

Technical Panels

The following section lists the technical panel abstracts, moderators and their panelists. Position papers can be referenced in the CD ROM Proceedings.

PANEL 1: How Much SE is Enough? How Do We Decide? A Panel Discussion

One of the key decisions in a program is deciding on “how much” and “what kind” of SE is needed and will be performed. It is easily argued “one size does not fit all.” This panel discusses ways to “right size” and “right focus” SE activities to the specific program situation. Four very senior individuals identify key factors that should impact this SE nature and scope decision. Chosen panelists bring a diverse – and potentially opposing – set of experience, opinion, and insight. People, process, and problem dimensions are discussed. A number of heuristics are offered which can serve to facilitate getting nature and scope answers that are appropriate for a particular program.

Moderator:

Lawrence D. Pohlmann, owner of Strategics Consulting, provides consulting for systems engineering, organizational development, and business development. For over 35 years (18+ with Boeing), he has applied and extended SE techniques in and published extensively in several domains—including avionics, space systems, information technology, user-system interfaces, use of the internet, and business process improvement

He developed INCOSE’s first Strategic Plan for the council (1996). He represents INCOSE on the Systems and Software Technology Conference (SSTC) Advisory Board. He was Technical Program Chair for the first Mid-Atlantic Regional Conference (INCOSE-MARC2000). He is a recipient of INCOSE’s Founders Award.

Panelists:

Dennis M. Buede, a Principal in Innovative Decisions, Inc., conducts decision and risk analyses for a wide range of clients. He has been a Professor at Stevens Institute of Technology and at George Mason University. He has done extensive research in the fields of decision analysis, data fusion and systems engineering.

He has authored the book *The Engineering Design of Systems: Methods and Models*, coauthored the book *Decision Synthesis*, and authored numerous professional papers. He belongs to the Institute for Operations Research and Management Science and IEEE. He is a Fellow of INCOSE.

James E. Long is President of Vitech Corporation, the developer of the system engineering support tool CORE®. Mr. Long’s 45 years of engineering, systems engineering, and management experience include positions at Allison Division of General Motors, TRW, TITAN Systems, and Vitech Corporation. His experience includes assignments in flight test engineering, electric propulsion space trajectories, air defense, ballistic missile defense, undersea surveillance, satellite surveillance systems, and military C3I systems.

He was selected as an Eminent Engineer by Tau Beta Pi, the honorary engineering scholastic society in recognition for career achievement in engineering.

Jack Ring, Principal of Innovation Management, has a deep and long-standing interest in demonstrating system value management of intelligent enterprises and other people-centered systems. This interest derives from 48 years of initiating new systems and businesses with GE Aerospace, Honeywell Computer Divisions, Edelbrock Corp., Ascent Logic Corp., and IBM – and serving as coach to a variety of high tech turnarounds and startups.

His professional associations include Chaordic Commons, the Systems Dynamics Society, the American Association for Artificial Intelligence, and several knowledge management initiatives. He is a Fellow of INCOSE.

PANEL 2: System Safety in Systems Engineering

A reactive approach to system safety is extremely costly in terms of lives, times, and dollars. Recent literature on safety issues indicates that safety must be built into a system. This requires developers to take a proactive approach and address system safety early in the development process; within the context of systems engineering. The panel members will present four aspects of this concept. The first panelist will discuss an embedded safety process in a system's development cycle. The second looks at determining where failures can occur before they happen and how to prevent them. After that, we will deliberate how an effective system safety discipline addresses safety policy, infrastructure, assurance and culture within a system engineering environment. Finally, drawing on lessons learned from the Global War on Terror, specifically Operation: Iraqi Freedom, the last panelist will challenge engineers to ensure that safety gets the required focus during development, fielding and operation.

Moderator:

Elizabeth Rodriguez-Johnson is currently a Senior Policy Analyst in the Systems Engineering Office of the Defense Systems Directorate within the Office of the Secretary of Defense. Her responsibilities include serving as the Executive Secretariat of the Acquisitions and Technology Programs Task Force within the Defense Safety Oversight Council. Her previous position was within the Interoperability Office as the Deputy Director for Systems Architectures, where she was responsible for identifying key directions in DoD weapons systems and mission critical systems architectures needed to achieve effective joint interoperability.

Dr. Rodriguez-Johnson's government service has included assignments with the Director of Defense Research and Engineering (DDR&E), Department of Transportation (DOT), two years with the White House Office of Science and Technology Policy (OSTP), Office of the Director of Operational Test and Evaluation (DOT&E), Naval Research Laboratory (NRL), the House of Representatives, Office of Management and Budget and the Pacific Missile Test Center. Dr. Rodriguez-Johnson graduated from New Mexico State University with a BS in Mathematics in 1975, continuing with her MS in 1976, earning her Ph.D. in 1980.

Panelists:

Marianne Almesåker is an expert on Safety Assessment and Quality Assurance of safety critical system. Presently she is the Chief Executive Officer of A NANO Research Sweden Corp, supplier of safe architecture for systems solutions for safety critical applications used by government and the community. The advantages and dual-use from space and airborne techniques are used as patterns to build commercial high technology products. The company performs research for the community, government and for commercial purpose for reliable reports and products.

Mrs. Almesåker specializes in computing and safety critical systems for her science doctoral studies at the Department of Computer and Information Science, University of Linköping, Sweden. Her research interests include the areas of concurrent and distributed systems, real-time and embedded systems, software architecture, programming languages, and architecting safe software and hardware. She has been Project Manager for NFFP3 research areas for industry and government requirements.

