advancing systems engineering

preVIEW

International Council On Systems Engineering UK Chapter Newsletter

Spring conference 2005 – Swindon Marriot, May 9th ,10 & 11th

Oh boy! Time flies!! I hear you ask yourself! Spring already? Well not quite, however, we at INCOSE like to prepare early, as all good systems engineers should!. So without further ado, I would like to remind members of our next major event, the Spring Conference to be held at the Swindon Marriot (same venue as last years' Autumn Assembly) on May 9th, 10th & 11th. This years theme is 'interoperability'. The call for papers and tutorials has already gone out and is also posted on the website, ww.incose.co.org. I have already had some initial interest and some of you no doubt are still scratching your heads trying to figure out what 'interoperability' means! Well here's your chance to find out from those who do. In a nutshell, How do you ensure the system you introduce fits into its environment, especially when the timeline between changing environments is decreasing. This is a dilemma experienced by all industry sectors and a major challenge for systems engineers. If you are one of those tackling this problem, then why not share your thoughts and ideas. Who knows, you might find innovative solutions from the feedback you receive. The conference also provides the perfect networking opportunity. We have had representatives from the South African, Dutch, German, French and US chapters, plus, engineers from all over the world. So it is truly an international event. Just to prove that we are not 'all work and no play', there is a formal dinner (on the 10th) followed by a lively after dinner speaker. These have been very successful and enjoyable evenings in the past.

Dipesh Patel
SEPDC Chair

In brief

INCOSE election results announced

I am pleased to announce the results of the recent elections and to congratulate the newly elected officers and Member Board representatives. We wish all those elected a very gratifying term in office and are grateful that you have volunteered to dedicate time to the cause of advancing our organization. The results are:

Board of Directors
Secretary: Bill Miller
Director for International Growth: Christopher Dean
Director for Strategic Presence: Bill Ewald
Member Board
Region I: No position up for election
Region II: John Hsu
Region III: Doug Cowper
Region IV: Mike Eagan
Region V: Dick Kitterman
Region VI: Joe Kasser
    The membership also approved the bylaws change to make the Technical Board Chair a voting member of the Board of Directors.
    Let me express my deep gratitude to those members who ran for office but did not succeed this time around. We appreciate the effort you have invested in standing for election and truly look forward to your continued service to INCOSE.
    I also wish to thank John Snoderly for chairing the Nominations, Elections, and Leadership Development Committee; and to Evelyn Richardson and David Wright for their service on the Committee. I know it takes time to work with all the candidates and to ensure that we have good choices amongst the best in our midst.
    Finally, thank you to all those INCOSE members who took the time to evaluate the choices and vote in the election – we appreciate your interest and participation!

Heinz Stoewer
President

Prof Phil John steps down as UK chapter president

Unfortunately Prof Phil John has had to relinquish the presidency for family reasons. I have agreed to take over, and am very pleased (not to say relieved) that Phil has agreed to remain on the Board in a suitable capacity compatible with the time he is able to spend. I'm sure you'll join me in giving Phil our thanks for all the work he has done for INCOSE UK, and our heart-felt best wishes for him and his family.

Hillary Sillitto
President of the UK Chapter

In profile - Douglas Cowper, Academic Liaison - INCOSE UK

Douglas Cowper is currently Business Development Manager for University College London's Centre for Systems Engineering, where he is also completing a part-time Ph.D in Technology Management and Planning. Before joining UCL, Doug worked mainly in the Aerospace and Defence industries, starting out his career as an electronic apprentice at the Royal Aircraft Establishment in Farnborough. His previous role was Engineering Manager for Land Systems at Ultra Electronics in Cheltenham. Doug is a Chartered Engineer, a member of the IEE, a member of the IEE Professional Network for Systems Engineering Executive Team, Academic Liaison Board member for INCOSE UK and Region III representative on the INCOSE Member Board. He obtained his B.Eng (Hons) in Electronic and Electrical Engineering (1993) and his M.B.A. (1997) from the University of Surrey. From the 1st March 2005 Doug will be a Senior Systems Engineering Consultant for Sula Systems Ltd.

" You were instrumental in re-launching the UK Chapter Newsletter as "preview" 18 months ago. The new style has been very well received, but do you have any plans for further improvements in the future?"

