Project Performance International

Systems Engineering

Newsletter (SyEN)

SyEN #032 - May 30, 2011

Brought to you by Project Performance International

http://www.ppi-int.com/newsletter/SyEN-032.php

Dear Colleague,

SyEN is an independent free newsletter containing informative reading for the technical project professional, with scores of news and other items summarizing developments in the field, including related industry, month by month. This newsletter and a newsletter archive are also available at www.ppi-int.com.

Systems engineering can be thought of as the problem-independent, and solution/technology-independent, principles and methods related to the successful engineering of systems, to meet stakeholder requirements and maximize value delivered to stakeholders in accordance with their values.

If you are presently receiving this newsletter from an associate, you may receive the newsletter directly in future by signing up for this free service of PPI, using the form at www.ppi-int.com. If you do not wish to receive future SE eNewsletters, please reply to the notifying e-mail with "Remove" in the subject line, from the same email address. Your removal will be confirmed, by email.

We hope that you find this newsletter to be informative and useful. Please tell us what you think. Email to: contact@ppi-int.com.

What's Inside:

READ ALL

A Quotation to Open On

Featured Articles -

- Functional Analysis - An Overview
  ... Read More

Systems Engineering News

- Upcoming Submission Deadlines and Themes for INSIGHT
- INCOSE Webinar - Leveraging Systems Engineering to Improve Program Performance
- Celebrating 10 years of Systems Engineering at Stevens
- The International Requirements Engineering Board is starting IREB GmbH
- Stevens Multi-Disciplinary Systems Design Project Saves Lives and Money for the Military
- Three Stevens' Papers Receive Awards at IEEE Systems Conference
- Special Issue of International Journal on Autonomous and Adaptive Communications Systems (IJAACS) on Self-* Systems
- Participate in INCOSE/ Wiley Strategic Journal Development Survey
- INCOSE Decision Analysis Working Group Forms
- SESA Votes to Reunite with INCOSE
  ... Read More

Featured Society - Academy of Mathematics and Systems Science (AMSS), China

... Read More

INCOSE Technical Operations

- Systems Security Engineering Working Group
- List of INCOSE Working Groups
  ... [Read More](#)

Systems Engineering Software Tools News

- Automate Document Generation from SysML Models with Rational Rhapsody ReporterPLUS
- Atego Acquires HighRely
  ... [Read More](#)

Systems Engineering Books, Reports, Articles and Papers

- Book Review - "The View From Here" by Reece Lumsden
- Systems Thinking: From Heresy to Practice: Public and Private Sector Studies
- Journal of Enterprise Transformation
- An Agile Systems Engineering Process - The Missing Link?
- Requirements Engineering Method and Maturity Model for ERP Projects
- Ayman Nassar's Reflections - New Responsibilities for Higher Education
  ... [Read More](#)

Conferences and Meetings

... [Read More](#)

Education and Academia

- Post-Doctoral Associate Position Available
- Postdoc Fellowship: Design-driven Development for Resilient Systems - Phoenix Research Group, INRIA Bordeaux, France
- New Johns Hopkins Institute Will Tap Large Pool of Experts to Solve 'Grand Challenges'
- Systems Engineering Group of the Eindhoven University of Technology, Department of Mechanical Engineering
- Faculty Position at Arizona State University re Human-Centered Computing
  ... [Read More](#)

Some Systems Engineering-Relevant Websites

... [Read More](#)

Standards and Guides

- ISO TC 184 - Automation Systems and Integration
  ... [Read More](#)

Some Definitions to Close On - Engineering

... [Read More](#)

PPI News

- PPI Hits the United Nations
  ... [Read More](#)

PPI Events

... [Read More](#)

A Quotation to Open On

"Engineering is not merely knowing and being knowledgeable, like a walking encyclopedia; engineering is not merely analysis; engineering is not merely the possession of the capacity to get elegant solutions to non-existent engineering problems; engineering is practicing the art of the organized forcing of technological change... Engineers operate at the interface between

science and society... ." - Dean Gordon Brown

Featured Article

Functional Analysis – An Overview

By Robert J. Halligan, FIE Aust
Project Performance International

Functional analysis is generally regarded as an activity whereby functions are broken down into sub-functions, and relationships between sub-functions shown (e.g. sequence, concurrency, control flow, item flow, logical branching, looping, iteration, replication, etc.). The breakdown (decomposition) of a function describes how that function is to be accomplished (performed).

Functional analysis has two major applications. The first is as a tool for *capture* and *validation* of requirements. That is, functional analysis is a technique used within requirements analysis. Anybody who has ever developed a use case, or written down how something is to be used for a particular use, has used functional analysis in this application. There are, of course, much more comprehensive ways of using functional analysis as a requirements analysis.

The second major application of functional analysis is as a design tool, a *logical design* tool. In this application, requirements level functions are broken down into solution level functions. Take the "Conduct the Olympic Games System" which is to perform the function by the same name. When we define functions such as "design the stadium", "build the stadium", "obtain certificate of occupancy", "conduct event trial", etc., we are *deciding upon*, we are *creating*, solution level functions. It is exactly the same with technology-based solutions. As soon as we decide that the function "design the stadium" is to be performed by the "stadium contractor" object, we have *created* a functional requirement on that object. That is the design application of functional analysis.

When the "stadium contractor" object receives our requirements, and finds them unclear, incomplete, unverifiable, all the usual problems, the stadium contractor may perform a requirements analysis to capture missing requirements, validate what is already there, identify requirements issues to raise with us, raise those requirements issues with us, and facilitate their resolution. So in this sense, the design application of functional analysis was first, in creating some functional requirements on a solution object, which became the subject of the requirements analysis application of functional analysis, which lead to validated requirements on a solution level object, which became the subject of the design application of functional analysis. The relationship is recursive – the proverbial "which came first, the chicken or the egg?".