Mrs. Almesåker is also a board member of the Swedish Network for System Safety. She is an inventor of safety equipment for central processor units to increase S/W reliability, maser & laser directed transportation media and new architecture of computers. Other inventions are for defense use.

She has served as Senior System Safety Engineer for the JAS 39 Gripen

Aircraft at Saab in Linköping. Prior to her work at Saab she served as Program Manager for Software Quality Assurance at Avionics & Aircraft Systems Divisions, Air Materiel Department at FMV i.e. The Swedish Defence Materiel Administration.

Linda Sollars is the Director of System Safety for Jetblue Airways. She manages the Internal Evaluation Program and Operations compliance issues and is a First Officer on the Airbus 320. She is a past recipient of the Roger A. Lockwood System Safety award. She holds Masters in Business Administration from the University of Connecticut. In addition she holds an Airframe and Powerplant Mechanics License, an Electronic Technologies Certification, is the Vice President of the Association for Women in Aviation Maintenance and serves on the Board of the Professional Aviation Maintenance Association. She has worked as a Chief Pilot for a part 121 carrier, in systems management on Wall Street and as an aviation insurance broker. Publications include maintenance safety issues and Aerospace career development.

Ronald Stroup joined the Federal Aviation Administration as an Aerospace Engineer in 1989. He holds a Bachelor of Science degree in Avionics Engineering from Parks College of Saint Louis University. Mr. Stroup served, as a Systems Engineer in the Aircraft Certification Services' Chicago Aircraft Certification Office and in 1997 became the Software Technology Specialist for the Aircraft Certification Service. In 1998, Mr. Stroup served as the Software Safety and Certification Lead for the Office of Information Services and Chief Information Officer. In 2002, Mr. Stroup completed the DOD's Advanced Management Program and holds a NSTISSI 4011 Certificate in Information System Security. In March 2003, Mr. Stroup became the Chief System Engineer for Airborne and Ground System Integration for the FAA organization known today as the Air Traffic Organization. Mr. Stroup is currently pursuing a Masters of Science in Information Management from Syracuse University.

Brian X. Murray is the Assistant Deputy for Force Modernization within the Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology). In this capacity he is concerned with the Army Campaign Plan (ACP), Army Modularity and Force Modernization program integration. He is recognized as an authority in acquisition and program management and logistics. He serves as the primary point of contact and authority for the Deputy for Acquisition Systems Management to oversee, coordinate and facilitate the integration of ACP and other Army acquisition activities. He provides technical and professional leadership to resolve complex management, technical, acquisition, systems integration, and force modernization issues to deployed forces in Kuwait and Iraq. This requires he stay abreast of business reengineering initiatives and systems management efforts and applications in other government agencies and commercial / industrial organizations having related interests. He maintains close association with captains of industry, heads of educational institutions and commercial / industrial organizations.

PANEL 3: What is Most Important to System Design Success: Models, Design Documents, Process or Something Else?

The aim is to consider the pros and cons of a proposed MODEL built from DESIGN DOCUMENTS of systems engineering design, into which PROCESS is integrated.

The model to be considered consists a Department of Defense Architecture Framework and an ANSI/AIAA G-043 Proposed Operational Concept Document. This model is directly related to the published work of Peter Checkland (Soft Systems), and James Martin (Aerospace).

Two panel members will present a case FOR the benefits to be gained by the use of such a model. The other two panel members will present a case that questions the sufficiency of such a model.

The debate will be conducted with the proposed model screened before the audience and made available as hard copy on each chair.

The team supporting the model will explore relationships with the WBS, program and SEMP through the concept of a Project Creation Cycle based on the proposed model.

The team opposing the model will argue that whereas the model may be a necessary help it is not sufficient to solve the holistic problem facing a program – that of delivering products that meet the acquirers expectations. The missing ingredients to the model will be explored.

Moderator:

George Caple is a retired systems design engineer, currently taking an MPhil in Systems Engineering in the Small to Medium Enterprise (SME) at Loughborough University, and participating actively in the INCOSE RWG and IEWG. Mr. Caple served 12 years in the RAF as a systems maintenance engineer. He then joined Hawker Siddeley Dynamics as a Senior Systems Design Engineer on the Martel, Sea Eagle and Sky Flash missile systems over a period of 13 years. A major interest was the “interfacing” of the Sky Flash missile and the Phantom, F3 Tornado and Viggen aircraft. Four years at the Airborne Radar Division of GEC-Marconi followed, as Deputy Group Leader / System Design Manager of the “Ground Clutter Gathering Radar, RT4”, followed by the Chinese F7 (MIG21) Fire Control Radar and “Air Defence System”. (MADS 7) and technical liaison on the Foxhunter radar for the original EFA in 1982. Mr. Caple then moved to the Electronic Warfare Division of GEC-Marconi for his final 17 years, as a Principal Design Engineer, working on a range of projects and creating his own research projects on the integration of radar and E.W. A design for bistatic airborne radar and missile launching and guidance for the F3 Tornado and the Lynx helicopter Sea Skua missile, aroused great interest and enthusiasm at MoD RAF and RN. However, the end of the “Cold War” stopped this. The final project was the initial design of the E.W. system for the C130J. Mr. Caple was a founder member of the GEC-Marconi Systems Engineering WG in the late 80’s, a founder member of INCOSE U.K. and initiated the WG which produced the GEC-Marconi Systems Engineering Process. He has created, designed, and developed his Generic Unified Systems Engineering Metamodel (GUSEM) over the years since 1993, and published nine papers on it in Germany, across the USA and in the U.K.