There are still teething problems with the new format due to compatibility issues between the printer's and my software – what you see is not always what you get. These issues still need sorting out in the short term. With regards to future improvements, I would like to improve the variety of news and information in the newsletter and to do this I need the INCOSE UK membership's help. Members of INCOSE UK must be working on exciting projects and working in interesting systems engineering areas and should therefore have some insightful news, views etc. that they would like to share with the community. If you fall into this category please put 'pen to paper' or 'finger to keyboard' and forward them to me.

I think that in the not too distant future we might want to re-brand the newsletter to give it 'a fresh coat of paint' and to avoid the name clash with the newsletter of the MoD. I only discovered this just before Christmas.

"It is time to compile material for the next issue of preview; what contribution would you most like to find in your inbox?"

I would like to see more contributions in my inbox! I spend a large amount of my newsletter time chasing up enough material to make a reasonable production. It would be great to have a selection of articles, news, comments and book reviews to keep the readers interested. One aspiration I have, which already appears to be starting – see page 6, is to have a series of debates running via the your comments page. I would also encourage more questions which can be put to the experts in the community for help. In addition if you have some advice that would be useful to other Systems Engineers please send it in as a 'Top Tip'.

"As well as your INCOSE roles, you are a member of the Executive Team for the IEE Professional Network for SE. What is the relationship between the IEE PN and INCOSE, and how should the two organisations work together for the greater benefit of Systems Engineering in the UK?"

A good question. Since the signing of the MoU establishing how this relationship between the two organisations will work at a practical level is still being sorted out. Currently both organisations advertise each other's events; however there is an aspiration to run combined events. Another area of co-operation to be explored will be the assessment of 'Chartered Systems Engineers' which will be based upon output of the Systems Engineering Core Competencies working group and the US Certification of Systems Engineers. Whatever the working level approach is I hope that both organisations can pool resources to further Systems Engineering within the UK.

"Congratulations on your selection as the Region III representative on the INCOSE Member Board. Why should the average INCOSE member be interested in what the Member Board does, and what do you hope to achieve during your time in this role?"

The Member Board's role is to ensure that INCOSE satisfies the needs of all its members and chapters by improving INCOSE as an organisation, supporting and maintaining vibrant chapters and ensuring INCOSE provides valued products and services. The Member Board representatives are the membership's voice to INCOSE central and visa versa - so please use me as a conduit for your views, comments etc.

I hope to improve the two way communication between the chapters in Region III and INCOSE central. I would also like to see more cross chapter co-operation /communication/dissemination of best practice within Region III. Finally, I would like to see more outreach to other industrial sectors not traditionally linked to INCOSE. I think that the UK has a good track record of reaching out to other sectors and I would like to use this as a platform for the rest of Region III.

"How do you find time for day job with all your INCOSE and IEE commitments?"

This at times can be a challenge. The trick is to try to align activities together so that they overlap and if this fails use the 3 hour train commute to and from work to get things done!

In profile next time, Allen Fairbairn, Secretary, INCOSE UK

INCOSE UK strategy

Having taken up the reins unexpectedly early, I am now getting to grips with how INCOSE UK runs and our strategy for the next couple of years. We are continuing the strategy review Phil started and will be publicising the conclusions and new actions in the next month or two.

The member survey is on line - please respond to this if you have not already done so. Simon plans to have an annual on-line survey and also put up a "question of the moment" each month. You should also see other subtle changes to the website over the next few months.

I want INCOSE UK to do more to provide direct benefit to members. To free up effort for this we are changing the way the board works slightly. The strategy process will establish clear direction for various initiatives so that board members can operate more independently, and adjust their responsibilities to make sure their INCOSE tasks are compatible with the time they can free up from their day jobs and other commitments. When they need help they will be encouraged to co-opt assistance from the broader membership rather than relying as heavily as we do now on the core of "activitists". So if you get contacted, please respond positively. And if you would like to help INCOSE UK deliver value to its members, please contact me or any of the board, or turn up at your local group.

Hillary Sillitto
President of the UK Chapter

President's corner

As we go to press we hear news of two fantastic systems engineering achievements which involved massive contributions from Europe and the UK: the successful Titan landing, and the A-380 launch. Well done everyone who participated!

I write this in an airport lounge. The journey here led to some reflections on the nature, scope and business benefits of systems engineering.