At a conceptual level of detail, the design application of functional analysis creates a design architecture, a *logical* design architecture. That logic is the logic of a corresponding *physical* (*structural*) design architecture. Both are forms of design (noun); the activities that create them are both forms of design (verb). But having architecture is not enough; having selected architecture, we then need to add detail to a level of implementability, giving us a detailed design (noun).

A minor application of functional analysis is in the structuring of the functional and performance requirements section of a system requirements specification or a software requirements specification. In this application, functional modelling is used to give the structure of the section in terms of the names and sequencing of paragraph and subparagraph headings. Rules related to decomposition, logical branching and concurrency are used to determine where to subparagraph. Corresponding functional and performance requirements are placed at the leaves of the structure.

Copyright Project Performance International 2007-2011

Systems Engineering News

Upcoming Submission Deadlines and Themes for INSIGHT

INSIGHT is the newsletter of International Council on Systems Engineering. It is published four times per year (January, April, July, October). INSIGHT features status and information about INCOSE's technical work, local chapters, and committees and

boards. Additionally, related events, editorials, book reviews, trends, and how-to-do articles that are pertinent to the many aspects of a systems engineer's job are also included, as space permits.

More information

INCOSE Webinar - Leveraging Systems Engineering to Improve Program Performance

May 18, 2011

Abstract: An understanding of the value of Systems Engineering (SE) is necessary to justify a project's investment in SE resources and activities. To identify the value of SE, the U.S. National Defense Industrial Association (NDIA) Systems Engineering Division, in collaboration with the Software Engineering Institute (SEI), developed and executed a survey of U.S. defense industrial contractors (i.e., suppliers to the U.S. government). The survey, conducted anonymously, collected information regarding the SE practices deployed on development projects, and the performance of those projects, as measured by conformance to budget, schedule, and technical requirements. Responses received from 64 projects were analyzed to identify the statistical relationships between the deployed SE capabilities and project performance. The analysis of the responses revealed quantitative relationships between specific SE efforts applied to the project and the overall success of the project. This information is used to develop recommendations on the deployment of SE for both system acquirers and system suppliers.

More information

Celebrating 10 years of Systems Engineering at Stevens

The School of Systems and Enterprises (SSE) at Stevens Institute of Technology recently hosted a day of events to commemorate the 10th Anniversary of its Systems Engineering program. Distinguished guests were on campus all day long attending the events, which included an agreement signing with the U.S. Army, a Dean's Seminar, and a special reception in the evening.

More information

The International Requirements Engineering Board is starting IREB GmbH

The International Requirements Engineering Board (IREB) e.V., holder of the certificate Certified Professional for Requirements Engineering (CPRE), has recently founded IREB GmbH as its operating company.

More information

Stevens Multi-Disciplinary Systems Design Project Saves Lives and Money for the Military

Seventeen students at Stevens Institute of Technology are participating in a multi-disciplinary design initiative, sponsored by the U.S. Department of Defense (DoD), that brings together the students' diverse skills to solve a real-world problem using systems engineering principles. This student team, one of fourteen in the nation producing innovative solutions for the DoD while simultaneously gaining systems engineering practice, is designing an efficient and sustainable Advanced Expeditionary Housing System (AEHS) for remote combat operations and disaster relief.

More information

Three Stevens' Papers Receive Awards at IEEE Systems Conference

The IEEE hosted their 5th Annual International Systems Conference in Montreal, Quebec, Canada from April 4-7, 2011. The theme of this year's IEEE International Systems Conference was the Engineering of Complex Systems, to include Systems-of-systems, Systems Engineering, Systems Integration, and Systems Thinking. Several members of the Stevens community (faculty/students) from the School of Systems & Enterprises presented papers at the conference.

Best papers of the conference were announced on Thursday, April 7.   Stevens' authors (faculty/students) were awarded 3 of the 5 best paper slots.

More information

Special Issue of the International Journal on Autonomous and Adaptive Communications Systems (IJAACS) on Self-* Systems

The International Journal on Autonomous and Adaptive Communications Systems (IJAACS) is seeking original manuscripts for its special issue on self-* systems. This special issue aims to reveal the current state-of-the-art to build and operate self-* (e.g., self-configuring, self-organizing, self-managing, self-healing, self-scaling and self-adaptive properties) systems.

Topics of interest include:

- Formal models and methods for self-* systems

- Autonomy, adaptability, scalability, survivability, optimality and stability of self-* systems

- Uncertainty in self-* systems

- Management and control of self-* systems

- Modeling and simulation of self-* systems

- Design and performance issues in self-* systems

- Interdisciplinary (e.g., biologically, socially and economics inspired) approaches to build self-* systems

- Software engineering and performance engineering for self-* systems

- Tools, test beds and deployment aspects for self-* systems

- Applications and experiences with self-* systems

Application domains include autonomic computing, computer networks, distributed systems, green computing and networking, grid/cloud computing, intelligent agents, molecular communication, nano-scale computing and networking, pervasive computing and robotics.

More information

Participate in INCOSE/ Wiley Strategic Journal Development Survey

To increase the position of the *Systems Engineering* journal in the systems engineering field, INCOSE and Wiley have developed a brief survey. Your response will guide the editorial direction of the journal.

More information

INCOSE Decision Analysis Working Group Forms

A Decision Analysis Working Group (DAWG) has formed within INCOSE. The new DAWG will meet at the INCOSE International Symposium in Denver, USA taking place over June 20-23, 2011.

More information

SESA Votes to Reunite with INCOSE

Members of the Systems Engineering Society of Australia (SESA) voted at SESA's 3 May, 2011 Annual General Meeting, held

as a part of the SETE Conference in Canberra over 2-4 May, 2011, that SESA become a full Chapter of the International Council on Systems Engineering (INCOSE). SESA will do this whilst retaining its status as a Technical Society of Engineers Australia.

SESA was previously affiliated with INCOSE. During this period, its members held the special status of International Affiliates, conferring some of the benefits of INCOSE membership, but without voting rights. SESA disaffiliated from INCOSE in 2003, then in 2006 established a limited affiliation with the INCOSE Australian Chapter. The wheel has now more than turned!