Panelists:

James R van Gaasbeek is a Principal Systems Engineer involved in system development, process development and automation support in the Integrated Systems Sector of the Northrop Grumman Corporation. He has experience in analysis, research and development in the areas of aeroservoelasticity, flight dynamics and handling qualities, constructive and virtual simulation and systems engineering. He has been the IPT lead for an aircraft development program and is currently acting as requirements manager on a major

development Program. Mr van Gaasbeek is leading the joint AIAA - INCOSE effort to update ANSI/AIAA G-043, Guide to the Preparation of Operational Concept Documents. He represents Northrop Grumman on the Corporate Advisory Board and is a member of the INCOSE Requirements Working Group and is the Northrop Grumman member of the AIAA Systems Engineering Technical Committee.

Mr van Gaasbeek received a BS in Aeronautics and Astronautics from MIT, an MS in Engineering Mechanics from the University of Texas, and an MBA from Texas Christian University. He holds a certificate from the California Institute of Technology in Systems Engineering.

James Martin is a systems engineer at the Aerospace Corporation developing architectures for information systems and space systems. Mr. Martin led the working group responsible for developing ANSI/EIA 632, a US national standard that defines the processes for engineering a system. He previously worked for Raytheon Systems Company as a lead systems engineer and architect on airborne and satellite communications networks. He has also worked at AT&T Bell Labs on wireless telecommunications products and underwater fiber optic transmission products. His book, Systems Engineering Guidebook, was published by CRC Press. Mr. Martin is an INCOSE Fellow and leader of the Standards Technical Committee.

Colin Ingamells is the Head of Requirements Based Engineering Process & Methods. Mr. Ingamells is responsible for the Requirements Based Engineering Process & Methods within the Engineering Centre of Competence (CoC) for the whole of Airbus. This work involves updating the Requirements Based Engineering (RBE) policies, procedures and methods for the Airbus A400M and following Aircraft programmes.

Colin is coordinating the activities for the recently formed INCOSE - Region 3 Requirements Engineering Working Group (RE3WG).

He was recently responsible for the Requirements Engineering activities for the Wing - Aircraft Component Manufacturing Team (ACMT) on the Airbus A380 Programme.

He has been involved in Project Management and Systems Engineering activities in the power generation (Coal and Nuclear) simulation industry, the submarine industry and on the 'Euro-fighter' programme.

Jerome (Jerry) Lake is an internationally recognized instructor, consultant and speaker in systems engineering and management. He is co-founder and president of Systems Management international (SMi) established in 1993. He is a former president (the first) of the International Council on Systems Engineering (INCOSE). Dr. Lake was a principal writer of IEEE 1220-1994. He served on the Electronic Industries Alliance's systems engineering working group that prepared the ANSI/EIA 632 standard Processes for Engineering of Systems and served with the US TAG for ISO/IEC JTC1 SC7 in the preparation of the ISO/IEC 15288 standard on System Life Cycle Processes (published November 2002). He is the Project Editor of ISO/IEC 19760 - A Guide for the application of ISO/IEC 15288 published in 2003. He has authored numerous articles on systems engineering, project management, and related topics.

Dr. Lake is an aerospace engineer with earned advanced degrees from the University of Michigan (Master of Science) and University of Oklahoma (Doctor of Philosophy). He is a graduate of the US Military Academy and served as a command pilot, test pilot, and R&D staff member in the US Air Force, as a dean at two business schools and director of engineering management graduate programs in academia, and as an industry consultant and project manager for cruise missile implementation and testing. As a professor of systems engineering at the Department of Defense Systems Management College he was a prime writer of the draft MIL-STD-499B, Systems Engineering, and was a consultant on an Integrated Weapons Systems Management team that improved the practice and effectiveness of Integrated Product and Process Development in the US Air Force. In the late 1990s Dr. Lake was consultant to FMV in Sweden for C4ISR architecture definition. Since

the late 1990s Dr. Lake has been a consultant to the Office of Chief Engineer of NASA for the preparation of a Systems Engineering Framework and to the Under Secretary of Defense (Acquisition, Technology and Logistics) for Enterprise Development.

Dr. Lake is a Fellow of the International Council on Systems Engineering and the American Society for Engineering Management. He is recognized in Men of Achievement and Who's Who in the World, East (US), and Southeast (US), and American Education. In 1996, he was honored with the second INCOSE Founders Award.

PANEL 4: Can Government Initiatives Bridge Industry with Academia or Do Links Have to Evolve Naturally ?

The aim of this panel topic is to debate the issue of governmental support (national or regional) aimed at forging links between academia and industry with a view to sustaining industry, promoting technology and/or sharing best practice. To this end, the panel will include advocates of governmental support (highlighted by examples; SEIC and CSE-AFIT) debating the issue with, not-for-profit organisations such as INCOSE which aim to forge links through natural progression and common interest. In essence, will best practice bridge the parties or is there a need to force the partnership ?

Your attendance and views would be highly valued in this debate.

Participants will benefit from the views and experiences aired by the panel members as well as the participating audience. Examples of existing governmentally established/nurtured partnerships will be of value to those seeking to set up similar ventures. Likewise, representatives from organisations with multitude of members will provide an alternative set of opportunities, challenges and success stories.

The panel has been chosen to elicit discussion of pros-and-cons as well as experience for each argument in the debate.

This topic and the panel have also managed to engage INCOSE representation through the participation of the current INCOSE Technical Director; Samantha Brown.