I drove here in a Japanese four-wheel-drive car, which I bought for its brand image of dependability (reliability and go anywhere any time) and slightly off-beat image (not a Toyota!) The company's effective product line policy maintains a high degree of cross-platform commonality across four basic models. This means that no product is a clean-sheet or high risk development. Each facelift of each model upgrades a subsystem that is then re-used as a non-developmental item on other models. A successful rally campaign promotes the brand and proves out new technology. Their supply chain is stable from model to model and year to year, though there may be periodic competition, and multiple suppliers for some subsystems. This is good systems engineering, delivering benefits to manufacturer and consumer. I wonder if the company would recognise the term?

As I drove into Edinburgh Airport's new multi-storey car park, an automatic system attempted to tell me how many places were available on each level. It was clearly error-prone. After an unsuccessful search on Level 4, where I found none of the 40 advertised places except for the ten or so disabled slots, I noticed that the displayed 40 had decreased to 39. Evidently it had counted me in, but had not counted me back out. I correctly assumed there would be ample spaces on the top storey, though I lost confidence in the system. (Was it selected on the basis of competitive fixed-price tenders?) This is bad systems engineering, or more likely, an absence of systems engineering. It probably does not matter a great deal, but it might. Would systems engineering have improved the system (or heaven forbid, was it systems engineered, but badly?)

The tsunami disaster is a massive tragedy, whose impact could have been mitigated by a warning system and decent contingency planning. The stories and doom-and-gloom forecasts in the week after the disaster bring home the value of a few key enablers of civilised society – contract law, property law, clean water, the right to an identity, and the constitutional and physical infrastructure that assures these. In the West we take these for granted. In Asia they are mostly there, and by the look of it, society is recovering faster than we might have expected. But it is clear that in the days after the disaster people were so far outside their comfort zone that they did not know what to do, and sometimes the apparently sensible things they did do were unconstructive or even counterproductive. For example, the bodies that were buried may have to be exhumed for identification; and according to some guy from the WHO, they were not actually the disease threat they were made out to be. Our brand of systems thinking might have helped focus what effort was available on the most useful immediate action - if we had been able to work out how to deploy it quickly enough to be useful. Any ideas?

Hillary Sillitto
President of the UK Chapter

Events calendar

2005

March

| 23rd - 25th March 2005 | Conference on Systems Engineering Research, Stevens Institute, USA |

May

| 9th - 11th May 2005 | INCOSE UK Spring Conference Come and enjoy a 3 day mix of tutorials, networking, refereed papers, panels, working groups, conference dinner, and more. Marriot Hotel, Swindon |

July

| 10th - 15th July 2005 | INCOSE 2005, 15th International Symposium, Rochester, USA |
| 17th - 21st July 2005 | Twenty-third International Conference of the System Dynamics Society, The Seaport Hotel, Boston http://www.systemdynamics.org |

Nov

| TBA Nov 2005 | INCOSE UK Autumn Assembly, Venue TBA |

If you have an event you would like published in Preview then please contact:

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Smart acquisition, smart requirements

The Smart Acquisition approach adopted by the Ministry of Defence (MOD) aims to "acquire defence capability faster, cheaper, better and more effectively integrated[i]". This article first appeared in the BCS RESG Newsletter, and introduces some aspects of Smart Acquisition to readers who will be familiar with the concepts, but may find the context and application of Systems Engineering by MOD of interest.

Background

The 1997 Strategic Defence Review (SDR) considered the capabilities of the Armed Forces in the context of the less-predictable realities of a post-cold war environment. An integral aspect was the Acquisition Organisation Review (AOR), a fundamental examination of how the MOD procured equipment within an annual budget of £9.43 billion (1997). The AOR concluded that MOD was not cost-effective in equipment acquisition, and recommended several changes to procurement policies, to the processes for procurement and support, and to the organisation structure. SDR described this approach as "Smart Procurement – faster, cheaper and better", although the term is now "Smart Acquisition" and integration has been added to emphasise the importance of a system-of-systems approach.

Acquisition Organisations

Smart Acquisition is built on organisational relationships, with the emphasis on clearly identified customers and the formation of Integrated Project Teams (IPT) to deliver and maintain the customer needs.

