INCOSE UK Newsletter

Better Late ....

The brochures for the Autumn Assembly went out a couple of weeks ago, and hopefully you have already made your selection and booked your place. If you are still making your mind up, there are some 'hot-off-the-presses' details in this Newsletter. For even more up to date information check out the web site at www.incose.org.uk.

I hope to see many of you at Malvern, and I am sure that if you manage to get there you will find it worthwhile. The prices are much lower than you would expect to pay for commercially organised events. The in depth coverage of the subjects on offer provide a much better training opportunity than a greater number of unrelated papers. Publishing a summary of the sessions after the event will ensure that any discussion during the event will be recorded. Many of the top names in UK and European Systems Engineering will be presenting, and will be available to answer your questions.

I know that it is sometimes hard to crack open the company training budget, but try using some of the arguments above. If those don't work, remember that the event is co-sponsored by the IEE and DERA. The few that attended last year's Autumn Event, were very complementary about the quality of the technical discussion and debate. This year's programme is even better, and is presented in such a way that you can mix and match any of the four days on offer.

So even if you can only make one day, try and get along. We aim to attract a sizeable proportion of the UK Chapter's membership over the four day period. Make sure that the report on the AA in the next Newsletter brings back memories of a great occasion, and not regrets that you didn't attend.

Pete Lister

Bristol Meeting - Smart Procurement

The 19th October saw the second meeting of the Bristol Group of the UK Chapter, where the main event of the evening was a presentation by Peter Brook on Smart Procurement. Before starting on this Chris Davies announced that in view of the healthy support that the first two meetings had attracted, he was planning to go ahead with more meetings next year. Three potential subjects were announced:

- A presentation by Stuart Arnold to follow up on the subject of Smart Procurement, to include more coverage of process and international aspects.
- A presentation or workshop by BAe Airbus, focusing on their extensive research work
- A presentation by GKN Westland on a subject to be defined.

The aim is to set up a mixture of afternoon and evening events. Workshop events would be slightly more formal, and would require more 'up-front' commitment from attendees. INCOSE members would be given priority for such events! Anyone who wants to be kept informed of up-coming events should get themselves on Chris's e-mail list by contacting him at christopher.davies@bae.co.uk.

Chris thanked Christopher Dean and Jane Smith for their help in organising the meeting, and took the opportunity to plug the Autumn Event.

Peter Brook started by emphasising that what he was presenting was the beginning of a story, and that by no means was everything in place. I certainly gained the impression from talking to Defence Procurement Agency staff newly enthused with Smart Procurement, that it was all about better procurement at the project level. Peter's presentation soon made it clear that project level 'Smart Procurement' is intended to be the end result of high level 'Systems of Systems' thinking that links the UK

Defence objectives, via capability areas to specific projects.

The newly created Capability Managers are to be given responsibility for a whole area. The example given was Anti Submarine Warfare (ASW), and that capability involves surface ships, submarines, fixed wing aircraft, helicopters etc. The aim is to get to a point where trade offs can be made across the whole capability area in order to meet the overall objective. This of course means that the MoD customer has to use Systems Engineering processes to analyse the capability requirements and design. This is already beginning to happen, and Peter cited the recent appointment of a System Integration Architect for Battlefield Digitisation.

There is of course a major training initiative for DPA staff to ensure that they understand the basis of the Smart Procurement approach. Peter also mentioned that a three level process guide is being developed, based on the previous DERA System Engineering process work. One thing that has yet to be fully explored is the question of how industrial competition is maintained within the Integrated Project Teams that are part of the Smart Procurement approach. Peter made it clear that not only was there much to do to detail the working processes, but that there was also many more new ideas to explore expressed as 'you ain't seen nothing yet'.

A lively question and answer session followed the presentation. Allan Levenson of the BAe Sowerby Research Centre proposed the vote of thanks for what was an interesting and thought provoking presentation. Despite the obvious focus on Defence Procurement there was much that would be of interest to commercial enterprises, and probably civil infrastructure development. It occurred to me on the drive home that maybe John Prescott should be looking at the Systems of Systems ideas when considering transport policy.