Moderator:

Ayman El-Fataty is the Business Development Manager for BAE Systems' Systems Engineering Innovation Centre & INCOSE CAB Chair-elect 2006/2007

Panelists:

Mark Wilson is the Director of the Centre for Systems Engineering, US Air Force Institute of Technology (CSE-AFIT)

Charles Calvano is the Associate Director for Systems Engineering, US Office of Naval Research (Global)

Peter Smith is Head of the Department of Electronic and Electrical Engineering at Loughborough University.

Andrew Pickard (TBC) is the Engineering Director for Control Systems at Rolls Royce.

Panel 5: “Will Current International Counter-Terrorism Strategy Reduce or Eradicate Terrorism?”: A Debate on the Issues

Terrorism is the systematic use of violence and force as a means of coercion through fear and intimidation. As we have seen since World War II and experienced first hand on September 11, 2001, the calculated murder of political personalities has given way to the random killing of innocent people and civilian populations.

Since 2001, INCOSE through its Anti-Terrorism International Working Group (ATIWG) has focused the principles, techniques, and practices of systems engineering on how to reduce and eradicate international terrorism.

Through the ATIWG sponsoring of panels (INCOSE symposia (2002-2004)), papers for publication (2003), a tutorial (2004), and working group activities, the systems engineering community has discussed the application of collaborative engineering environments, simulation and modeling, religion, system solutions to defend against terrorism, psychology, and root causes of terrorism to address the vulnerabilities of systems as well as the attack responses to threats.

This panel continues the INCOSE application of systems engineering to this international problem by debating whether the current international strategy against terrorism will provide its reduction and eradication as intended.

Panel members will present arguments for and against the question. Each argument will have a requirements analysis, add to or subtract from the current international strategies, an implementation strategy, and provide a benefit and risk analysis. Each argument will also address factors such as to what constitutes reduction and eradication of terrorism (i.e., metrics), what is an affordable strategy, what are the consequences for the law and personal freedoms, what is feasible, and the ability to control terrorism once reduced or eradicated.

Panel members and attendees may question and challenge the arguments. Systems engineers will benefit from this multidisciplinary debate. They will see that our systems engineering principles, techniques, and practices have application to complex multidiscipline societal problems. The objective, disciplined approach to problem analysis controls the emotional response to such difficult problems and offers insights that inform government decision makers.

Moderator:

Joseph Carl, Ph.D., P.E., CSEP has been a systems engineer for Harris Corp. for 20 years. He is the 2004 President of the INCOSE Chesapeake Chapter and a Co-Chair of the INCOSE Anti-Terrorism International WG (ATIWG). He is also a tri-athlete, a blue-water sailor, a master scuba-diver, an amateur classical guitarist, and one of 17,000 people who completed the 29th Marine Corps Marathon on Halloween Day in 2004.

Panelists:

William Mackey, Ph.D., J.D. is a Senior Member of the Executive Staff of CSC. He attended the U.S. Naval Academy and has B.S. and M.S. degrees in physics from the University of Pittsburgh and the Rensselaer Polytechnic Institute. He received his Ph.D. in systems engineering from the University of Pennsylvania and his J.D. from the Washington College of Law, American University.

Dr. Mackey has more than 35 years experience in scientific research, engineering, and management applied to homeland security, aerospace, energy, transportation, systems integration, and law. He has held a number of progressively responsible management positions, including leadership of 120 professionals involved in systems engineering, telecommunications and networking, office information systems, and major systems development in the CSC Systems Division.

Dr. Mackey is a member of both the District of Columbia and the State of

Virginia legal bars. He has served on many INCOSE WG/IG's and was Chairman of the Systems Engineering Applications Technical Committee from 1995 to 2001. He presently serves as the INCOSE Technical Board Chairman from June 2001 to June 2004. He chartered the Anti-Terrorism International WG within INCOSE in October 2001. He was facilitator of the INCOSE panels on Anti-Terrorism at INCOSE 2002 in Las Vegas, NV and INCOSE 2003 in Washington, D.C. Dr. Mackey is also an INCOSE Fellow.

Dr. Mackey recently led the development of a biometric-based Pedestrian Border Crossing Prototype intended for use by the Department of Homeland Security. It is presently being fielded at the San Ysidro border crossing in the United States.

Stephen J. Sutton, P.E. is a Technical Director at TASC Inc., a business unit of Northrop Grumman Corporation. He holds B.E.E. and M. Eng. (E.E.) degrees from Rensselaer Polytechnic Institute and the Engineer Degree (E.E.) from George Washington University.

Mr. Sutton has more than 39 years of experience in systems engineering and analysis, enterprise and system-of-systems architecture, and management for telecommunications, information, and intelligence systems. He has held program management, lead systems engineering, and line management positions.

Mr. Sutton has served INCOSE as President of the Chesapeake Chapter, Member Board Representative from Region V, and currently is a Co-Chair of the Anti-Terrorism International Working Group. In 2004, he led the development of the *INCOSE Members Guide to Benefits, Services, and Products*, an INCOSE product on CD. He currently is the INCOSE Corporate Advisory Board Representative for TASC Inc., a business unit of Northrop Grumman Corporation.

Currently, Mr. Sutton applies systems engineering principles to strategic planning and capabilities development for U.S. DoD and Intelligence Community clients. He also sits on the Systems Engineering Advisory Panel for the systems engineering curriculum at the University of Maryland Baltimore County.