SESA President Paul Logan said this week "SESA and INCOSE Australia members will now be part of, and receive the benefits provided by, a single, unique organization. SESA will provide representation and recognition of systems engineers, both in Australia as members of a profession-specific Society within the larger engineering community of Engineers Australia, and now also as an integral part of the international systems engineering community that is INCOSE. INCOSE, directly and in collaboration with other professional organizations, is driving the capture and development of the systems engineering body of knowledge. Now SESA members will benefit greatly from access to, use of, and perhaps contribution to, that knowledge."

Featured Society

Academy of Mathematics and Systems Science (AMSS), China
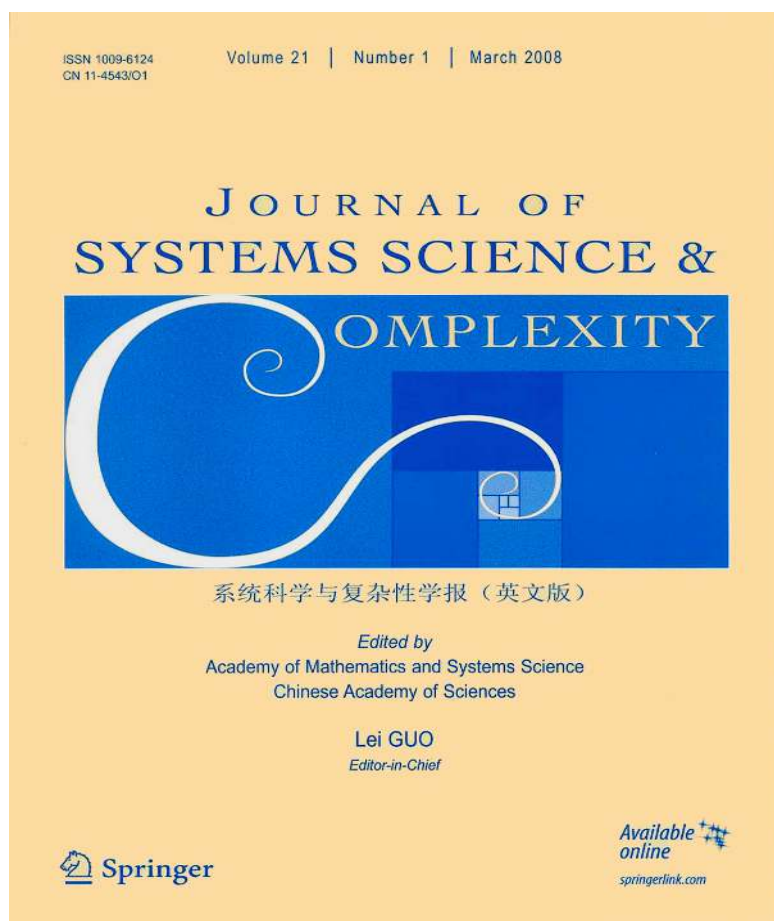
The Academy of Mathematics and Systems Science (AMSS) in the Chinese Academy of Sciences (CAS), founded in December 1998, is an integration of the Institute of Systems Science (established in 1979), the Institute of Computational Mathematics and Science/Engineering Computing (established in 1995), the Institute of Mathematics (established in 1952), and the Institute of Applied Mathematics (established in 1979). Professor Guo Lei (Member of CAS) is the current President of AMSS.

AMSS is a national comprehensive academic research center of systems science and mathematics. The strategic objectives of AMSS are to achieve important, original and pivotal research results, and to raise academic leads and talents in the field of mathematics and systems science, gearing the research to the international scientific frontiers and the national strategic demands. There are about 400 graduate students, doctoral students and post-doctoral researchers in AMSS.

AMSS has exchange and cooperation relationships with many academic institutions abroad.

The Systems Engineering Society of China (SESC) and the Operations Research Society of China, have set up their offices in AMSS. The website of the **Systems Engineering Society of China** is at: http://www.amss.ac.cn/sesc. However, the website appears to have no accessible content at this time.

Systems publications related to the AMSS and SESC are:

Journal of Systems Science and Complexity

The Journal of Systems Science and Complexity (JSSC) is a bimonthly journal to publish high-quality original and innovative papers on theories, methodologies and applications of systems science and complexity science, as well as insightful survey papers. It aims to encourage fundamental research of systems science and complexity.

Systems Engineering – Theory & Practice (in Chinese)

Archives of this journal, ISSN 1000-6788/CN 11-2267/N, are at http://www.sysengi.com/cn/xzph.asp
Website is at http://www.sysengi.com/

Systems Engineering – Theory & Practice (in English)

Systems Engineering - Theory & Practice (SETP), published bimonthly by Elsevier and sponsored by the Systems Engineering Society of China, is a peer-reviewed multi-disciplinary journal that focuses on systems science, management science, and information science. The editors welcome contributions that are based on applications of systems engineering in industry, agriculture, military, education, economy, finance, and social systems all over the world. Articles addressing innovative achievements in solving the practical problems, review of important research developments, and comments on excellent books are also welcomed.
ISSN: 1874-8651
Website: http://www.elsevier.com/wps/find/journaldescription.cws_home/714900/description#description

Journal of Systems Science and Systems Engineering

The Journal of Systems Science and Systems Engineering was founded by the Systems Engineering Society of China in 1992. Published quarterly by Springer, this international journal addresses the theory, methodology, and applications underlying systems science and systems engineering. The mission of the journal is to foster new thinking and research to help decision-makers understand the mechanisms and complexity of economic, engineering, management, social, and technological systems. Moreover, the journal helps readers discover new developments in theory and practice that can improve the performance of systems.
ISSN: 1004-3756 (print version)
ISSN: 1861-9576 (electronic version)
Website: http://www.springer.com/physics/complexity/journal/11518

