



# Systems Engineering Newsletter

Brought to you by Project Performance International (PPI)

SyEN #003 - December 17, 2008

Dear Colleague,

SyEN: Informative reading for the project professional, containing scores of news and other items summarizing developments in the profession and related industry, month by month. This newsletter and a newsletter archive are also available at [www.ppi-int.com](http://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 that meet requirements and maximize value delivered in accordance with the values of the stakeholders.

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

The newsletter presents in-depth coverage of the month's news in systems engineering and directly related fields, plus limited information on PPI's activities and events. Please forward this e-mail to friends and colleagues who you think would be interested.

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

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## A Quotation to Open On

"Iteration is like cholesterol. There is the good type, and the bad type. Bad iteration is iteration which costs more than the cost of avoidance of the iteration" Robert Halligan

## Feature Article

### The ISO Way

By Alwyn Smit

One of the first documents I was exposed to after joining the ISO standards development community via our national standards body, was a document called: "My ISO Job". It provides a unique insight into ISO and into the standards development process. The following sections quoted from this document aims to provide some insight into the standards development process.

### ISO membership

In ISO, there are three different types of membership:

**Member bodies** - A member body of ISO is the national body most representative of standardization in its country. Only one such body for each country is accepted for membership of ISO. Member bodies are entitled to participate and exercise full voting rights on any technical committee and policy committee of ISO. They can use ISO standards as the basis for their national standards.

**Correspondent members** - A correspondent member is usually an organization in a country which does not yet have a fully developed

national standards activity. Correspondent members do not take an active part in the technical and policy development work, but are entitled to be kept fully informed about the work of interest to them and can use ISO standards as the basis for their national standards.

**Subscriber members** - A subscriber member pays reduced membership fees that nevertheless allow it to maintain contact with international standardization. This membership category has been established for countries with very small economies.

### The committee structure

The development of standards is carried out by technical groups which receive inputs from a wide range of associated committees at the national level, and from liaison organizations with regional or international links.

Technical committees are established by the Technical Management Board to serve specific industries or generic subjects, in order to develop International Standards or other ISO publications appropriate to the needs of that sector.

All ISO member bodies and correspondent members are eligible for membership of any of the ISO committees. There are several types of membership.

**P-members** (participating members) are ISO member bodies which wish to play an active role in the work of a technical committee or subcommittee.

**O-members** (observers) include those who wish to follow the development of a standard, and possibly to make contributions to the work, without committing themselves to active participation.

**Twinning** has been introduced to help developing countries to participate more fully in ISO technical work.

**Liaison membership** provides a way for international and broadly-based regional organizations to participate in (category A liaison), or to be informed about (category B liaison), the development of standards, and thus to ensure wider acceptance of the final result and to ensure coordination of parallel standardization activities in different bodies.

### Stages leading to a new standard

The project structure adopted in ISO for active projects is a six stage system, although for certain projects it may be possible to omit one or more stages.

### Voting in ISO

Decisions are taken within ISO on the basis of votes cast by ISO member bodies, on the basis of one country, one vote. Those eligible to vote, and the approval criteria, vary depending on the nature of the vote and the rules are given in more detail in Part 1 of the ISO/IEC Directives. At the enquiry stage, a draft International Standard (DIS) is made available to all ISO member bodies and all of them are entitled to vote and comment on the document during a five month period. P-members of the committee responsible for the document are under an obligation to vote. If the DIS receives 100 % approval, it may proceed directly to publication once any comments received have been addressed. Otherwise, a final draft International Standard (FDIS) is sent to all ISO member bodies for voting for a period of two months, together with the report of voting on the DIS which includes all the comments received and how these have been addressed.

### ISO Deliverables

While ISO is best known worldwide for International Standards (such as ISO 9000 on quality management), these represent only one form of ISO product. There are five types of products developed by ISO:

**An International Standard (IS)** provides rules, guidelines or characteristics for activities or for their results, aimed at the achievement of the optimum degree of order in a given context. International Standards can take many forms. Apart from product standards, there are test methods, codes of practice and, increasingly, management standards. The focus is on performance-based rather than prescriptive standards. They are designed for common and repeated use, and do not have a pre-defined lifetime. They are, however, subject to review regarding their continuing utility, on a maximum five year cycle.

**A Technical Specification (TS)** addresses work still under technical development, or where there is seen to be a future but not immediate possibility of agreement on an International Standard. A Technical Specification is published for immediate use, but it also provides a means to obtain feedback. The aim is that they will eventually be transformed and republished as International Standards. A Technical Specification normally has a lifetime of six years before it is either transformed into an International Standard or withdrawn, but is subject to review regarding its continuing utility.

**A Technical Report (TR)** contains information of a different kind from that of the previous two publications. It may include data obtained from a survey, for example, or from an informative report, or information on the perceived "state of the art". A Technical Report does not have a pre-defined lifetime.

**A Publicly Available Specification (PAS)** is published to respond to an urgent market need, representing either the consensus of the experts within a working group, or a consensus in an organization external to ISO. As with Technical Specifications, they are published for immediate use and also as a means to obtain feedback for an eventual transformation into an International Standard. They also have a lifetime of six years before being transformed or withdrawn. It is possible to have a number of Publicly Available Specifications covering the same subject. These could be conflicting documents in some senses, since they are produced before consensus has been reached, but they should not conflict with an existing International Standard.

**An International Workshop Agreement (IWA)** is a document developed outside the normal ISO committee system, to enable market players to negotiate in an "open workshop" environment established under the auspices of ISO. Such a workshop will typically have administrative support from a designated ISO member body. The published agreement will include an indication of the participating organizations involved in its development. Once again, such an agreement can have a lifetime of six years before it is either transformed into another form of ISO product or withdrawn.

## Featured Society: Association for Configuration and Data Management (ACDM)

The Association for Configuration and Data Management (ACDM) is a member-based, independent, non-profit, professional society established in 1991. The national headquarters are in Salt Lake City, Utah, USA. The ACDM has a mission to be the premier professional organization that shares and refines the disciplines that accomplish Configuration, Data, and Change Management necessary for the delivery and support of products and services in a competitive and regulated global business environment. The organization could be described as USA-centric, whilst accepting international membership.