William Ewald, Ph.D. has been an ORC Macro line manager for over 25 years, and has more than 30 years of consulting and training experience in the Federal and private sectors. In the last 20 years, he has concentrated his practice in strategic planning, leadership development, executive coaching, business process reengineering, organizational change, knowledge management, systems and performance-based acquisition, and the influence of human systems in the context of systems engineering. His clients have included all levels of industry and government managers. A sample of his current engagements includes: a high government level Technical Cooperation Program (TTCP) of the five English speaking allies; the Joint Warfare Analysis Center (JWAC) within the US Department of Defense; and the University of Maryland Center for the Advanced Study of Language (CASL). He has a long history of successful speaking engagements, briefs, seminars, and other training assignments within the Federal government and industry. He received his doctorate from Emory University in Experimental Psychology and has held academic appointments at several universities. He is currently serving as a member of the Board of Directors for the International Council on Systems Engineers (INCOSE), co-chairs the INCOSE Human Systems Engineering Working Group, and is a member of the Board of Trustees of the U.S. Naval Academy Foundation.

James Long is President of Vitech Corporation, the developer of the system engineering support tool CORE®. He has been a performing systems engineer and innovator since creating the first behaviour diagrams (then called Function Sequence Diagrams) at TRW in 1967. He played a key technical and management role in the maturing and application of that system engineering process and technology at TRW and Vitech.

Mr. Long's 45 years of engineering, systems engineering, and management experience include positions at Allison Division of General Motors, TRW, TITAN Systems, and Vitech Corporation. His engineering experience includes

assignments in flight test engineering, electric propulsion space trajectories, air defense, ballistic missile defense, undersea surveillance, satellite surveillance systems, and military C3I systems.

Mr. Long has undergraduate and graduate engineering degrees from General Motors Institute and Purdue University and was selected as an Eminent Engineer by Tau Beta Pi, the honorary engineering scholastic society in recognition for career achievement in engineering.

A member of INCOSE since 1992, Mr. Long served as president of the WMA Chapter, represents Vitech Corporation on INCOSE's Corporate Advisory Board (CAB), is a Co-Chair of the Anti-Terrorism International Working Group, and is also an active member of the Modeling & Tools Technical Committee.

David M. Wright, Col. (retired), has a first degree in Physics. He spent 30 years as a member of the British Army's Royal Electrical and Mechanical Engineers, retiring as a Colonel in 2004. He held a variety of regimental appointments in UK, Cyprus, Germany and the Outer Hebrides, and has commanded units at all levels in the field force. He spent a number of years at the Royal Military College of Science, Shrivenham, gaining an MSc in Guided Weapon Systems and later both teaching there and creating a new MSc Course in Defence Technology. He held a wide variety of staff appointments in UK MOD and in the Procurement Executive. In the latter part of his military career, he was involved in the management and delivery of large-scale information systems for the UK MOD. He gained an MPhil degree for a programme of part-time research into the application of systems thinking to the problems of Defence acquisition. He is now Director of Logistic Initiatives with Lockheed Martin UK, Simulation Training and Support. He is a Chartered Engineer, a Fellow of the Institution of Electrical Engineers, and serves on the Board of Directors of the International Council on Systems Engineering.

Avigdor Zonnenshain, is currently the Deputy for Operations, ordnance systems Division, at RAFAEL – the Armament Development Authority of Israel. Dr. Zonnenshain has a Ph.D. in Systems Engineering from the University of Arizona, Tucson. Formerly, Dr. Zonnenshain held several major positions in the quality and System engineering arena, including:

- Director for Quality & Productivity of RAFAEL.
- Director of the Quality of Excellence Center, in the Prime Minister's Office.
- Director of Quality & Certification Department, in the Standards Institute of Israel.
- The first president of the World Quality Council (WQC).
- Director of Systems Department

Also, he is an active member of the Israel society for Quality (ISQ), and INCOSE-IL.

PANEL 6: Requirements Development in Commercial Industry

This panel will present a group of panellist that work with capturing and managing requirements in industry or commercial settings. They will share from their Requirements Process experience, including elicitation, analysis, specification, validation, and management. The link to the Product Managers, Marketing, Project Management and Developers will also be discussed. Some of the topics covered are the pace that industry requires system solutions, the source of requirements, how change is handled in industry, and the degree of formality, control, and rigor that is exercised. Many of the panellists have a view into government and non-government sectors and they will present an assessment of Requirements Engineering as practiced in industry based on this perspective.

This is an opportunity to share how requirements are captured and managed in commercial industry or non-government sector. It provides the opportunity for people in industry to share best practices and for those in the government sector to learn some of the techniques that work for both sectors. In particular many in the government sector develop internal products that can benefit from using industry processes.

Moderator:

Regina M. Gonzales is a respected leader in the area of Requirements Engineering. Her focus is on using modelling as a way to formalize requirements. She is President of the INCOSE Enchantment Chapter, A member of the INCOSE Technical Leadership Team, and Co-chair of the INCOSE Requirements Working Group. She is an active member of the IEEE Requirements Community.

Currently, Dr. Gonzales is a Principal Member of the Technical Staff at Sandia National Laboratories. At Sandia, she is a Program Engineer in the Weapons Program Integration Department and provides early lifecycle Systems Engineering Support on a number of strategic projects. Dr. Gonzales is also a College Assistant Professor at New Mexico State University (NMSU). She teaches in the area of Large-Scale Systems Engineering and Requirements Engineering.