Journal of Transportation Systems Engineering and Information Technology

The Journal of Transportation Systems Engineering and Information Technology, published bimonthly by Elsevier, is sponsored by the Systems Engineering Society of China. As an academic periodical in transportation and systems engineering of China, the journal focuses on high-quality, scholarly explorations and discussions among researchers, decision-makers and administrators related to transportation. Since 2004 the journal has been designated a Kernel Journal by the Ministry of Science and Technology of China. Topics of interest include:
• Decision-making and Policy Analysis in Transport Systems • Intelligent Transportation Systems and Information Technology • Applications of Systems Engineering Theory and Methodology in Transportation • Planning, Design and Construction of Integrated Transport Systems • Case Studies of Transport Modeling & Simulation Technologies.
ISSN: 1570-6672

Website:http://www.elsevier.com/wps/find/journaldescription.cws_home/712490/description#description

Journal of Systems Engineering and Electronics

This bimonthly journal, started in 1990, is sponsored by the Systems Engineering Society of China, amongst other sponsors. The journal, keeping abreast of the development trends of systems engineering and electronics worldwide, reports their latest developments and achievements and related research areas, and encourages various academic views. The journal strives to publish high-quality papers reporting original work in both theoretical and practical research results within the journal scope, involving system analysis, system modeling and simulation, military system analysis, aircraft control, C3I, radar, information systems engineering, machine intelligence, artificial neural networks, information acquisition and processing, aerospace electronics, and other topics in all related fields.
ISSN 1004-4132, CN 11-3018/N
Website: http://www.jseepub.com/EN/volumn/home.shtml

INCOSE Technical Operations

Systems Security Engineering Working Group

http://www.incose.org/practice/techactivities/wg/details.aspx?id=securitywg

Charter

Current system security strategies are inadequate and cannot be fixed by security engineers alone. The reason is evident: attack communities operates as intelligent, multi-agent, self organizing, system-of-systems – with swarm intelligence, tight learning loops, fast evolution, and dedicated intent. With few exceptions, the systems being targeted are alone, senseless and defenseless – relying on outside benevolence for protection, whether this be separate security systems, laws and penalties, or perceived probabilities of being an overlooked target.
This working group believes that system engineering cannot succeed without accepting core responsibility for enabling and facilitating effective system security – partly in system requirements, partly in system trade space recognition, but mainly in system thinking applied to concepts of operations and systems architecture. Sustaining system functionality in the face of intelligent determined attack requires self preservation capabilities that adapt and evolve with equal intelligence, determination, and strength of community. This requires full system awareness and adaptability, and system-of-system relationships. Security engineering alone cannot accomplish this.
It is fitting for INCOSE to tackle Next Generation Security, as the issues are leading edge systems engineering issues: architecture, systems of systems, self organizing systems, security tradeoffs with human factors, systems thinking – things that are typically high level integrated-system SE issues.
Participants in this working group's projects are developing vanguard critical understandings.

Leadership

- Chair: Rick Dove, Paradigm Shift International.
- Co-Chair: Jennifer Bayuk, Stevens Institute of Technology.
- Contact Systems Security Engineering WG for membership and access to the member activity site.

Accomplishments and Products

- A declaration of responsibility, outlining the nature of and reasons for integrating security enabling capabilities as core system engineering concerns, published in April 2008 INSIGHT issue.

- Twelve essays addressing The Interplay of Architecture, Security, and Systems Engineering, published as the theme for the July 2009 INSIGHT issue.
- Initial catalytic event of shared vision between SysE and SecE communities on next generation security concepts – nine-paper ITNG 2011 conference track, April 13, 2011 in Las Vegas.
- Working Group Charter completed October 2010.
- Panel sessions at IS10 and IS11.

Current Projects

- Twelve essays addressing Systems of Systems and Self Organizing Security, to be published as the theme for the Q2 2011 INSIGHT issue.
- Discovering and illuminating path-finder system-security patterns, characterized by self organization, adaptable tactics, reactive resilience, evolving strategy, proactive innovation, and harmonious presence.
- Adding appropriate security considerations to the INCOSE Handbook.

Future Projects

- Adding appropriate security considerations to the INCOSE CSEP qualifications.
- Becoming involved with the role of standards in effective system security.

Joint Activities and Products

- Architecture Working Group –collaborated on the 12 essays of The Interplay of Architecture, Security, and Systems Engineering. published in the July 2009 INSIGHT.
- Human Systems Integration Working Group – participating in the 2011Q2 INSIGHT Essay Project for Systems of Systems and Self Organizing Security.
- Antiterrorism Working Group –participating in the 2011Q2 INSIGHT Essay Project for Systems of Systems and Self Organizing Security.
- Complex Systems Working Group –participating in the 2011Q2 INSIGHT Essay Project for Systems of Systems and Self Organizing Security.

List of INCOSE Working Groups

The International Council on Systems Engineering (INCOSE) conducts its technical activities mainly by working groups. The current list of active working groups and their websites is:

Working Group	URL
Accreditation	No site available
Affordability	No site available
Anti-Terrorism International	www.incose.org/practice/techactivities/wg/ati/
Architecture	www.incose.org/practice/techactivities/wg/sysarch/
Autonomous System Test & Evaluation	www.incose.org/practice/techactivities/wg/aste/
Biomedical	www.incose.org/practice/techactivities/wg/biomed/
Complex Systems	www.incose.org/practice/techactivities/wg/complex/
Cost Engineering	No site available
Defense Systems	No site available
Education	No site available
Global Earth Observation System of Systems (GEOSS)	www.incose.org/practice/techactivities/wg/geoss/