The ACDM is governed by an Executive Board, with members of the Board elected by voting members. Three committees report to the Executive Board:

- The Education Committee, responsible for working with academia to establish CM-specific courses for credit, and influence training companies to establish professional certifications for qualified ACDM members who attend their courses.
- The Member Services Committee, responsible for providing membership benefits.
- The Nomination/Election Committee, responsible for conducting periodic financial audits.

The ACDM provides to members resources which include Configuration Management Plans guides and templates, reading lists, resource guides, acronyms list, glossaries, lists of relevant web links, Configuration Management Best Practices publications, project management references, and process improvement links. Benefits claimed of membership include:

- Participation in an organization devoted to the advancement of Configuration and Data Management disciplines.
  - Access to the finest minds in the profession, locally, nationally, or internationally, through a multitude of networking opportunities.
  - An opportunity to participate in the development and review of CM and DM standards and industry surveys focused on Configuration and Data Management issues.
  - An opportunity to participate in the annual ACDM conference and meeting.
  - Receipt of ACDM Journal with pertinent information regarding the latest Configuration and Data Management methodologies employed anywhere in the world.
  - Access to the "Members Only" e-Group providing an online network to all members.
  - Preferred reservations and reduces rates to the ACDM Annual Technical Conference.
  - Opportunity to join or form a local interest group in your area to access networking resources close to home.
  - Through ACDM's association with like-minded CM and DM organizations, discounts to conferences, education and training programs.
- Web: <http://www.acdm.org>

## Systems Engineering Software Tools News

### Galorath Annual User Conference

Thursday 19th March 2009, Old Trafford, Manchester, UK

### Artisan Launches Artisan Studio Uno

<http://www.embedded-computing.com/news/db/?14513>

Artisan® Software Tools, a supplier of collaborative modeling tools for complex, mission and safety-critical embedded systems and software, has launched Artisan Studio Uno™, a free-of-charge but claimed to be fully functional, single-user version of its Artisan Studio SysML/UML collaborative development environment.

### Ravenflow Introduces RAVEN 5.0

<http://www.ibtimes.com/prnews/20081203/ravenflow-introduces-raven-5-0.htm>

Ravenflow, the leader in Rapid Requirements Definition™, announced the newest version of its flagship requirements definition software. RAVEN 5.0 now supports IBM's new requirements definition platform, IBM Rational Requirements Composer, based on their Jazz technology for collaborative software delivery. Additionally, RAVEN 5.0 also provides integration with IBM Telelogic DOORS®, and also has a number of new capabilities focused on the user experience.

### 3SL Releases Cradel© December 2008 Newsletter

UK-based systems engineering tool vendor 3SL has released its Cradel© December 2008 Newsletter, containing lots of news regarding the product, and an interesting article on hierarchies. This newsletter and earlier editions can be downloaded at <http://www.threesl.com/pages/news/index.php>

Cradle© is an integrated environment for requirements management and systems engineering. Cradle claims a massively scalable architecture and is said to be fully configurable to support project's processes and needs. Cradle's requirements management and modeling paradigms are said to be suitable for the smallest to the largest problems, adaptable to any engineering process, and are said to be particularly applicable in large, multi-organization, multi-site programs.

### Vitech Corporation Continues Its Commitment to Educating Systems Engineers in University Settings

<http://www.prweb.com/releases/2008/12/prweb1710274.htm>

CORE - an integrated software tool which applies model-based systems engineering methodologies - enables users to work across an enterprise as they design, develop and build complex systems, accessing integrated views, running simulations and creating required documentation. With CORE having its roots in a graduate project of David A. Long, now president of the company, the Vitech University Program provides an opportunity for students and professors to apply their evolving engineering skills with CORE by taking a real-life situation, and applying model-based systems engineering methodology to solve the challenge. With CORE's automated document generation, live simulation and ability to produce DoDAF views, the students have a tangible product which demonstrates their progress and supports further learning through ongoing discussion.

Vitech advises that CORE was part of the curriculum at fifty universities world-wide, with over 2800 students downloading the software for use in projects and course work. As preparation for using CORE, professors are provided, by Vitech, with model-based systems engineering (MBSE) and product training via a series of webinars, and also invited to participate in ongoing webinars offered to Vitech customers.

Engineering departments are invited by Vitech at the beginning of each semester to partake in this program. There is no cost to the university, the professors, or to the students, just (as Vitech says) the opportunity to enhance developing engineering skills through real-life application.

Vitech Corporation is a privately-held company focused on bringing model-based systems engineering methodology to address complex, mission-critical development and business problems. Vitech offers services, training and its systems engineering software suite, CORE.

Vitech contact is Tricia Hartigan at +1 540.951.3322, or news (at) vitechcorp.com.

Web: [www.vitechcorp.com](http://www.vitechcorp.com)

## Systems Engineering Books, Reports, Articles and Papers

## SEI/NDIA Releases Report: A Survey of Systems Engineering Effectiveness - Initial Results (with detailed survey response data)

This survey quantifies the relationship between the application of Systems Engineering (SE) best practices to projects and programs, and the performance of those projects and programs. The survey population consisted of projects and programs executed by defense contractors who are members of the Systems Engineering Division (SED) of the National Defense Industrial Association (NDIA). The deployment of SE practices on a project or program was measured through the availability and characteristics of specific SE-related work products. Project Performance was measured through typically available project measures of cost performance, schedule performance, and scope performance. Additional project and program information such as project size, project domain, and other data was also collected to aid in characterizing the respondent's project. Analysis of the survey responses revealed moderately strong statistical relationships between Project Performance and several categorizations of specific SE best practices. Notably stronger relationships are apparent by combining the effects of more than one the best practices categories. Of course, Systems Engineering Capability alone does not ensure outstanding Project Performance. The survey results show notable differences in the relationship between SE best practices and performance between more challenging as compared to less challenging projects. The statistical relationship between Project Performance and the combination of SE Capability and Project Challenge is quite strong for survey data of this type.