Before joining Sandia, Dr. Gonzales functioned as Deputy Director of Advanced Technology developing Computer-based Systems in the area of Flight Safety. She has also functioned as a Project Manager and Systems Engineer in diverse areas including E-Business Applications in the Insurance Industry, Point of Sale Systems, computer peripherals, and MRI Medical Systems. Dr. Gonzales has consulted in other areas including Transportation and Home Automation. She began her career at Sandia designing and implementing embedded Telemetry Systems.

She has a Ph.D. in Computer Engineering with a specialty in Requirements Engineering from NMSU, an MS in Computer Science from University of Colorado, an MS in Electrical and Computer Engineering from University of Arizona, B.S. in Electrical and Computer Engineering from NMSU.

Panelists:

Mark E. Sampson is the principal systems engineer for integrating systems engineering tools and methods with the emerging product lifecycle management (PLM) business unit at UGS (2004 privately held spinout of EDS). The premise of PLM is to consider the whole lifecycle during all phases of design and support that lifecycle with enterprise-grade tools, ala ERP, CRM, SCM, etc.—essentially integrating systems engineering with the product development processes. As a result, Mark has insights into how a variety of commercial enterprises develop, manage, and implement requirements from high-tech electronics, to automotive, to medical devices, pharmaceuticals, and others.

Mark has a B.S. in Computer Engineering from BYU and an M.S. in Systems Engineering/MIS from USC. He sits on the INCOSE Technical Leadership Team where he is responsible for the Models & Tools Technical Committee.

Hermann Kaindl has joined the Institute of Computer Technology at the Vienna University of Technology in Vienna, Austria, less than two years ago. Prior to moving to academia, he was a senior consultant with the division of program and systems engineering at Siemens AG Austria. There he has gained more than 24 years of industrial experience in software development. His current research interests include software engineering with a focus on requirements engineering, and human-computer interaction as it relates to scenario-based design. He has published four books and more than eighty papers in refereed journals, books and conference proceedings. He is a senior member of the IEEE, a member of the INCOSE, and is on the executive board of the Austrian Society for Artificial Intelligence.

Erik W. Aslaksen is a Senior Principal of Sinclair Knight Merz, the largest technology consulting firm in Australia. He obtained his M.Sc. in Electrical Engineering from the Swiss Federal Institute of Technology in 1962 and a Ph.D. in physics from Lehigh University in 1968. He is a Fellow of INCOSE and of Engineers Australia, and a Member of the Australian Institute of Physics. Dr. Aslaksen's experience, gained in the US, Switzerland and Australia, covers fields as diverse as microwave components, power electronics, quantum electronics, and communications, and ranges from basic research to corporate management. In recent years his main interest has been in the area of systems engineering and engineering management, and before joining Sinclair Knight Merz in 1988, he was in charge of the design of the Australian Army's new tactical trunk communications system. He was the project manager for the EPCM of a major new, state-of-the-art underground copper mine, and has recently been involved in railway control systems, intelligent transport systems, and the business case for a new operational headquarters for the Australian Defence Force. He is the author of three textbooks (one with W.R. Belcher) and over fifty papers.

Rick Dove is Chairman of the Agile Security Forum and CEO of Paradigm Shift International. He is a recognized thought leader in the area agile enterprise and agile systems. Recent interim executive engagements include two years as CIO/CSO at a Malaysian semiconductor foundry building an agile IT infrastructure, and one year as President of ProMetal transforming it from R&D to an agile commercial operation. In the nineties he co-led the seminal effort at Lehigh University that defined agility as the survival need of the new millennium, and subsequently organized and led the Agility Forum's industry-collaborative work that defined methods and principles for achieving agility in all enterprise systems. His research work includes frameworks for agile systems requirements development. He holds a BSEE from Carnegie Mellon University, and did graduate work at UC Berkeley toward a PhD in Computer Science. He is author of *Response Ability: The Language, Structure, and Culture of The Agile Enterprise and Value Propositioning - Perception and Misperception in Decision Making*.

PANEL 7: Psychological, Technical & Managerial Aspects of Effective Design Review

Design Reviews (DR) are review/survey/audit activities, which are planned and performed after certain stages of the product design or the project development. For example, after completion of the system requirements formulations based on the customer's expectations and the market demands, it is usual to perform the System Requirements Review (SRR). During the SRR, the completeness and clarity of requirements are surveyed, and also the fitness of the requirements to the market/customer's demand.

In the beginning of the product design, the DR focuses on the System Design Level, and afterwards on the detailed design level. Usually, the DR is performed by an independent expert team, appointed by the customer. Sometimes the organization, which is responsible for the design, performs its own DR (Internal DR) – as a control of the design process and/or preparation for the external DR. In this case, the DR is performed by an expert team, appointed by the Management.

In most organizations, the DR activities are viewed as vital for controlling the design process and to ensure the quality of the design. There is a large amount of resource investment in the DR process.

- The Design Team prepares the documents for the DR and participates in DR sessions.
- The DR Team invests its time and expertise in the DR process.
- The Design Team and the Project Management are obliged to deal with the findings and recommendations of the DR Team.

Consequently, it is very important for all participants of the DR process, that it is effective and with proven added value for the design process and products.

Pertaining to the panel, we will discuss and present various aspects of the effectiveness of DR process Technical aspects, Managerial aspects and Psychological aspects.

Technical aspects include questions, such as:

- What is the technical check list of the DR?
- Can the DR experts really technically review the design?
- How do you prevent “design session” during the DR session?
- How do you quantitatively assess the readiness for the DR and the completion of DR?
- How do you balance in the DR – the review of the product itself and review of product design process.