April 1999 was an implementation milestone with the transformation of the Procurement Executive to Agency status as the Defence Procurement Agency (DPA), and the formation of the Defence Logistics Organisation (DLO) from three service-oriented organisations. October 1999 was another significant milestone with the formation of a centralised Equipment Capability Customer (ECC) organisation, providing a focus for capability requirements that meet the needs of the Armed Forces. By April 2000, 141 Integrated Project Teams (IPT) were operational, delivering capabilities identified by the ECC.

The ECC is responsible identifying the capability required to meet UK defence objectives, for translating these ideas into an approved programme and for ensuring cost-effective capability delivery. The ECC defines, refines and maintains a valid and affordable user requirement throughout the life of the project, and as the

acceptance authority is responsible for accepting the system into service.

The IPT is formed as the user requirements are developing, and is responsible for creating, refining and maintaining a valid system requirement. Each IPT has a clearly defined team leader, empowered to make cost, performance and time scale trade-offs within clearly defined boundaries. The Requirements Manager (RM) within each team is a serving member of the Armed Forces, providing a link between the IPT and the ECC as well as in-house military advice. The RM ensures the IPT provides sufficient system definition to enable whole life costing, analysis of candidate options and to inform iterative debate as the user requirements evolve. The IPT is accountable to the DPA until the In-Service Date (ISD) when it transfers to the DLO.

The Second Customer role is fulfilled by the front-line commands and is responsible for realising military capability through all lines of development. Customer 2 also provides coherent operational input to the user and system requirements, and becomes the lead customer when the system and all lines of development are in place at ISD.

Military Capability

It is worth noting that equipment is one element of effective military capability, as illustrated in Figure 1.

These elements or Lines of Development (LOD) ensure all aspects are considered in addition to equipment. This is important for military equipment when personnel, in-theatre support and tactical procedures can be as important as equipment design and performance. This holistic approach to delivering capability also encourages integration with other systems, in particular logistics systems that may be procured as separate projects.

System Life Cycle

Smart Acquisition takes a whole life approach, ensuring the system procured to meet a defined capability is the most effective option based on the total cost of ownership. This encourages the IPT and industry to explore options that may be more expensive to procure, but that offer considerable savings during operation. This is particularly relevant when the in-service life of military equipment often exceeds 30 years!

Each project develops a realistic, costed Through Life Management Plan (TLMP) to plan and control the project across all LOD within the context of a system life cycle. The Smart Acquisition life
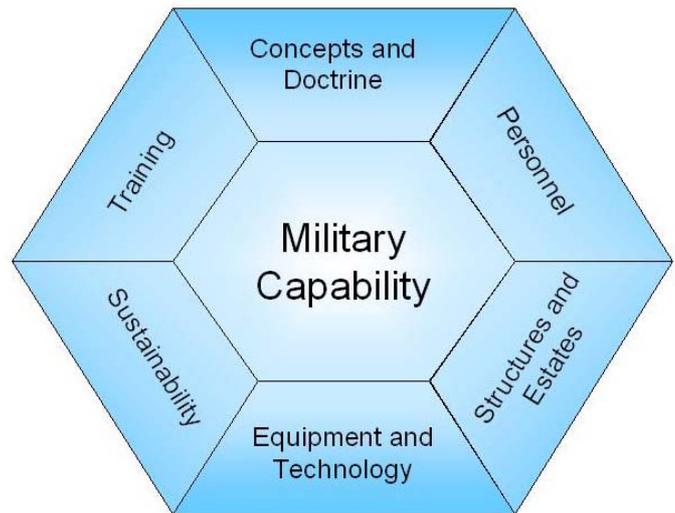

Training · Concepts and Doctrine · Personnel · Military Capability · Sustainability · Structures and Estates · Equipment and Technology

Figure 1 - Elements of Military Capability

cycle comprises six stages (CADMID) and two approvals gates. The concept phase defines the required capability and explores concept options. The Initial Gate business case presents the case for closing the capability gap, requesting formal approval to conduct the assessment phase. The system requirements are progressively refined in conjunction with the system design during the assessment phase. The Main Gate business case confirms that there is a cost effective system that will deliver the required capability, and that risks have been progressively reduced to acceptable levels. Approval at main gate is to procure the system, with demonstration and manufacture stages continuing to reduce the development risks and implement, integrate and accept the system. Once the system achieves In-Service Date (ISD), the capability is available for operational use with effective support, trained operators and tactical procedures in place. The final disposal stage is included to ensure all through life costs are included. An important issue when the equipment portfolio includes the cost of nuclear ownership and munitions.