The report is downloadable at [http://www.sei.cmu.edu/publications/documents/08\\_reports/08sr034.html](http://www.sei.cmu.edu/publications/documents/08_reports/08sr034.html)

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## IEEE TSE - Specials Issue on Exception Handling

<http://callforpapers.radiognome.com/2008/11/17/pn-cfp-ieee-tse-special-issue-on-exception-handling/>

CALL FOR PAPERS: IEEE Transactions on Software Engineering (TSE) Special Issue:

"Exception Handling: From Requirements to Software Maintenance"

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## The 5 Signs You Know You Need Web-based Requirements Management

<http://www.jamasoftware.com/blog/2008/11/17/the-5-signs-you-know-you-need-web-based-requirements-management/>

If you're like 80% of companies, you're still using documents, spreadsheets and email to manage product requirements. It's easy enough. You fire up Microsoft Word, you start writing your Software Requirements Specification (SRS) or the Product Requirements Document (PRD). When you're done, you email it to the team, maybe post the content up on a Wiki or in a document management system. No problem, right?...

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## Ten Applications Definition Best Practices: Step 8

[http://fowlersoftware.blogspot.com/2008\\_11\\_16\\_archive.html](http://fowlersoftware.blogspot.com/2008_11_16_archive.html)

Challenge: Requirements review iterations are too time-consuming...

Solution: Eliminate review iterations using modify-on-the-fly tools...

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## Process Mapping for Knowledge Transfer

<http://www.qualitydigest.com/magazine/2008/nov/article/process-mapping-knowledge-transfer.html>

The challenge to increase productivity with fewer resources has led to dozens of methodologies and toolkits to help organizations meet their objectives and become more profitable and effective. One principle consistent with all those methodologies, and that makes enormous practical sense, is to leverage what you already know. This means harnessing the single greatest resource in any organization--the knowledge of its own people...

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## Production Systems Engineering

By Jingshan Li, Semyon M. Meerkov

Publisher: Springer, Publication Date: 21 November 2008,

ISBN-10 / ASIN: 0387755780, ISBN-13 / EAN: 9780387755786

Synopsis: Production systems engineering is an emerging branch of engineering intended to uncover fundamental principles of production systems and utilize them for analysis, continuous improvement, and design. This volume is stated to be the first ever textbook devoted exclusively to production systems engineering. It is intended for senior undergraduate and first year graduate students interested in manufacturing. The development is first principle-based rather than recipe-based. Using a system-theoretic approach, this textbook provides aims to provide analytical solutions for the following problems: mathematical modeling of production systems, performance analysis, constrained improvability, bottleneck identification and elimination, lean buffer design, product quality, customer demand satisfaction, transient behavior, and system-theoretic properties. Numerous case studies are presented. In addition, the so-called PSE Toolbox, which implements the algorithms developed, is described. The volume includes numerous case studies and problems for self-study assignment.

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## The Benefits of Agile Development

By Lana Kovacevic, Builder AU

<http://www.builderau.com.au/strategy/developmentprocess/soa/The-benefits-of-agile-development/0.339028278.339293420.00.htm>

I recently spoke to Scott Ambler, Practice Leader Agile Development, Rational Software from IBM about the benefits of the agile development method. Ambler broke myths about agile development by explaining how it's better than some of the more traditional methods out there, discussed the different methodologies available and gave advice on how to smoothly transition into agile...

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## Beyond Software with Scrum?

By Craig Rudman

<http://blogs.atsva.com/main/2008/11/19/beyond-software-with-scrum/>

Everyone who takes part in a Scrum project eventually has the thought, "Hey, Scrum could be used for just about any kind of project – it's not specific to software projects!" After all, there's nothing in Scrum that refers specifically to software engineering. And Scrum has a very simple and elegant structure that's easy to manage: ...

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### Applications of Cognitive Work Analysis

by Ann M. Bisantz, Catherine Burns

Date of publication: 24/09/2008, Publisher: CRC Press Inc

ISBN: 9780805861518

Synopsis: Despite continued interest in Cognitive Work Analysis (CWA) techniques for the analysis and design of complex, human-technology systems, few published accounts exist that document all of the five recommended phases of CWA in real world applications. Delineating a work-centered conceptual framework that guides the design of technology, "Applications of Cognitive Work Analysis" provides the understanding necessary to apply these robust techniques to real world, large scale system design problems in a variety of domains. The book provides a complete CWA analysis for a complex, simulated air traffic control environment and a three phase analysis of an actual healthcare system. It includes detailed applications of work domain, control tasks, and strategies analysis for systems including military command and control, transportation, and emergency management. The contributors present discussions and examples of techniques drawn from research and design traditions other than CWA that can be used to complement and enrich CWA analyses in areas of social and organization analysis, and knowledge and skills analysis. They emphasize important theoretical and application oriented advances in CWA related to the integration of CWA within a larger system design. The concluding chapter examines the progress of CWA as a cognitive engineering tool, then outlines its theoretical underpinnings and a path for the future of this approach. The book demonstrates how these methods can be applied in complex, real world design contexts, subject to constraints of cost, time, and information. It shows the how, when, and where CWA techniques can be integrated into the systems engineering design process and provides concrete evidence for the value that the CWA approach provides in every domain.

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### Usability in Practice - The Human Face of Software

Dr. Charles B. Kreitzberg and Ambrose Little

<http://msdn.microsoft.com/en-us/magazine/dd263095.aspx>

Welcome to Usability in Practice. This is the first in a series of columns that will focus on the design of the user experience (UX). In the past, user experience was not a high priority for most development projects, but that's changed. Today, end users have a lot of experience with the Web and with software. They want design that's easy to learn and use and that fits their workflow. This column will show you how to deliver such designs...