Human Systems Integration	www.incose.org/practice/techactivities/wg/hsi/
Information Systems	www.incose.org/practice/techactivities/wg/infosys/
Infrastructure	www.incose.org/practice/techactivities/wg/infrastructure/
In-Service Systems	www.incose.org/practice/techactivities/wg/iss/
Intelligent Enterprises	www.incose.org/practice/techactivities/wg/intelent/
Lean Systems Engineering	www.incose.org/practice/techactivities/wg/leansewg/
Life Cycle Management	www.incose.org/practice/techactivities/wg/lcmwg/
Measurement	www.incose.org/practice/techactivities/wg/measure/
Model-driven System Design	www.incose.org/practice/techactivities/wg/mdsd/
Motor Sports	www.incose.org/practice/techactivities/wg/MotorSports/
Net-centric Operations	www.incose.org/practice/techactivities/wg/netcentric/
Power & Energy Systems	No site available
Process Improvement	www.incose.org/practice/techactivities/wg/piwg/
Requirements	www.incose.org/practice/techactivities/wg/rqmts/
Research	No site available
Resilient Systems	www.incose.org/practice/techactivities/wg/rswg/
Risk Management	www.incose.org/practice/techactivities/wg/risk/
Space Systems	www.incose.org/practice/techactivities/wg/sswg/
Standards	www.incose.org/practice/standards/
System Safety Integration	www.incose.org/practice/techactivities/wg/safety/
Systems Engineering in the Commercial World	www.incose.org/practice/techactivities/wg/secw/
Systems Engineering Effectiveness	www.incose.org/practice/techactivities/wg/seewg/
Systems Security Engineering	www.incose.org/practice/techactivities/wg/securitywg/
Systems Science	www.incose.org/practice/techactivities/wg/syssciwg/
Tools Database	www.incose.org/practice/techactivities/wg/tools/
Tools Integration and Interoperability	www.incose.org/practice/techactivities/wg/tii/
Transportation	www.incose.org/practice/techactivities/wg/transportation
Verification and Validation (V&V)	www.incose.org/practice/techactivities/wg/vvwg/
Very Small and Micro Entities	www.incose.org/practice/techactivities/wg/vsme/

INCOSE working group members participate by working and networking with others with an interest and expertise in the same area, and/or; having expertise to some level, sharing that expertise with others, on a voluntary basis, participating in the creation of working group products that bring value to INCOSE stakeholders.

See www.incose.org regarding membership of INCOSE.

Systems Engineering Software Tools News

Automate Document Generation from SysML Models with Rational Rhapsody ReporterPLUS

This article explains techniques to generate documents from IBM® Rational® Rhapsody SysML models, using the Rhapsody ReporterPLUS feature. Automated document generation from existing models enhances consistency between the different representations of the system used throughout system development. Using the right techniques, it is possible to produce publication-ready, human-readable documents that support engineering processes.

[More information](#)

Atego Acquires HighRely

Atego, claiming to be the leading independent supplier of industrial-grade, collaborative development tools for engineering complex, mission- and safety-critical architectures, systems, software and hardware, has acquired HighRely, a leading provider of high reliability engineering solutions, services and tools for critical embedded product and systems development.

This acquisition brings:

- DO-178B/DO-254 avionics certification and training services, under the AtegoHighRely™ brand
- HighRely's expertise in the aerospace and avionics markets adds considerable breadth and depth to our solutions and services for critical system design and development
- HighRely, headquartered in Phoenix (Arizona, USA) boasts North America's largest Avionics Certification Center and fields more DO-178B and DO-254 Designated Engineering Representatives (DER's) and avionics engineers than any other services company
- Atego will continue to support industry standards and competitor integrations for maximum customer choice
- Reinforces Atego's capabilities in the aerospace and avionics market as well as expanding our presence in the transportation, medical equipment and nuclear industries
- Combined global footprint results in significant operations in the USA, UK, Germany, France and Italy

  [More information](#)

Systems Engineering Books, Reports, Articles and Papers

Book Review - "The View From Here" by Reece Lumsden
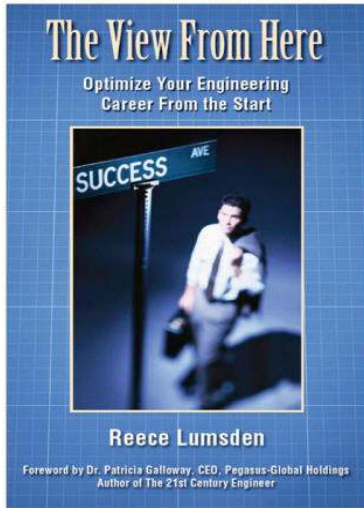
The View From Here is one of those books that you wish you had read thirty years ago (for those of us who have been in the game for 30 years!). The message in a sentence: optimize your career from the start, and keep optimizing as you go.

Young Engineer of the Year award winner Reece Lumsden, an Australian by birth working in the United States, has written a goldmine of sound career advice for engineering students and young engineers (and even older engineers) worldwide. Young enough to connect with the younger generation, but smart and experienced enough to have demonstrated the wisdom of the advice that he now shares, Reece Lumsden has filled a void with this book.

The View From Here is written in a conversational, easy-to-read style. Major subject areas are:

- what is engineering?
- engineering and university
- the working world
- so just what are employers looking for?
- job hunting
- being an engineer – so what's it like?
- communication – the engineer's lynchpin
- outsourcing and off-shoring
- so why aren't engineers
- the successful engineer's secret – attitude.

The book, meticulously researched, is crammed full of examples which well support the guidance that the author is providing. Each chapter is followed by a summary of key points, and a set of actions that the reader can take immediately to exploit the guidance in the chapter.

Systems engineering of course rates a mention, consistent with the purpose of the book.

The View From Here is a valuable book that every engineering student and young engineer should read.

ISBN 978-1-4507-5055-4 (hard cover), 978-1-4507-5077-6 (soft cover)

More information on content or to purchase

Systems Thinking: From Heresy to Practice: Public and Private Sector Studies

Keivan Zokaei (Editor), John Seddon (Editor)
Publisher: Palgrave Macmillan (January 18, 2011)
ISBN-10: 0230285554
ISBN-13: 978-0230285552

Product Description: Systems Thinking is a topic which is at the forefront of how we think about management in the Public Sector and Service Industries. This collection from leading thinkers in the field takes a case study approach to a variety of issues which encompass topics such as Banking, Electrical Distribution, Manufacturing and Adult Social Care.

