

Ali Raz, Ph.D., CSEP

Candidate for INCOSE Secretary



Vision Statement

Systems Engineering must become the leader among all technical disciplines to decipher the increasing complexity of our progressing world, engineer effective solutions to trans-disciplinary complex problems, and steer us in a direction to ensure prosperity, security, and progress of our civilization—and it is INCOSE’s job to make it happen. Over the last 28 years, INCOSE—thanks to its dedicated and committed members—has transformed the discipline of systems engineering but its job is far from being complete. To continue the momentum that INCOSE has built-up over the years and establish systems engineering as a fundamental and leading technical discipline, we need to innovate constantly, bring in foundational rigor in systems engineering knowledge and practices, and create value streams to inspire, attract, and retain the next generations of systems engineers.

Systems engineering is inherently a trans-disciplinary endeavor and I see INCOSE as the focal point of bringing these disciplines together to discover and engineer solutions to really hard and complex problems—problems that remain beyond the reach of any one single discipline. For INCOSE, there are three important aspects of becoming this focal point. First, we need to continue the innovation, development, and progress of our own discipline for which our working groups and chapters continue to do a tremendous job. Second, we need to start building alliances with other technical and non-technical organizations to create our multi-disciplinary foot print, introduce systems engineering solutions, and discover systems’ problems that we will need to address in the future. Along with building alliances, we will need to structure INCOSE such that the interactions with allied organizations can rapidly translate into new challenge problems for us and result in improved INCOSE products that are widely applicable to future systems. Last but certainly not the least, we need to start introducing foundational and theoretical rigor into the systems engineering body of practice to establish our profession as a scientific and one of the fundamental engineering disciplines for studying and producing complex systems.

It is of utmost importance to recognize that the INCOSE members and the dedicated volunteers are the only driving force for achieving these goals. We must continue to innovate for generating value at the individual level for our members and position our self to attract new members from multiple disciplines—especially young professionals. Anecdotally, based on participation in various INCOSE chapter meetings, regional and international conferences, I see a conspicuous lack of young systems engineering professionals (< 10 years of experience). However, if we are to succeed in future, we need to engage the millennial work force and create agile platforms within INCOSE where the young professionals can experiment with their high-risk high-reward innovative ideas. This not only ensures that we will continue to progress with current INCOSE initiatives well into the future, but we will also be able to quickly discover and respond to new and emerging opportunities.

If elected to the INCOSE Secretary position, I will work with our members, the working groups and the chapters, the board and the executive committee, and the INCOSE staff for building strategic initiatives to advance our membership and create opportunities for sustained growth of young professionals. I am confident that my passion for systems engineering along with my academic, government, and industry experience has equipped me with the right tools for taking on this responsibility and succeeding in this role. I will be honored to provide a dedicated service to INCOSE, to our members, and to our profession.

Biography

Dr. Ali Raz is a research scientist at Purdue University's Center for Integrated Systems in Aerospace and a prominent advocator of systems engineering and INCOSE. He is a Certified Systems Engineering Professional (CSEP) and a recipient of Alexander Kossiakoff Fellowship from the INCOSE foundation and the John Hopkins University Applied Physics Lab. He is a past president of Purdue University INCOSE student chapter where he promoted INCOSE and systems engineering to local Purdue Community and under his leadership the Purdue student chapter secured funding from several organizations. Furthermore, Dr. Raz is a senior member of the American Institute for Aeronautics and Astronautics (AIAA) and actively engaged in the Young Professionals Committee. He was the chair for the Rising Leaders in Aerospace forum at the AIAA SciTech Conference in 2018.

Dr. Raz's research interests are built upon his passion of systems engineering and specifically address design and evaluation of complex systems and system-of-systems. He started his professional career in 2005 as a systems engineer for Honeywell Aerospace, where he worked on flight management and flight control system for military and commercial aircraft. He received an outstanding engineer award from Honeywell Aerospace for Results and Leadership and excelled in coordinating systems engineering activities and technical communications in a multi-disciplinary, geographically distributed, and culturally diverse environment. After six years of hands-on systems engineering work experience and recognizing the need for fundamental mathematical methods in systems engineering, he joined Purdue University School of Aeronautics and Astronautics to pursue doctoral studies in system-of-systems engineering. During his doctoral education, he worked in systems engineering roles at a United States DoD agency and the John Hopkins University Applied Physics Laboratory.

Dr. Raz has presented at many systems engineering related conferences and promoted systems engineering at other technical conferences around the world. He has taught systems engineering related tutorials at international conferences and his research has been published in Systems Engineering Journal, INCOSE International Symposium, IEEE SMC, and highly-ranked Information Fusion Journal. He is a technical reviewer for Systems Engineering Journal, INCOSE International Symposium, and has served on the INCOSE SEP examination committee.

Dr. Raz holds a Bachelor and Master of Science in Electrical Engineering from Iowa State University, Ames, IA, USA, and a Ph.D. in Aeronautics and Astronautics from Purdue University, West Lafayette, IN, USA. He has also completed a graduate certificate in Applied Management Principles from Purdue University Krannert School of Management.