Smart Requirements Model

Prior to SDR, operational requirements were expressed in equipment terms, based on the perceived solution. Detail was added as the project progressed, but development was constrained in terms of time, affordability and technology by the solution defined by the requirement. There was a tendency to express requirements in terms of equipment that was understood and in service, with little incentive to understand the real need in terms of capability. As a result, considerable expenditure was required improving in-service systems to meet operational needs that had not been

recognised early in the life cycle.

These shortcomings were recognised in the AOR Report[ii], with a recommendation that "a revised front-end process should be introduced which delivers robust requirements". The result was the Smart Requirements Model, a "method for capturing, engineering and managing requirements based on the principles of systems engineering[iii]".

The Smart Requirement Model is based on a generic process defining and baselining the User Requirement Document (URD) and the System Requirement Document (SRD). Both are continually evolving, coherent and structured sets of unique requirement statements, ensuring a top-down analysis based on needs rather than solutions.

Smart Requirement Process

The Smart Requirements Model includes the generic requirement process[iv] illustrated in Figure 2.

The process recognises that requirement definition is invariably iterative, based on the following main activities:

- Analyse the need to establish the scope of the requirements and the external and operational development factors that must be considered;

- Capture requirements;

- Specify requirements in terms that are unique, concise, unambiguous and measurable;

- Review to provide quality assurance, and obtain stakeholders agreement;

- Communicate the requirements to promote a common understanding and to support reviews and approvals;

- Manage the requirements to maintain change and configuration controls, traceability and to assess the impact of change and risk.
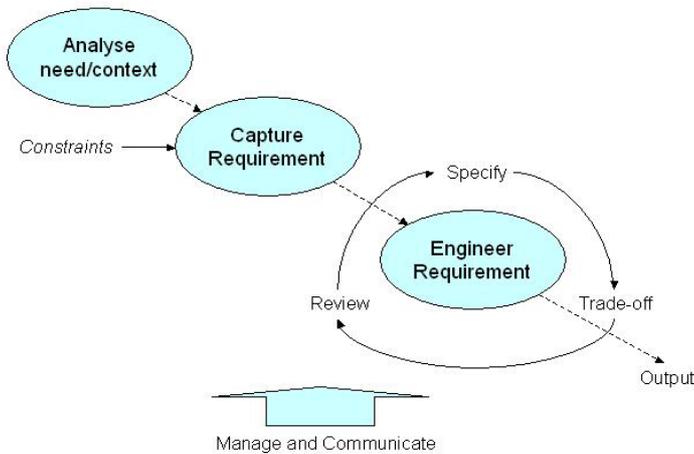

Figure 2 – Smart Requirement Process

Process Outputs

User requirements define the needs for a bounded operational capability as outputs or results required by users, independent of the type of system that may provide the answer. The URD is developed from a bounded, single statement of need and updated as necessary throughout the life of the system to reflect evolving user needs, affordability and changing assumptions. The URD is baselined to support project reviews, approvals and system validation, following the five-part format outlined by the URD Policy Paper[v]:

Part 1 – General description
Part 2 – Key User Requirements
Part 3 – User Requirements
Part 4 – Context Documents
Part 5 – Index, glossary

The context documents are included to aid understanding by industry and to support the approvals process. Details will include mission profiles, support factors, the concept of employment (CONEMP) and the concept of operations (CONOPS).

The Model also identifies a series of attributes for each requirement included in Part 3:

- Unique Identifier based on the requirement hierarchy;
- Requirement Descriptor;
- Effectiveness Envelope;
- Priority (Key, 1, 2, 3 to capture the willingness to trade-off within each requirement);
- Justification;
- Verification Criteria, describing how the achievement of the requirement will be demon-

strated;
- Remarks;
- Status (candidate, traded, cancelled).

The IPT-owned SRD describes in functional terms what the system must do in order to meet the user needs. An outline SRD at Initial Gate provides sufficient detail to support the analysis of options, whole-life costing and assessment phase planning. This definition is refined during assessment phase to provide a complete SRD at Main Gate that has been verified against the user requirements and accepted by the customer. This approved SRD then supports cost-capability trade-off activities, contracts and tender assessment during the demonstration phase. It also forms the basis for system acceptance prior to ISD, and is the basis for in-service upgrades necessary to maintain or enhance performance.