More information

Journal of Enterprise Transformation

The Journal of Enterprise Transformation (JET) is a new quarterly publication designed to provide a forum for original articles on trends, new findings, and ongoing research (both theory and application) related to enterprise transformation. Published by the Taylor & Francis Group, JET is a joint publicatioon of the Institute of Industrial Engineers and the International council on Systems Engineering.   JET brings together interdisciplinary research in management, industrial and systems engineering, information systems, organizational behavior, political science, economics, etc. JET aims to provide a window to the future by publishing advanced thinking around enterprise transformation including:

- Enterprise change
- Enterprise architecting
- Theories of transformation
- Transformation methodologies
- Research methods
- Enterprise modeling and simulation
- Context-specific case studies of transformation
- Role of information technology in transformation
- Enterprise performance measurement
- Policy considerations

The inaugural issue contains:

- An Introduction to the Journal of Enterprise Transformation
- Notes from the Field: Transforming the Starbucks Experience
- Enterprise Transformation: Why are we Interested, What is it, and What are the Challenges?
- Raising Questions: How Long does it Take, How Much does it Cost, What will we Have when we are Done?
- An Emerging Theory of Enterprise Transformations
- Necessary Competencies for Transforming an Enterprise
- Book Review

ISSN:1948-8289 (print) / 1948-8297 (online)

More information

An Agile Systems Engineering Process - The Missing Link?

Matthew R. Kennedy, DAU, David A. Umphress, Ph.D., Auburn University

Abstract: Today's systems are increasingly threatened by unanticipated change arising from volatility in user requirements, Information Technology (IT) refresh rates, and responses to security vulnerabilities. With the rapidly changing world of IT, long static development cycles of a Software Intensive System (SIS), a system in which software represents the largest segment in one or more of the following criteria: system development cost, system development risk, system functionality, or development time [1] may doom the system before development begins.

More information

Requirements Engineering Method and Maturity Model for ERP Projects

S. Parthasarathy, Thiagarajar College of Engineering, India

Muthu Ramachandran, Leeds Metropolitan University, UK

Abstract: Requirements engineering is an important component of Enterprise Resource Planning (ERP) projects.

We propose: (1) An ERP maturity model (EMM) for assessing the ERP maturity within the organization and (2) A Requirements Engineering (RE) method to capture the requirements from the different types of users of an ERP system, verifying and validating them. The EMM consists of three levels and each level has a focus and a key process area. Key indicators of ERP functionality identified by a major ERP vendor have been used to apply the EMM to an enterprise. This identifies the level of the EMM to which an enterprise belongs. Then the RE is used to enable the enterprise to assess its ERP system requirements and refine it using a process database to reach a higher level in the EMM. We deem that the EMM and the RE can benefit users across all the ERP projects.

More information

Robert's Reflections on Ayman Nassar's Reflections - New Responsibilities for Higher Education

Ayman Nassar's reflections are always worth reading. Working as I do daily with the shortcomings of present engineering education, Ayman Nassar's most recent piece resonated. The piece deals with the responsibilities of educational institutions. In it, he makes a statement that "optimized learning is a new responsibility on the shoulders of higher education". He goes on to say that, quote:

Optimized learning means that institutes take on the responsibility for :

- *improving learning abilities*
- *increasing the number of students who persist and succeed in programs*
- *closing the gaps in achievement while raising the bar.*
- *developing curriculum and courses that directly reflect societal needs*
- *engaging and leading partnerships with K-12, private sector, non-profits, government and other institutes*
- *setting and developing standards that reflect how well an institution addresses societal needs and challenges*
- *creating learning-centered environments.*

The view is expressed that another responsibility on institutions of higher education is public accountability. The piece links to two good references which he quotes.

Robert Halligan

More information

Conferences and Meetings

SPICE 2011 - The 11th International SPICE Conference Process Improvement and Capability dEtermination

30 May - 1 June 2011, Dublin, Ireland
More information

Systems Engineering Day

6 June, 2011, INPE/LIT, São José dos Campos, Brazil

Seventh European Conference on Modelling Foundations and Applications

6-9th of June, 2011, University of Birmingham, Birmingham, UK
More information

TTCN 3 - 10th Testing & Test Control Notation User Conference

June 7-9, 2011, Bled, Slovenia
More information

Introduction to Capability Maturity Model® Integration for Services (CMMI-SVC) Version 1.3 ⋙ NEW

June 7-9, 2011, Washington, DC, USA
More information

4th Symposium on Resilience Engineering

June 8-10, 2011, Sophia Antipolis, France
More information

25th ACM/IEEE/SCS Workshop on Principles of Advanced and Distributed Simulation (PADS) 2011 ⋙ NEW

June 14-17, 2011, Nice, France
More information

Dutch Model Checking Day 2011 ⋙ NEW

June 17, 2011, Delft University of Technology, Delft, Netherlands

More information

ONTOSE 2011 - 5th International Workshop on Ontology, Models, Conceptualization and Epistemology in Social, Artificial and Natural Systems

June 20, 2011, University of East London - Docklands Campus, London, UK
More information

BPMDS'11 Working Conference

in conjunction with CAISE 2011
June 20-21 in London, United Kingdom
More information

FM 2011: 17th International Symposium on Formal Methods

June 20 - 24, 2011, Lero, Limerick, Ireland
More information

The 32nd International Conference on Application and Theory of Petri Nets and Concurrency (PETRI NETS 2011)

11th International Conference on Application of Concurrency to System Design (ACSD 2011)
June 20-24, 2011 Kanazawa Cultural Hall, Kanazawa, Japan

More information

Swiss Requirements Day

June 22, 2011, Kongresshaus, Zurich
More information

INES 2011 - 15th IEEE International Conference on Intelligent Engineering Systems 2011

June 23-25, 2011, Poprad, High Tatras, Slovakia
More information

SoSE 2011 - 2011 6th International Conference on System of Systems Engineering (SoSE)

June 27 - 30, 2011, Albuquerque, New Mexico, U.S.A
More information

ICMT2011 - International Conference on Model Transformation
Theory and Practice of Model Transformations

Co-located with TOOLS Europe 2011
June 27 - July 1, 2011 - Zurich, Switzerland
More information