Managerial aspects may include questions like:

- How to perform the DR at the right time – not too early and not too late?
- How do you deal effectively with DR findings?
- What is the managerial role in case of dispute among the Design Team and the DR Team?
- How do you reward the DR Team for its efforts?

Psychological aspects may focus on the following questions:

- How do you create openness and an environment of cooperation among the Design Team and the DR Team
- How do you create open communication in the organization for the DR process?

Moderator:

Avigdor Zonnenshain is currently the Deputy for Operations, ordnance systems Division, at RAFAEL – the Armament Development Authority of Israel. Dr. Zonnenshain has a Ph.D. for Systems Engineering from the University of Arizona, Tucson. Formerly, Dr. Zonnenshain held several major positions in the quality and System engineering arena:

- Director for Quality & Productivity of RAFAEL.
- Director of the Quality of Excellence Center, in the Prime Minister Office.
- Director of Quality & Certification Department, in the Standards Inst of Israel.
- The first president of the World Quality Council (WQC).
- Director of Systems Department

Also, he is an active member of the Israel society for quality (ISQ), and INCOSE_IL

Panelists:

Tom Gilb is a consultant, author and teacher to international industry. He has published 9 books and well over 100 papers. His new book Competitive Engineering should be published January 2005. He primarily works at changing engineering culture in major multinationals. He does pro-bono work for US DOD, UK MOD, various charitable organizations, and countries (India, China, Korea). His clients include McDonnell Douglas/Boeing, BAE Systems, Hewlett Packard, Nokia, Sony/Ericsson, Philips, CitiGroup, Intel, Microsoft,

Canon, and United Defense. His major technical interests are in the areas of requirements engineering, design and architecture, Evolutionary project management and specification quality control. He started working for IBM in 1958 for 5 years and has been an independent consultant since then. He was born in California and lives in Norway. His URL www.gilb.com. Email Tom@Gilb.com

Eric C. Honour is President of Honourcode, Inc.; Director, INCOSE Systems Engineering Center of Excellence. Mr. Honour has been in international leadership of the engineering of systems for over a decade, part of a 35-year career of complex systems development and operation. His energetic and informative presentation style actively involves class participants. He was the founding Chair of the TNCOSE (International Council on Systems Engineering) Technical Board in 1994, was elected to INCOSE President for 1997, and continues as Director of the Systems Engineering Center of Excellence (SECOE). He was selected in 2000 for Who's Who in Science and Technology and in 2004 as an INCOSE Founder. He has been a systems engineer, engineering manager, and program manager at Harris Information Systems, E-Systems Melpar, and Singer Link, preceded by nine years as a US Naval Officer flying P-3 aircraft. He has led or contributed to the development of 17 major systems, including the Air Combat Maneuvering instrumentation systems, the Battle Grout Passive Horizon Extension System, the National Crime Information Center 2000, and the DDC 1200 Digital Zone Control system for heating and air conditioning. Mr. Honour now heads Honourcode, Inc., a consulting firm offering effective methods in the development of system products. Mr. Honour has a BSSE (Systems Engineering) from the US Naval Academy and MSEE from the Naval Postgraduate School.

Jim Armstrong has 37 years of experience in systems development. He is a consultant and trainer in systems engineering and is a lead assessor for systems engineering appraisals. As a customer, he has participated in and chaired several reviews from participant to program manager. He has also presented reviews to customers.

Joseph Kasser has been a practising systems engineer for 30 years. He is the author of *Applying Total Quality Management to Systems Engineering*, published by Artech House. Dr. Kasser holds a Doctor of Science in Engineering Management from The George Washington University, and is a Certified Manager. Currently, he is the Defence Science and Technology Organisation Associate Research Professor at the Systems Engineering and Evaluation Centre at the University of South Australia (UniSA). He performs research into improving the Defence acquisition process, the nature of systems engineering and the properties of object-oriented requirements. He is also the Project Manager for the Defence Materiel Organisation customised section of the Master of Project Management postgraduate degree. Prior to taking up his position at UniSA, he was a Director of Information and Technical Studies at the Graduate School of Management and Technology at University of Maryland University College. There, he developed and was responsible for the Master of Software Engineering degree and the Software Development Management track of the Master of Science in Computer Systems Management (CSMN) degree. He is a recipient of NASA Manned Space Flight Awareness Award for quality and technical excellence (Silver Snoopy), for performing and directing systems engineering. Dr. Kasser also teaches systems and software engineering in the classroom and via distance education.

He is also president of the emerging JNCOSE-Australia chapter and represents Region VI on the INCOSE Member Board.

Shoshani Sharon – Tavory, M.Sc (Electrical Engineering) a chief systems engineer in RAFAEL (Israel). Her background includes project management and software engineering (developing and managing) of large real time systems in the defense domain, for the past 20 years. In the past couple of years she had been involved in SE improvement processes including Design Review process and focus. She serves as the chair of the INCOSE_IL technical board.

PANEL 8: The Value of Systems Engineering to Program Management

One goal of systems engineering is to see problems on the horizon so you can address them before they hit and potentially destroy a program. The imperative for DoD and its industry partners is to drive systems engineering back into acquisition programs.

Analyses of a sampling of major acquisition programs show a definite linkage between escalating costs and the ineffective application of systems engineering. There are many cases where programs have not delivered as promised. These programs failed to conduct the required systems engineering analyses before setting requirements, and the programs were prematurely launched. Gaps between resources and requirements were not discovered until well into product development. Many programs trace their rising costs and lagging schedules to requirements-based problems such as poor program definition, lack of traceable allocations, and incomplete or weak verifications.