Key Requirements

The introduction of Smart Acquisition also required effective project monitoring, to ensure difficulties were recognised in sufficient time. Key requirements are used as an indicator of IPT and DPA performance, with the predicted achievement of 98% of key requirements providing a corporate target[vi]. Key requirements are defined as individual requirements assessed as essential to the achievement of the mission need, or which are of particular interest to management.

Key User Requirements (KUR) define the capability boundary, facilitating the assessment of trade-offs, feasibility and successful delivery. They are not expected to characterise the whole requirement, but to capture the critical aspects of the capability required for the investment to be effective. They also enable the measurement of IPT performance in meeting customer needs, but will be limited in numbers to ease

management.

Summary

Smart Acquisition was introduced to enable the procurement of cost-effective equipment more suited to the less predictable post cold war operational environment. A Smart Requirements Model based on the principles of systems engineering encourages a capability rather than a solution led approach to progressive system definition within an Integrated Project Team. The recognition of wider lines of development and the need for integration within the wider operational context ensures systems being procured under Smart Acquisition have the potential to deliver military capability faster, cheaper and better than before.

Simon Hutton
Principal Consultant, 3SL

[i] MOD: Smart Acquisition Handbook (Version 5, January 2004)
[ii] McKinsey and Company: Transforming the UK Defence Procurement System (20 February 1998)
[iii] MOD: The Smart Requirements Model (18 May 1999)
[iv] ibid
[v] MOD: The User Requirements Document Policy Paper (January 2000)
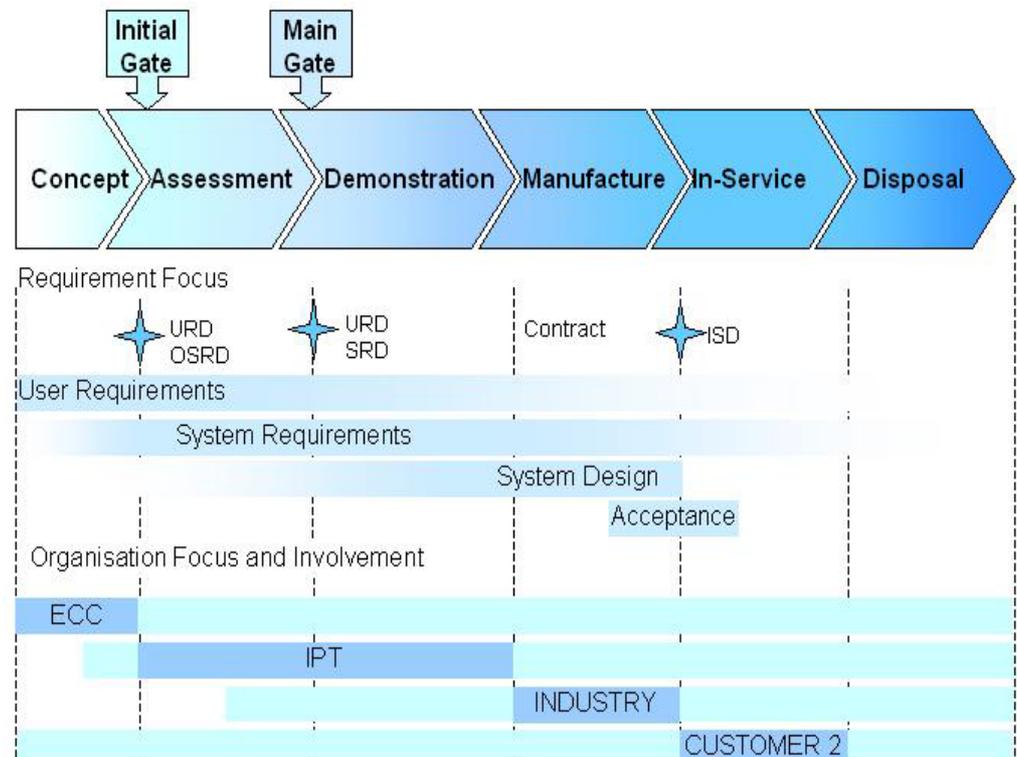[vi] Defence Procurement Agency Business Plan (2003)

Figure 3 – Requirements and the Life Cycle

Your comments

In Response to Prof Derek Hitchens (November 2003)

"If open systems science is the holy grail of systems engineering …..."