15th International Conference on System Design Languages

July 5th - 7th, 2011, Toulouse, France
More information

15th Annual PSM Users' Group Conference   NEW
"Emerging Software and Systems Trends – What Are the Impacts for Measurement"

July 11-15, 2011, Mystic, Connecticut, USA
More information

International System Dynamics Conference

July 24 – 28, 2011, Washington, DC, USA
More information

46th Annual International Logistics Conference and Exhibition (SOLE 2011)

August 2011
More information

21st International Conference on Systems Engineering (ICSEng 2011)

Las Vegas, NV USA , August 16 - 18, 2011
More information

19th IEEE International Requirements Engineering Conference

August 29 – September 2, 2011, Trento, Italy
More information

Workshop on Requirements Engineering for Systems and Systems-of-Systems NEW

Held in conjunction with the International Requirements Engineering Conference
August 30, 2011, Trento, Italy
More information

International Conference on Industrial Engineering, Systems Engineering and Engineering Management for Sustainable Global Development

September 21-23, 2011, Spier Hotel and Conference Centre, Western Cape, South Africa
More information

Second Annual IIBA Conference

October 2011, More details TBA
More information

AGTIVE 2011 - International Symposium on Applications of Graph Transformation with Industrial Relevance

October 4-7, 2011, Budapest, Hungary
More information

SSEE 2011 - Society for Sustainability and Environmental Engineering 2011 International Conference

October 24-26, 2011, Brisbane Convention & Exhibition Centre, Brisbane, Australia
More information

INCOSE UK Annual Systems Engineering Conference (ASEC) 2011 NEW

November 9 - 10, 2011, Scarman Training and Conference Centre, Warwick Conferences, University of Warwick, UK

More information

11th Annual CMMI® Technology Conference and User Group NEW

November 14 - 17, 2011, Hyatt Regency Denver Tech Center, Denver CO, USA
More information

CSER 2012 – Conference on Systems Engineering Research NEW

March 19-22, 2012, St Louis, Missouri, USA
More information

SETE APCOSE 2012 NEW

April 30 – May 2, 2012, Brisbane Convention and Exhibition Centre, Brisbane, QLD, Australia

More information

Education & Academia

Post-Doctoral Associate Position Available

The Human Factors Program at the University of Illinois at Urbana- Champaign is seeking applications for a Post-Doctoral Associate in human factors, cognitive engineering, human-computer interaction, applied cognition and decision making, communication, cognitive and human performance modeling, human-automation interaction, and related areas.

The associate will participate in Illinois' interdisciplinary program in Human Factors (http://www.humanfactors.illinois.edu) in collaboration with faculty in the Departments of Computer Science, Educational Psychology, Industrial & Systems Engineering, Psychology, Library and Information Science, Industrial Design, and the Beckman Institute.

More information

Postdoc Fellowship: Design-driven Development for Resilient Systems - Phoenix Research Group, INRIA Bordeaux, France

The objective of this postdoctoral fellowship is to propose a development methodology for resilient systems that takes into account dependability concerns in the early stages and ensures the traceability of these requirements throughout the system life-cycle, even during runtime evolution.

More information

New Johns Hopkins Institute Will Tap Large Pool of Experts to Solve 'Grand Challenges'

A new Johns Hopkins institute will bring together the university's experts in engineering, medicine, public health, the social and physical sciences, education and other fields to solve tough national-scale problems that require a multidisciplinary approach. Some of the institute's initial targets may include patient safety enhancement, development of individualized learning plans for K-12 students and improvement of disaster preparedness plans.

The organization, called the Johns Hopkins Systems Institute, will operate as a "virtual" center with a small administrative staff but a large list of affiliated researchers from the university's academic divisions in Baltimore and its Applied Physics Laboratory in Laurel, Md. Institute members will seek funding from government agencies and corporations to solve challenging problems with diverse teams of university experts. In addition to traditional lab scientists and engineers, most of these projects will require help from Johns Hopkins experts in medicine, nursing, political science, economics, business and education.

More information

Systems Engineering Group of the Eindhoven University of Technology, Department of Mechanical Engineering

The Systems Engineering group aims to develop quantitative methods for the analysis, design and implementation of (embedded) mechanical engineering systems exhibiting concurrent behavior, with particular focus on the manufacturing high tech industry. The objectives are to generate theory, to develop techniques, to build computational tools, and to apply these in selected cases from industry.

More information

Faculty Position at Arizona State University re Human-Centered Computing

The College of Technology and Innovation of Arizona State University (ASU) at the Polytechnic campus invites applications for

a tenure/tenure-track faculty position at the Assistant or Associate level starting August 2011 or January 2012. Areas of expertise desired include Human-Computer Interaction, User-Centered Design, Mobile and Web Interfaces, Requirements Engineering, and Software Design & Innovation.

More information

Some Systems Engineering-Relevant Websites

http://ttool.telecom-paristech.fr/index.html
 TTool - An open-source UML and SysML toolkit

http://thinksysml.org/
This site is hosted by the Systems Engineering Program of Cornell University. It is dedicated to providing open source code and public domain materials promoting the use and development of SysML, the Systems Modeling Language.

http://www.acquisitionresearch.net/_beta/page/view/home/
This is the website of the U.S. Naval Postgraduate School Acquisition Research Program.

Established in 2003, Naval Postgraduate School's (NPS) Acquisition Research Program aims to provide leadership in innovation, creative problem solving and an on-going dialogue, contributing to the evolution of U.S. Department of Defense acquisition strategies.

The NPS Acquisition Research Program goals are to:

1. Position ARP as a recognized leader in defense acquisition research.

2. Establish NPS acquisition research as an integral part of policy-making for Departments of Defense officials.

3. Create a stream of relevant information concerning the performance of DOD acquisition policies with viable recommendations for continuous process improvement.