Studies show that in cases where programs were started with requirements that exceeded resources, costs increased from 55 percent to nearly 200 percent, and schedule delays jumped an estimated 25 percent. Early application of systems engineering will give DoD's top decision makers the necessary confidence in a program's ability to define and match technical requirements with resources—in other words, to stay on budget and on schedule—and to define, understand, and manage program risk.

Purpose

- Critical insights into successful program management that apply universally to military and commercial programs and projects
 - Systems engineering best practices
 - Test and evaluation best practices
- Insights into effectively integrating the myriad of tools available to program management

Moderator:

Mark Schaeffer serves in a dual capacity as the Principal Deputy (PD), Defense Systems (DS), and as the Director, Systems Engineering in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD(AT&L)). He has served in various executive positions over his career that include; Director of Management Operations and Chief Information Officer (CIO) at Defense Advanced Research Projects Agency, Director of Industrial Engineering and Quality in the Office of the Assistant Secretary of Defense for Productions and Logistics. In addition, Mr. Schaeffer's skills have been enlisted on the professional staff of the Presidentially-appointed, congressionally-mandated Commission on Merchant Marine and Defense. Mr. Schaeffer received a Bachelor of Science in Mechanical Engineering from California State University at Sacramento (CSUS) in 1976 and has completed graduate studies at the Massachusetts Institute of Technology, Duke University, and Georgetown University.

Panelists:

Robert Skalamer has over twenty-five years experience in the research, development, test, evaluation, acquisition, and systems engineering of Department of Defense weapons systems. He currently serves as Deputy Director for Systems Engineering (Enterprise Development) in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics – Defense Systems, and is the focal point for the establishment and application of systems engineering policies for all Department of Defense acquisition programs. Prior to joining OUSD(AT&L), Mr. Skalamer served as the Assistant Program Executive Officer for Systems and Engineering at the Naval Air Systems Command. In this capacity he established acquisition and systems engineering best practice and provided senior-level systems

engineering counsel to 12 Program Management Offices, spanning over 60 ACAT programs and 55 different Type/Model/Series of operational aircraft. He was selected for the Navy Superior Civilian Service award in 2001. Mr. Skalamera holds a Bachelor of Science degree in Electrical Engineering from Drexel University and a Master of Engineering degree in Computer Engineering from the Pennsylvania State University. He is also a graduate of the Senior Executive Management Development Program.

David Castellano serves as the Deputy Director, Systems Engineering (Assessments and Support) in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (OUSD(AT&L)). As the Deputy Director, Mr. Castellano is the focal point within the Office of the Director, Defense Systems for systems engineering assessments of major and non-major defense systems and for software intensive systems issues. In this capacity, Mr. Castellano is responsible for technical risk management, manufacturing and production, quality, reliability and maintainability, software engineering, modeling and simulation, configuration and data management, value engineering, and other related disciplines for both hardware and software. Mr. Castellano received a Master of Science in Computer and Information Science from New Jersey Institute of Technology in Newark, New Jersey in June of 1986 and a Bachelor of Science in Chemical Engineering in June of 1979. Mr. Castellano's awards include the Department of the Army Civilian Achievement Medal in July of 1993, Department of the Army Meritorious Civilian Service Medal in July of 1999, National Defense Industrial Association bronze plaque presented in February of 2002 by Dr. Nancy Spruill, commemorating ARDEC as the world's first organization to achieve a Capability Maturity Model Integration (CMMI) Level 3 in Software & Systems Engineering and Supplier Sourcing.

Richard Lockhart was selected to the Senior Executive Service in 1998. He currently serves as the Director, Developmental Test and Evaluation (DT&E) for the Department of Defense. As such, he serves as the principal staff assistant and advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) for all DT&E matters. Mr. Lockhart has over 28 years of service in the Department of Defense. Prior to assuming his current position, he served as Manager of the NATO Alliance Ground Surveillance (AGS) Program in the Office of the Secretary of Defense, where he coordinated all of the Department of Defense activities on the AGS Program. Mr. Lockhart is a 1973 graduate of the University of Maryland where he earned a Bachelor's Degree in Aerospace Engineering. He earned a Master's Degree in System Management from the University of Southern California and is a graduate of the Defense Systems Management College Program Managers Course and the Department of Defense Senior Leadership Executive Program. Mr. Lockhart is a recipient of the Navy's Civilian Tester of the Year Award.

Col. Warren Anderson, USAF is the Deputy for Systems Engineering Policy and Plans, in the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, Defense Systems, Systems Engineering, Enterprise Development, The Pentagon, Washington DC. In this position, he assists in the sound application of systems engineering principles within the entire DoD acquisition workforce and its industry partners by capturing, sharing, and ensuring the application of best practices in the design, development, production and support of defense systems; promoting systems engineering learning; setting systems engineering policy; and overseeing its implementation. Colonel Anderson earned a bachelor of science in chemistry, bachelor of aerospace engineering with honors, and master of science in industrial management from the Georgia Institute of Technology and a master of science in national resource strategy from the National Defense University. He is a graduate of the USAF Squadron Officers' School and a distinguished graduate from the USAF Air Command and Staff College and the Industrial College of the Armed Forces. In addition, Colonel Anderson is a graduate of the Advanced Program Management Course, Defense Systems Management College, the Program for Management Development, Harvard Business School, and the Senior Acquisition Course, Defense Acquisition University.