Well, this sets us off in quite a novel direction, particularly in the traditional way in which we view Systems Engineering, but its really quite sense making, when SE is considered as a mechanism for problem solving.

However, does this mean as practitioners we will be going down a road that is well, (or less) travelled ?.

Without being overtly philosophical here, there have been many attempts, from a number of systems theorists, L v. Bertalanffy, (General Systems Theory) and the Macey Conferences, 1940's/1950's New York - Weiner, Ross Ashby (Cybernetics) to provide a unifying, conceptual integrating framework that attempted to satisfy the conditions that Hitchens describes, and are laid out quite elegantly in the Principia Cybernetica. Although it has to be noted, latterly, Cybernetics and Systems Theory appear to have been overtaken by the Complexity Sciences, which from this viewpoint is a considerable diversion.

Where does this leave us today ?, its interesting to note that to take this direction (from an engineering body such as INCOSE) it is also one that is also being followed by organisations such as the UK Systems Society, the OU Systems Group and Demos (Jake Chapman's work in the Cabinet Office of the Blair Government) in what we now know as Systems Thinking, (Wikipedia 2004, the study of wholes and interconnectedness).

To put Systems Thinking into the context of an open systems science, let's examine Hitchen's canon, from his 1987 Theory of Command and Control to Advanced Systems Thinking in 2004, this arguably places him at the softer end of the "Hard/Soft" systems continuum addressing the solution of organisational type problems, or as both Checkland and Ackoff note "messes".

Yet inspecting the methods that are being used to solve these problems and to construct system archetypes, you find that they are derived from the Forrester/Senge school of Industrial Dynamics, the "Fifth Discipline", and are quite firmly, mathematically grounded in Classical (Second Order) Control Theory, and also including Power's Perceptual Control Theory in this pedagogy.

It's now apparent that Systems Thinking can and has been quantitatively grounded, the next "baby" step is to qualititatively ground Systems Thinking, through a normative/descriptive standard.

Addressing a qualitative representation or theory, for an open systems science, in which most organisational scientists or behaviourists would themselves describe as problem formulation, leaves us with choices for representing ill structured, interconnected sets of experiences (messes) , within and between people/groups (or the system). This therefore gives us the requisite variety for constructing system archetypes. These choices can, should and must include the socio-cybernetics of Geyer, and the "creative holism" described by Jackson and Flood, which can address the inherent tensions that are inevitably found in these situations.

Without forgetting that by using Systems Thinking "in the round" , system/environmental impacts (interconnectedness) are crucial and have to be represented, which to a first order approximation, can be shown by Benathy's metaphor of 3 lenses, or equally the SWOT/PEST type of organisational/managerial representation.

Clearly what is being noted, is a synthesis of methods, graphical representations, metaphors and analogy, with an integration of process and activities to address an open systems science.

Can a theory or open system science be constructed to inform Systems Engineering as it is practiced today and into the future?, does it address Hitchin's question?, In this authors opinion, yes to both.

A set of principles can be captured and postulated within a structure, for example Kolb's Learning Cycle, which allows this set to be taught. The activities of Systems Engineering can therefore be based within an integrating framework of problem solving, that is both tractable and open to scholarship.

What's the benefit – the emergent property of an open systems science, Learning, both individually and organisationally, win/win all round!

Peter W Bolton –
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If you have a question you would like answered by our panel of experts or a point of view you would like to share with Preview readers then please send to:

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or write to:
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'Bart Simpson guide to SE'

The article on the 'Bart Simpson guide to SE' coincided with the washup from a 'Process Communication' exercise in teaching complexity and systems thinking to second year Product Design students at Glasgow School of Art. Given the hint for copy from Simon Hutton, we thought it might be useful to share our experiences.

Lessons learned as regards teaching material and approach included:

- There is good theoretical material on the web to be pointed to, but not much case study material suitable for a general introduction. There do not appear to be 'neutral' overviews of the topic outlining the various approaches.

- Systems thinking should be related to everyday experience before getting into theory.

- Simple diagramming tools of almost instant usability should be provided early on to get engagement with the approach.

- Teaching in the context of a (on-month) project enabled issues to become concrete.

Experiences and issues (successfully) addressed by the students included:

- Being swamped by the amount of information.

- Finding the devil in the detail.