4. Prepare the DoD workforce to participate in the continued evolution of the defense acquisition process.

5. Collaborate with other universities, think tanks, industry and Government in acquisition research.

The website contains an archive of hundreds of downloadable study reports and symposium presentations on a diverse range of aspects of acquisition and military capability development. The NPS Acquisition Research Program publications have substantial systems engineering content or relevance.

Standards and Guides

ISO TC 184 - Automation Systems and Integration

The ISO TC 184 website lists all the relevant information on this Technical Committee, including the following list of working groups:

Subcommittee/Working Group	Title
TC 184/AG	Advisory group
The convener can be reached through the secretariat	

TC 184/SC 1	Physical device control
TC 184/SC 2	Robots and robotic devices
TC 184/SC 4	Industrial data
TC 184/SC 5	Interoperability, integration, and architectures for enterprise systems and automation applications

The ISO TC 184 Business Plan describes:

· The business environment of the ISO/TC

· The benefits expected from the work of the ISO/TC.

· Representation and participation in the ISO/TC

· Objectives of the ISO/TC and strategies for their achievement

· Factors affecting completion and implementation of the ISO/TC work programme

· Structure, current projects and publications of the ISO/TC

The work programme for each of the working groups of ISO/TC 184 is set out on the ISO website in terms of the standard or project, the Standards Development Process Stage code and the International Classification for Standards (ICS) reference.

The meeting calendar is also provided on the website.

Some Definitions to Close On

Engineering

Engineering: The application of a systematic, disciplined, quantifiable approach to structures, machines, products, systems, or processes.
Source: ISO/IEC 24765:2008 Systems and software engineering vocabulary, 2008

Engineering: The application of science and mathematics by which the properties of matter and the sources of energy in nature are made useful to people.
Source: www.merriam-webster.com/dictionary/

Engineering: The application of scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, machines, processes, and systems.
Source: www.thefreedictionary.com by Farlex

Engineering: The discipline dealing with the art or science of applying scientific knowledge to practical problems
Source: www.hyperdictionary.com

Engineering: The profession of applying scientific principles to the design, construction, and maintenance of engines, cars, machines, etc. (mechanical engineering), buildings, bridges, roads, etc. (civil engineering), electrical machines and communication systems (electrical engineering), chemical plant and machinery (chemical engineering), or aircraft (aeronautical engineering)
Source: www.thefreedictionary.com by Farlex

Engineering: The profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize economically the materials and forces of nature for the benefit of mankind.

Source: Accreditation Board for Engineering and Technology (ABET), USA.

Project Performance International News

PPI Hits the United Nations

PPI this month delivered training in requirements specification writing to the International Atomic Energy Agency (IAEA), a part of the United Nations family based in Vienna, Austria. The training was delivered to engineers, scientists, user and procurement personnel at the Vienna International Centre, the Headquarters of the IAEA, and the United Nation's base in Vienna.

More about the IAEA: www.iaea.org. Note: this website has day to day technical status information on the Japanese Fukushima nuclear power station situation. An overview is at www.iaea.org/About/japan-infosheet.html

Project Performance International Events

Systems Engineering 5-Day Course

Upcoming locations include:

- Las Vegas, USA
- Adelaide, Australia
- Brisbane, Australia
- Rio de Janeiro, Brazil
- Melbourne, Australia
- Munich, Germany

View 2010/2011 Systems Engineering Course Schedule

Requirements Analysis and Specification Writing 5-Day Course

Upcoming locations include:

- Adelaide, Australia
- Sydney, Australia
- Stellenbosch, South Africa
- Las Vegas, USA
- Amsterdam, The Netherlands

View 2011 RA&SW Course Schedule

OCD & CONOPS in Capability Development 5-Day Course

Upcoming locations include:

- Canberra, Australia
- Brasilia, Brazil

View 2011 OCD/CONOPS Course Schedule

Software Development Principles & Processes 5-Day Course

Upcoming locations include:

- Amsterdam, The Netherlands
- Stellenbosch, South Africa
- Sydney, Australia

View 2011 Software Development Principles & Processes Course Schedule

Cognitive Systems Engineering 5-Day Course

Upcoming locations include:

- Adelaide, Australia
- Stellenbosch, South Africa
- Las Vegas, USA
- Sydney, Australia

View 2011 Cognitive Systems Engineering Course Schedule

Requirements Engineering 5-Day Course

Upcoming locations include:

- São José dos Campos, Brazil

View 2011 Requirements Engineering Course Schedule

Introduction to Software Development Principles & Processes 2-Day Seminar

View 2011 Introduction to Software Development Principles & Processes Seminar Schedule

Introduction to Requirements Analysis 1-Day Seminar

Upcoming locations include:

- Melbourne, Australia
- Adelaide, Australia
- Sydney, Australia

View 2011 Introduction to Requirements Analysis Seminar Schedule

Preparing Great Requirements Specifications 1-Day Seminar

Upcoming locations include:

- Melbourne, Australia
- Adelaide, Australia
- Sydney, Australia

View 2011 Preparing Great Requirements Specifications Seminar Schedule

PPI Upcoming Participation in Professional Conferences

- Systems Engineering Day - São José dos Campos, Brazil (Sponsoring)
- INCOSE IS11 - Denver, Colorado, USA (Exhibiting)
- Defence & Industry - Adelaide, Australia (Exhibiting)
- MICSSA - Pretoria, South Africa (Sponsor/Exhibiting)

Kind regards from the SyEN team:

Robert Halligan, Managing Editor, email: rhalligan@ppi-int.com
Alwyn Smit, Editor, email: asmit@ppi-int.com
Elise Matthews, Production, email: ematthews@ppi-int.com

Project Performance International
PO Box 2385, Ringwood, Vic 3134 Australia
Tel: +61 3 9876 7345
Fax: +61 3 9876 2664
Web: www.ppi-int.com
Email: contact@ppi-int.com

Tell us what you think of SyEN: email to contact@ppi-int.com

If you do not wish to receive a copy monthly of SyEN in future, please reply to this e-mail with "Remove" in the subject line. All removals are acknowledged; you may wish to contact us if acknowledgement is not received within 7 days.