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### Pulling the Strings

By Matthew Hause

<http://www.newelectronics.co.uk/article/16043/Pulling-the-strings.aspx>

Mission and safety critical applications require a holistic approach to their design and development and OMG SysML provides the ideal environment. An extension of UML2, it provides a standard modeling language for engineers to analyse, specify, design and verify complex systems...

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### BPM is not Software Engineering

<http://kswenson.wordpress.com/2008/11/25/bpm-is-not-software-engineering/>

A lot of the confusion and difficulty in the BPM community is because some people think that BPM is a kind of Software Engineering. Indeed, superficially it looks like Software Engineering: you start with requirements, you determine the pieces of information that need to be stored and retrieved from variables, you might have a drawing of the relationships, and in the end you have something that can be installed and executed on networked computers. But there is a difference, and that difference is the entire reason that BPM exists...

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### How to Write a Software Requirements Specification

by Robert Japenga

There are many good definitions of System and Software Requirements Specifications that will provide us a good basis upon which we can both define a great specification and help us identify deficiencies in our past efforts. There is also a lot of great stuff on the web about writing good specifications. The problem is not lack of knowledge about how to create a correctly formatted specification or even what should go into the specification. The problem is that we don't follow the definitions out there...

<http://microtoolsinc.com/Howsrs.php>

Editor's note: Although the title of the above paper refers to Software Requirements Specifications, the paper is relevant regardless of solution technologies, hence its inclusion in SyEN.

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### Customer Team Member - a way to winning together

<http://java2jee.blogspot.com/2008/11/customer-team-member-way-to-winning.html>

One of the core XP practices is having a Customer Team Member. It means that development teams have access to the newest information from the customer's side and they know about all changes in the requirements very quickly. Having on-site customer (or customer proxy for commercial products with lots of potential customers) ensures that requests change informally, the process becomes flexible, and saves the cost of formal overhead...

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### Paulo Merson on Documenting Application Architectures Using UML 2.0

<http://www.infoq.com/news/2008/11/paulo-merson-architecture>

Documenting application architecture is an important part of the software development process. Paulo Merson recently talked about the role of documenting architecture in managing the Reference Architecture (RA). He did a presentation at SD Best Practices Conference on what information about an architecture should be captured and how UML 2.0, BPMN and other modeling notations and guidelines can be used for architecture representation...

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### Operations Engineering for More Efficient Operating Rooms

<http://www.physorg.com/news147455024.html>

Work by specialists from the USC Viterbi School of Engineering has led to significant improvements in turnover times for operating rooms at three California safety net hospitals, allowing "many more hours of daytime surgery per year." Because of the success of the program, the work will be expanded to include three more hospitals.

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### CMMI, Agile, and Managing Projects

[http://herdingcats.typepad.com/my\\_weblog/2008/11/cmmi-agile-and-managing-projects.html](http://herdingcats.typepad.com/my_weblog/2008/11/cmmi-agile-and-managing-projects.html)

The topic of CMMI and Agile has come up again with a Technical Note from SEI on how CMMI and Agile might be somehow connected. This is one of those "must read" papers. But not necessarily for the reasons the authors might expect.

The abstract opens with:

Agile development methods and CMMI (Capability Maturity Model® Integration) best practices are often perceived to be at odds with each other. This report clarifies why the discord need not exist and proposes that CMMI and Agile champions work toward deriving benefit from using both and exploit synergy's that have the potential to dramatically improve business performance...

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### Software Security Engineering: A Guide for Project Managers

by Julia H. Allen (Author), Sean Barnum (Author), Robert J. Ellison (Author), Gary McGraw (Author), Nancy R. Mead (Author), Addison-Wesley Professional publisher, ISBN: 032150917X, 1st edition, Pub Date: May 11, 2008

Synopsis: Providing readers with a set of sound practices they can selectively adopt to increase the security and dependability of software, both during its development and its operation, this guide draws extensively on the systematic approach developed for the Build Security In (BSI) Web site.

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### 10 Tips for Better Software Requirements

<http://bytethings.blogspot.com/2008/11/10-tips-for-better-software.html>

Often underestimated, good requirements are a key factor to the success of software projects. Specifying good requirements is a science of it's own, and requires experience and a methodical approach. In this article I want to give you 10 concise and easy to implement tips that you can apply to specify better software requirements...

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### Advances in Computer and Information Sciences and Engineering

By Tarek Sobh, Publisher: Springer, ISBN: 9781402087400, Publication date: October 2008

Product Description: Advances in Computer and Information Sciences and Engineering includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computer Science, Software Engineering, Computer Engineering, and Systems Engineering and Sciences. Advances in Computer and Information Sciences and Engineering includes selected papers from the conference proceedings of the International Conference on Systems, Computing Sciences and Software Engineering (SCSS 2007) which was part of the International Joint Conferences on Computer, Information and Systems Sciences and Engineering (CISSE 2007).

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### A Lean, Scalable Requirements Information Model for the Agile Enterprise

For those of you who have been following the Big Picture series, you may have noted that one element of the picture is the "requirements information model" that flows down the right side. This element of the model describes agile terms for expressing system behaviors at various levels of abstraction...

<http://scalingsoftwareaquility.wordpress.com/2008/12/04/a-lean-scalable-requirements-information-model/>

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### Requirements engineering and quality

This article covers requirement quality or "what does a good requirement look like? how we can measure the quality of a requirement?" It also explains the context of requirements and warns against over use...

<http://businessanalystmentor.com/2008/12/10/requirements-engineering-and-quality/>

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## Conferences and Meetings

### INCOSE UK 2009 Events Calendar

[www.incoseonline.org.uk/?CatID=Events](http://www.incoseonline.org.uk/?CatID=Events)

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### QUT and IEEE Joint Chapter in Control Systems, and Robotics and Automation Seminar: Cognitive approaches to human decision making and human-machine cooperation in complex autonomous systems.

