office, US Dept. of Energy, NSF, National Governors' Association, White House Office of Science and Technology Policy, McDonnell Douglas, Boeing, NASA-Ames Research Center, Rockwell International, MEMC Electronic Materials Inc., Electronics & Space Corp., Emerson Electric, TSI, IBM, and the US National Academy of Engineering.

Honors and Awards include:

- **2008 University of Minnesota Award for Outstanding Contributions to Post-baccalaureate, Graduate, and Professional Education**, and was inducted into the **University's Academy of Distinguished Teachers** "in recognition of excellence in instruction, instructional program development, intellectual distinction, advising and mentoring, and involvement of students in research, scholarship, and Professional development," April 2008
- **2007 Fellow of the Institute for Infrastructure and Information Assurance (IIIA)** "for contributions to homeland security, scholarly achievements in infrastructure protection and information assurance, effective leadership, and commitment to teaching and mentoring university students." National Academies, Washington DC, May 2007
- **2002 Chauncey Award**, the highest annual EPRI Award in recognition for "**leadership in creation and execution of the Infrastructure Security Initiative**", March 2003
- **2002 President's Award** for the Infrastructure Security Initiative, EPRI, Palo Alto, CA, April 2002
- **2001 Performance Recognition Award**, "for helping build the CEIDS R&D plan (Consortium for **Electricity Infrastructure for a Digital Society**, http://www.epri.com/ceids)", EPRI, Palo Alto, CA, 2001
- **2000 Chauncey Award**, the highest annual EPRI Award in recognition for **"creation of a world-class analytical capability for electricity market design"** by the six-member power market design team, 2001
- **1992-93, 93-94, 94-95 Professor of the Year**, School of Engineering & Applied Science, Washington University

Education

Storm King School, Cornwall-on-Hudson	High School Diploma	Highest Honors, 1979
University of Massachusetts, Amherst	Electrical Engineering	B.S. (cum laude), 1982
University of Massachusetts, Amherst	Electrical & Computer Eng.	M.S., 1985
Washington University, St. Louis	Systems Science & Mathematics	M.Sc., 1986
Washington University, St. Louis	Systems Science & Mathematics	D.Sc., 1990

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