- Finding where dynamics mattered.

- Dealing with important information late on in the project.

- The difficulty of finding the boundaries of the whole process and then of setting the boundaries and focus for the communication.

- Presenting a clear coherent message without trivialising the complexity of the process.

- The difficulty of assigning tasks to team members when dealing with a 'wicked' problem.

Processes chosen by the students included censorship, building a house yourself, becoming enlightened as a Buddhist, understanding and dealing with mental illness, adopting a child, and voting in an election.

The brief was to produce something that could communicate the process to a newcomer in five minutes. The outputs comprised a film, a split-page booklet, a 3D-jigsaw, a tabletop maze, a combination of posters and website, and a rotating set of filters.

The experience was enjoyed by all concerned.

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System dynamics international conference

The Systems Dynamics Society is holding its twenty-third International Conference on the July 17 - 21, 2005, at The Seaport Hotel, Boston. The program will consist of plenary, parallel, poster and workshop sessions demonstrating the state of the art in the theory and application of system dynamics. Panel discussions, special interest group sessions, student colloquia, modelling assistance workshop sessions, events of historic interest, vendor displays, exhibits, demonstrations, and Society business meetings and other related gatherings will also be scheduled. The schedule also provides time for relaxed social and professional interaction. The conference brings together diverse perspectives on the application of system dynamics to important issues in the theory of complex dynamic systems and the practical use of these tools to address critical real-world challenges. A small sampling of the topics to be addressed includes:

* Regional, national and global economic dynamics
* Environmental and ecological challenges
* Health care policy
* Agent-based and evolutionary modelling
* Industry evolution: interactions of competition and organizational capabilities
* Corporate strategy
* Organizational change and improvement in business and beyond
* Project management and product development
* Public safety and security
* Nonlinear dynamics
* Dynamic decision making and experimental studies
* Public policy applications
* Dynamics of information systems
* Developments in simulation tools and techniques for model analysis and visualization
* Advances in the modelling process and group model building
* System dynamics contributions to theory building in the social and natural sciences
* Teaching systems concepts and dynamics in the K-12 grades, universities, and beyond.

Conference website:
http://www.systemdynamics.org
Conference Partner: PA Consulting Group
Conference Host: System Dynamics Group, MIT Sloan School of Management, Cambridge, MA USA

Around the regions

Scotland

Please note that the event in Glasgow on 11th Nov - visualisation and innovation - was postponed due to illness and a new date will be announced.

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How do you get involved with regional activity?

Are you looking to participate in local INCOSE activities?

Are you looking to set up a regional group?

For more information about regional activities or how to go about setting up a regional group, please contact:

Simon Hutton on 01229 838867
or
email: simon.hutton@threesl.com

1st annual membership survey

INCOSE UK is about to launch the first Annual Membership Survey to find out 'what you think' and how we can improve INCOSE's offering. The Annual Membership Survey is an on-line survey and is available on the web site at www.incose.org.uk/survey05.htm. I would be grateful if everyone can take a few minutes to complete the survey over the next few weeks, so we can understand what is important to the UK chapter, and can monitor progress as new initiatives and benefits are introduced. I am hoping the results will be available for the next edition of Preview,
and expect we should have a timely snapshot of the state of systems engineering in UK.

Simon Hutton
CMC Chair

Editor's note

A new year - another edition of Preview. I hope you all had a good Christmas break and I hope that one of your new years resolutions is to get more involved in INCOSE's activities. There are many opportunities to get involved (as highlighted at last year's Autumn Assembly). For example, the International Symposium, the UK Spring Conference and Autumn Assembly, local and working groups and of course the newsletter. I am looking for contributions including: letters/comments, book reviews and Systems Engineering news articles. To contribute please send your articles to me at d.cowper@ucl.ac.uk.

The planned programme for Preview over the coming year is: **February, April, June, August, October** and **December**. This is a change to previous years in order to fit in better with the UK chapter's activities. To get your article into each edition I need to receive it by the 15th of the previous month. For example, to make the April edition I need to have your submission by the 15th March.

I hope next time to bring you a report from the international workshop in Tampa and some news from the regional groups.

Finally I hope 2005 is a year where we banish apathy and 'help you to help yourself'.

Doug Cowper
Editor of Preview

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Please email your news and views to d.cowper@ucl.ac.uk
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