Thursday, 18th December, 2008, Refreshments at 5.30pm, Talk at 6.00pm, OJW Room, Level 12, S-Block, QUT Gardens Point Campus, Presented by: Professor Gilles Coppin, Telecom-Bretagne, France

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### **INCOSE International Workshop (IW) 2009**

January 31 – February 3, 2009, San Francisco, CA  
[www.incose.org/newsevents/events/details.aspx?id=44](http://www.incose.org/newsevents/events/details.aspx?id=44)

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### **INCOSE Los Angeles Chapter (INCOSE-LA) 2009 Mini-Conference**

February 7, 2009, Loyola Marymount University (LMU), Los Angeles CA  
<http://www.incose-la.org>

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### **MBSE'09, Second International Conference on Model-Based Systems Engineering**

Herzeliya and Haifa, Israel, March 2-5, 2009  
<http://eventseer.net/e/8077/35491/>

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### **Third Workshop on Engineering Complex Distributed Systems (ECDS 2009)**

March 16-19, 2009, Fukuoka, Japan  
<http://voyager.ce.fit.ac.jp/conferences/ecds2009/>

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### **International Conference on Complex, Intelligent and Software Intensive Systems (CISIS) 2009**

March, 16th - 19th 2009, Fukuoka Institute of Technology (FIT), Fukuoka, Japan  
<http://www.cisis-conference.eu/conf/>

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### **Fifth Workshop on Model-Based Testing (MBT) 2009**

March 22, 2009, York, UK  
<http://react.cs.uni-sb.de/mbt2009/>

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### **The 2nd International Conference on Industrial Informatics and Systems Engineering (IISE 2009)**

Leipzig, Germany, 23-25 March 2009  
<http://siwn.org.uk/2009leipzig/IISE09.htm>

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### **INCOSE U.K. Annual Spring Conference**

March 30 – April 1, 2009  
<http://www.incose.org.uk/events.htm>

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### **The International Council on Systems Engineering Spring 09 Conference**

April 2 – 4, 2009  
Hosted by INCOSE Region V Chapters at the Virginia Modeling, Analysis and Simulation Center (VMASC), Suffolk Facility, VMASC West, 1030 University Blvd., Suffolk, VA 23435

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### **American Society for Engineering Education (ASEE) Spring 2009 Northeast Conference**

University of Bridgeport, April 3-4, 2009  
<http://www.asee2009online.org>

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### **The First NASA Formal Methods Symposium**

April 6 - 8, 2009 Moffett Field, California  
<http://ti.arc.nasa.gov/event/nfm09/>

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### **IDEAS 2009- XII Iberoamerican Conference on Requirements Engineering and Software Environments**

Medellin, Colombia, 13-17 April 2009  
<http://ideas09.eafit.edu.co/>

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### **Conference on Systems Engineering Research (CSER) 2009**

Loughborough, UK, 20 - 22 April, 2009  
<http://cser.lboro.ac.uk>

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### **Systems & Software Technology Conference (SSTC) 2009**

"Technology: Advancing Precision", 20-23 April 2009, Salt Lake City, Utah  
<http://stsc.hill.af.mil/conference/index.html>

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### **Software & Systems Engineering Essentials 2009**

### **ICMISE 2009: International Conference on Medical Information Systems Engineering**

Tokyo, Japan, May 27-29, 2009  
<http://www.waset.org/wcset09/tokyo/icmise/>

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### **EJC 2009 - 19th European Japanese Conference on Information Modelling and Knowledge Bases**

Maribor, Slovenia, June 1-5, 2009  
<http://www.pori.tut.fi/ejc/>

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### **RefsQ`09 The 15th International Working Conference on Requirements Engineering: Foundation for Software Quality**

Amsterdam, Holland, June 8-9, 2009  
<http://www.refsq.org/>

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### **Exploring Modeling Methods in Systems Analysis and Design (EMMSAD) `09**

8-9 June 2009, Amsterdam, The Netherlands  
held in conjunction with CAiSE' 09  
<http://www.emmsad.org/>

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### **INCOSE 19th Annual International Symposium (IS) 2009**

July 20-23, 2009, Singapore  
<http://www.incose.org/symp2009>

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### **2009 International Conference of the System Dynamics Society**

Albuquerque, New Mexico, July 26 - 30, 2009  
<http://www.systemdynamics.org/conferences/current/index.htm>

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### **PICMET '09 Conference: "Technology Management in the Age of Fundamental Change"**

August 2 - 6, 2009, Hilton Portland and Executive Tower, Portland, Oregon, USA  
<http://www.picmet.org/main>

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### **17th IEEE International Requirements Engineering Conference (RE`09)**

31 August - 4 September 2009, Atlanta, Georgia, USA  
<http://www.re09.org>

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### **ICISE 2009 - International Conference on Industrial and Systems Engineering**

23 September 2009, Toronto, Canada  
<http://www.conferencealerts.com/seeconf.mv?q=ca1xx0h6>

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### **ACM/IEEE 12th International Conference on Model Driven Engineering Languages and Systems (formerly the UML series of conferences)**

Denver, Colorado, USA, October 4-9, 2009  
<http://www.modelconference.org/>

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### **Formal Methods for Industrial Critical Systems (FMICS) 2009**

November 2-3, 2009, Eindhoven, The Netherlands  
<http://www.dsic.upv.es/workshops/fmics2009>

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## **Education**

### **Prepare for Systems Engineering Certification with an Online Tutorial**

Interested in receiving your [INCOSE](#) Systems Engineering (SE) certification? Northrop Grumman Corporation (NGC) is hosting an online tutorial to help you prepare for the INCOSE Systems Engineering (SE) certification exam. The tutorial is taught by John Clark, Chief Engineer at the NGC Mission Systems Sector and Director of Education & Training for the INCOSE Hampton Roads Area Chapter. The tutorial consists of 15 weekly Thursday sessions from noon to 1:30 p.m., Eastern Time USA, beginning Thursday November 6 and running through March 2009. Click [here](#) for more information.

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### **Viterbi School to Partner in New Systems Engineering Research Center**

The Viterbi School will join with Stevens Institute of Technology in the nation's first University Affiliated Research Center (UARC) in a venerable USC specialty, systems engineering, on a five year contract with the National Security Agency in coordination with the Department of Defense.

At a ceremony on Steven's Hoboken N.J. campus keynoted by INCOSE Fellow and TRW Professor of Software Engineering Professor Barry Boehm of the Viterbi School, the Systems Engineering Research Center (SERC) was formally launched.

<http://viterbi.usc.edu/news/news/2008/viterbi-school-to.htm>

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### **BUID welcomes first intake of students for Masters in Systems Engineering**

Leading UAE research-based postgraduate university, The British University in Dubai, launched a pioneering programme today aimed at boosting the level of key skills in the region, through the creation of the Middle East's first MSc degree in Systems Engineering.

<http://www.ameinfo.com/176179.html>

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### **UM-Dearborn Launching First Doctoral Programs, In Engineering**

UM Regents approve Ph.D. programs in automotive systems engineering and information systems engineering to begin in September 2009 at Dearborn campus The College of Engineering and Computer Science at the University of Michigan-Dearborn will launch Ph.D. programs in information systems engineering and automotive systems engineering beginning in fall 2009, following the approval of the proposals by the UM Regents at their meeting in Ann Arbor Nov. 20...

<http://www.wwj.com/UM-Dearborn-Launching-First-Doctoral-Programs--In-/3357467>

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### **Postdoc Position - Model-Driven Development**

CEA LIST Research Institute (<http://www-list.cea.fr/>), Paris area

Breakthroughs in model-based transformation; application to generative approaches for embedded systems development.

<http://serl.cs.colorado.edu/~serl/seworld/database/8398.html>

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### **Department of Systems and Industrial Engineering, College of Engineering**

#### **The University of Arizona, USA**

<http://grad.arizona.edu/live/programs/description/159>

The University offers the programs below in Systems Engineering. Academic staff include Professor A. Terry Bahill, Professor (Emeritus) A. Wayne Wymore, and Adjunct Associate Professor Gary Bakken. Programs include:

- B.S. in Systems Engineering
- M.S. in Systems Engineering
- Doctor's degree in Systems Engineering

The Doctor's program is stated to prepare individuals to apply mathematical and scientific principles to the design, development and operational evaluation of total systems solutions to a wide variety of engineering problems, including the integration of human, physical, energy, communications, management, and information requirements as needed, and the application of requisite analytical methods to specific situations.

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### **Temasek Engineering School, Temasek Polytechnic, Singapore**

#### **Diploma in Business Process & Systems Engineering**

Temasek Polytechnic is a significant contributor to the field of para-professional education in Singapore. The aim of the course is said to be to equip graduates with systems thinking, integration and facilitation skills, which are so essential in today's market environment. It is said that graduates will possess the unique ability to integrate both business and engineering principles to serve on cross-functional teams that drive organizations from improvement and productivity towards organizational excellence.

[http://www-eng.tp.edu.sg/eng\\_home/eng\\_courses/eng\\_ft\\_courses/eng\\_bze\\_home.htm](http://www-eng.tp.edu.sg/eng_home/eng_courses/eng_ft_courses/eng_bze_home.htm)

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### **The Australian Government Invests in Systems Engineering for the Defence of Australia**

#### **Professional Doctorates Program**

The Australian Government will invest up to A\$5.9 million to establish a Professional Doctorate Program in Systems Engineering. This initiative seeks to increase the Australian defence industry's capacity and capability in the area of systems engineering. The program aims to ensure that PhD candidates receive the most up to date coursework and research in systems engineering and ensure they have a clear appreciation of its application to defence industry and to the military.

The Defence Systems Innovation Centre (DSIC) will coordinate the development of the course and administer the scholarship program. The professional doctorate degree will be initially offered by the University of South Australia (UniSA), which will work with defence industry to develop an appropriate program.

The first round of scholarships will be offered nationally in early 2010 with an annual intake of five PhD candidates.

#### **Masters of Systems Support Engineering**

The Australian Government will invest up to A\$6 million to establish a Masters Program in Systems Support Engineering, that aims to equip senior engineering and project managers with the knowledge and understanding to develop and deliver integrated support solutions. Adelaide based company BAE Systems will co-ordinate the development of the course with RMIT, and with substantial input from the University of South Australia, SAAB and ASC. The result will be a multi-disciplinary Masters Degree education program covering systems engineering, supply chain management, maintenance, logistics operations, logistics engineering, information coherence, engineering enduring systems and

architecting of support solutions and business process modelling. Design and development of the program will commence in the first half of 2009.

### **Masters of Systems Integration**

The Australian Government will also invest up to A\$2.5 million with the University of South Australia to convert the existing Masters of Military Systems Integration to flexible delivery mode. The Masters program was developed by a partnership of UniSA and three defence industry companies – BAE Systems, Saab Systems and ASC Ltd. The additional funding provided under this initiative is intended to increase participation in the Masters program, especially by industry, defence civilians and ADF members. Design and development of the program will take place in the first half of 2009, with testing and delivery scheduled for the second half of next year. UniSA is anticipating up to 50 enrolments in the program per semester by 2011.

[www.defpro.com/news/details/4103/](http://www.defpro.com/news/details/4103/)

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### **Colorado State University Launching a Systems Engineering Program**

Colorado State University (USA) is launching a new systems-engineering program, hiring former astronaut and U.S. Undersecretary of the Air Force Ronald Sega, to head it. A grant from the Woodward Charitable Trust establishes an endowed professorship in the College of Engineering. The systems-engineering program that will develop at CSU under Sega's leadership will fill a critical need for specialized education that will benefit the community beyond the campus, Woodward President and CEO Tom Gendron said. "The most complex engineering problems require critical thinking at a systems level". Sega has since acquired the additional appointment of Vice President for Energy, the Environment and Applied Research at the Colorado State University Research Foundation. CSU specializes in the field of energy management.

<http://vpr.colostate.edu/pages/news.asp>

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### **First UM-D Ph.D Program to Start in Fall 2009**

Although the University of Michigan - Dearborn has offered numerous Master's degree programs over the years, never before has there been a Doctorate of Philosophy (Ph.D.) program. Beginning in Fall 2009, UM-D will offer two new Ph.D. programs, in information systems engineering and automotive systems engineering...

<http://media.www.themichiganjournal.com/media/storage/paper255/news/2008/12/09/News/First.UmD.Ph.d.Program.To.Start.In.Fall.2009-3576002.shtml>

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## **People**

### **ASU Professor Brad Allenby Named One of the Top U.S. Teachers**

Arizona State University (U.S.A.) engineering professor Brad Allenby has been selected as one of the winners of a 2008 "U.S. Professors of the Year" awards. Professor Allenby has been at the forefront of supporting one of ASU's core missions by developing curriculum and teaching courses to advance the study of sustainability. He is co-director of the Center for Sustainable Engineering, and is developing courses connected to a new Center of Earth Systems Engineering and Management. An ASU representative said "He elegantly and passionately articulates his philosophy that society must understand the environmental and societal implications of developing technologies. He has a unique way of bridging engineers, scientists, policy makers, students and the broader public."

<http://www.fulton.asu.edu/fulton/news/page.php?sid=543>

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### **Joseph Mitola joins Stevens as VP of Research Enterprise**

After a long and illustrious career in government and industry, Joseph Mitola has joined Stevens Institute of Technology (Hoboken, New Jersey, USA) on October 1 as Vice President of Research Enterprise. Dr. Mitola also holds joint appointments in the School of Engineering and Science and the School of Systems and Enterprise. Amongst other duties, Dr. Mitola is tasked with enhancing the impact on Stevens of the recently announced DOD Systems Engineering Research Center...

<http://media.www.thestute.com/media/storage/paper1092/news/2008/11/21/CampusNews/Mitola.Joins.Stevens.As.Vp.Of.Research.Enterprise-3555572.shtml>

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### **University Professor Scoops Top Technology Award**

Professor Kevin Warwick, from the University's of Reading's School of Systems Engineering, is to be awarded the esteemed 2008 Mountbatten Medal by the Institution of Engineering and Technology (IET). The Mountbatten Medal is awarded annually by the IET for an outstanding contribution, or contributions to the promotion of electronics or information technology and their applications. Professor Warwick said: "I am absolutely delighted to be the recipient of the 2008 Mountbatten Medal."

[http://media-newswire.com/release\\_1079897.html](http://media-newswire.com/release_1079897.html)

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### **IEEE Creativity and Innovation Prize Paper Award**

Dr. Jing Zhang, Associate Professor in the Systems Engineering Department of the University of Arkansas at Little Rock, has been awarded, along with his co-authors P. Srirama and M. Mazumder, the IEEE Creativity and Innovation Prize Paper Award for the paper: "E-SPART Analyzer for Mars Mission: A New Approach in Signal Processing and Sampling", IEEE Transactions on Industry Applications, vol. 43, no. 4, July/Aug 2007, pp. 1084 - 1090.

<http://technologize.ualr.edu/systemsengineering/?p=217>

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## **Related News**

### **Embedded Market Forecasters Publish In-Depth Analysis of Model-Driven Development as a Best Practices for Safety-Critical Application Development**

Embedded Market Forecasters Hail Benefits of Formal Methods and Tools such as Model-Driven Development and Esterel Technologies SCADE Suite(TM) for Critical Application Development in Mil/Aero, Industrial, Transportation and Medical Applications...

<http://www.marketwatch.com/news/story/Embedded-Market-Forecasters-Publish-In/story.aspx?guid={EC1EC3F1-FEFD-490B-B968-2B3EBEBAAF5F}>

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### Iowa State Researchers to Develop National Energy/Transportation Model and Plan

... You're starting with working equipment full of expensive parts. So you don't want to throw everything away and start over. You want to put together just the right combination of existing parts and new pieces to make the most cost-effective, sustainable and resilient machine possible. In this case, the machine is the country's energy and transportation infrastructure...

<http://www.physorg.com/news146406135.html>

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### BAE Systems Business Honored with Top Engineering Rating

BAE Systems Ground Systems, a leading producer of ground vehicles to the U.S. military, has received Level 5 certification against the Software Engineering Institute Capability Maturity Model Integration (CMMI). This is the highest level rating that an engineering organization can achieve. The designation was awarded after an independent two-week investigation led by the Systems and Software Productivity Consortium which involved in-depth interviews and document reviews.

<http://www.marketwatch.com/news/story/BAE-Systems-Business-Honored-Top/story.aspx?guid=%7B78B389BA-B959-40D2-AD04-073A916A5A14%7D>

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### OMG to Acquire Green Computing Impact Organization (GCIO)

NEEDHAM, Mass., Dec 11, 2008 -- The Object Management Group(TM) (OMG(TM)) today announced it will acquire the Green Computing Impact Organization, Inc. (GCIO). GCIO is a collaborative membership organization with a mission to promote and increase sustainability across all facets of the business. The membership works together on standardized definitions and measurements of sustainability, shares stories of lessons learned and successes, compares ROI and TCO metrics, develops educational and promotional material to drive sustainability throughout the enterprise business world. GCIO will work cooperatively with the OMG-managed SOA Consortium and BPM Consortium. OMG™ is an international, open membership, not-for-profit computer industry consortium. OMG Task Forces develop enterprise integration standards for a wide range of technologies, and an even wider range of industries. OMG's modeling standards such as UML and OMG SysML enable visual design, execution and maintenance of software, system and business processes.

Source: The Object Management Group, <http://www.omg.org>

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### EADS Receives Milestone Process Certification for its Military Aircraft, Systems and Software

ARLINGTON, VA, Dec 09, 2008 (MARKET WIRE via COMTEX) -- EADS' Military Transport Aircraft Division (MTAD) has been certified to Capability Maturity Model Integration Level 3 (CMMI 3) specifications, further validating the company's commitment to and success in applying rigorous process improvement standards in its aircraft, systems and software for U.S. military and homeland defense requirements...

<http://www.marketwatch.com/news/story/EADS-Receives-Milestone-Process-Certification/story.aspx?guid={2C413C12-A900-4B51-94BA-A316A6DAE00E}>

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### New INCOSE Chapters

At a recent INCOSE Board of Directors meeting, two new Region III chapters were approved; one in Istanbul (see <http://www.incoseistanbul.org/>) and one in Italy. Full contact details for these chapters can be found at <http://www.incose.org/chapters/findachapter.cfm>.

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### Lockheed Martin Receives Award for Naval Aviation Systems Engineering

Lockheed Martin [NYSE: LMT] and the U.S. Navy have received a Top 5 Department of Defense Program Award for their collaborative effort to integrate the Link 16 tactical data link system into the Navy's new MH-60R and MH-60S multimission helicopters...

<http://www.digital-battlespace.com/2008/12/lockheed-martin-receives-award-for-naval-aviation-systems-engineering/>

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## Some Systems Engineering-Relevant Websites

<http://www.telelogic.se>

An enterprise-wide requirements management system that captures, links, traces, analyses and manages information in order to ensure a project's compliance with specified requirements and standards.

<http://modeling.telelogic.com>

<http://www.aonix.com>

Aonix is an international software company with more than half a million users worldwide, which provides end-to-end products and services aimed at managing complex application development and information management systems.

<http://ui4all.ics.forth.gr>

The ERCIM Working Group analyses the requirements, identifies the viability, and demonstrates the feasibility of constructing 'user interfaces for all'. The purpose of an ERCIM working group is to build and maintain a network of ERCIM researchers in a particular scientific field.

<http://www.resg.org.uk>

This is the Requirements Engineering Specialist Group site. Requirements engineering is the elicitation, definition, modeling, analysis, specification and validation of what is needed from a computer system. It is a process, which draws on techniques from software engineering, knowledge acquisition, cognitive science and the social sciences to improve software-engineering practice

<http://wrobinson.cis.gsu.edu/IFIP2.9/>

The IFIP Working Group site offers information about Software Requirements to; help develop a better understanding of the elicitation,

specification, analysis and management of the requirements for large and complex software intensive systems. It also helps the interpretation and documentation of those requirements in such a way as to permit the developer to construct a system, which will satisfy them.

<http://www.xprogramming.com>

Extreme Programming is a discipline of software development based on values of simplicity, communication, feedback, and courage. It works by bringing the whole team together in the presence of simple practices, with enough feedback to enable the team to see where they are and to tune the practices to their unique situation.

[http://www.xprogramming.com/xpmag/incremental\\_req1.htm](http://www.xprogramming.com/xpmag/incremental_req1.htm)

This is a link to the Extreme Programming magazine and describes how 'most modern methodologies talk about incremental and iterative processes, but surprisingly few projects operate this way.'

<http://agileadvocate.blogspot.com/>

<http://clearconceptualthinking.blogspot.com/>

Clear Conceptual Thinking - No fluff, just stuff: Rolf Goetz' engineering blog on requirements, projects and systems

<http://planetproject.wikidot.com/>

This site provides useful checklists of all kinds – principles, processes, rules – for work on requirements, projects, systems.

## Standards and Guides

### OMG SysML V 1.1 Now Available

OMG SysML v. 1.1 minor revision is now available. You can download it from the Specifications page of the SysML Forum (<http://www.SysMLforum.com/specs.htm>) or from the Object Management Group (OMG) website.

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### UPDM negotiates first phase of the OMG's fast track standardization process

The Unified Profile for DoDAF/MODAF (UPDM) 1.0 draft specification has achieved a positive vote at the OMG to successfully clear the first hurdle in the Object Management Group (OMG)'s fast track standardization process.

## A Definition to Close On

**Architecture:** the conceptual structure and overall logical organization of a system from the point of view of its use or design. (Oxford English Dictionary)

## PPI News

### Robert Halligan Thrown Out of Kazakhstan

PPI CEO and systems engineering guru Robert Halligan has been known to visit unusual places, slotted in between courses in his hectic program of worldwide delivery of training in systems engineering. Between contiguous courses in Turkey, Robert flew five and a half hours on a Friday night from Istanbul to Almaty, arriving around 4am. He was promptly told that his visa application papers were incomplete, sat in a corner for three hours, and then put on a five and a half hour flight back to Istanbul. Oops ..

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### PPI Delivering OCD/CONOPS Training to the Brazilian Army

PPI is this week delivering its 5-day OCD/CONOPS in Military Capability Development to the Brazilian Army: Centro Tecnológico do Exército – CTEX, in Rio de Janeiro.

A shortened version of the course will be delivered at the Massachusetts Institute of Technology, in Cambridge, MA, USA, the following week.

## Project Performance International Events

### Systems Engineering 5-Day Courses

Upcoming locations include:

- Amsterdam, Netherlands
- La Spezia, Italy
- Sydney, Australia
- Adelaide, Australia
- Las Vegas, USA
- London, UK

[View 2008-2009 Systems Engineering Course Schedule](#)

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### Requirements Analysis and Specification Writing 5-Day Courses

Upcoming locations include:

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

[View 2008-2009 RA&SW Course Schedule](#)

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## Requirements Engineering 5-Day Courses

Upcoming locations include:

- Yokohama, Japan

[View 2008-2009 Requirements Engineering Course Schedule](#)

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## OCD/CONOPS 5-Day Courses

Upcoming locations include:

- Melbourne, Australia
- Adelaide, Australia

[View 2008-2009 OCD/CONOPS Course Schedule](#)

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## Software Engineering 5-Day Courses

Upcoming locations include:

- Amsterdam, Netherlands
- Melbourne, Australia
- Adelaide, Australia

[View 2008-2009 Software Engineering Course Schedule](#)

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## PPI Upcoming Participation in Professional Conferences

- 30 June - 2 July, 2009 - **Defence + Industry 2009** - Adelaide, Australia (Exhibiting)
  - 20 - 23 July, 2009 - **INCOSE International Symposium 2009** - Singapore (Exhibiting)
- 

Kind regards from the SyEN team:

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