Pete Lister

INCOSE UK Chapter can arrange for speakers like Peter Brook to address a local meeting near you. We can also help with advertising, guidance on suitable formats, and to a limited extent with expenses for room booking. All we need is for someone to step forward, as Chris Davies did, to provide local knowledge and co-ordinate arrangements. Local meetings can bring the best of INCOSE to your doorstep. Contact Pete Lister or John Mead for further information.

INTERNATIONAL COUNCIL ON SYSTEMS ENGINEERING UK CHAPTER

SYSTEMS DEVELOPMENT GOOD PRACTICES & INTEGRATING CE, SE AND PM

We are lucky to be able to offer you an afternoon with Mr James H Brill from California. James has spent most of his working life with the US Government and Hughes Aircraft Company, and is a Founding Member, Director and Past President of INCOSE. His three specialities are:-

- General and Systems Management at Executive level of Government and aerospace and defence enterprises and programmes.
- Functional management of manufacturing, integrated logistics support, and systems engineering.
- Systems Enginneering providing educational and training services to industry and government agencies.

Monday 13th December 1999 2.00pm

At BAe Farnborough

Presentation Theatre, York House. Host John Anderson.

Refreshments will be provided.

Please read your newsletter, or visit the web site where details and booking procedure will be posted when finalised.

www.incose.org.uk

John Mead 01344   422325
john@johndmead.demon.co.uk

Annual General Meeting

Members are reminded that the annual General meeting will be held on Wednesday10th November 1999 in the Nelson Theatre at DERA Malvern in accordance with the notice circulated to all members with Newsletter 19 in September. The meeting will commence at 12 00 hrs.

In addition to information provided at that time it is proposed to reconstitute the Communications and

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Remember that we will publish a listing of your forthcoming event absolutely free.

Contact the Editor (Pete Lister) or INCOSE UK Administrator (John Mead) with your requirements.

Membership committee. We have a nomination for the position of Chairperson in Mr James Kirby of SEC DERA Malvern. Proposed by Peter Brook, and seconded by Allen Fairbairn and Peter Lister. We are seeking volunteers to work on this committee the aim of which is to promote INCOSE both to individual members, but perhaps more importantly to establish the credentials and relationships with other organisations.

Please forward your name and contact details to John Mead or if you wish to discuss it please call me on 01344 422325.

The Autumn Assembly at a Glance

The following table gives you an overview of the whole Autumn Assembly programme. Please refer to your brochure for full details. If you don't have a brochure contact John Mead. Get those registrations in soon.

ADMINISTRATION DETAILS

For the most up to date details please keep in touch with the web site www.incose.org.uk where any programme changes or other relevant information will be posted.

Please note when booking that cheques should be made payable to INCOSE UK, but that all registrations have to be made with Comax as indicated on the booking form.

The number of tutorials to be made available will be decided based upon the number of bookings received for each on 1st November, so please book before then, or they may be cancelled unnecessarily.

Full details will be sent to those who register, but it should be noted that car parking will be on the Three Counties Showground with transport provided to and from this site.

To obtain access, and comply with HMG security procedures, all attendees, whether delegates exhibitors or speakers must pre-register with COMAX.

Stock Clearance Sale!

UK Symposium Proceedings:

1996   Getting to Grips With Complexity

1997   Systems Engineering in Practice

1998   Systems Engineering - A Matter of Choice

Any of the above at £5.00 inc. post and packing

Send your orders to John Mead - Address at the back of the Newsletter

Monday 8th November	Tuesday 9th November	Wednesday 10th November	Thursday 11th November
SOFT SYSTEMS ENGINEERING	LIFE CYCLES AND REQUIREMENTS	SYSTEMS ENGINEERING IN SERVICE & STANDARDS	TUTORIALS
9.00pm Coffee	8.30 Coffee. Exhibition opens	8.30 Coffee	8.30 Coffee
9.30 WELCOME BY MR JAMES KIRBY 9.40 SESSION 1 INTRODUCTION AND THE HOLON METHODOLOGY	9.00 WHOSE LIFE CYCLE IS IT? A COMPARISON OF DIFFERENT APPLICATION DOMAINS	9.00 IN SERVICE SYSTEMS ENGINEERING A MODELLING APPROACH AND PRESENTATIONS ON SATISFYING LIFETIME REQUIREMENTS	No1 UML (Half Day) Robert Collins No 2 Model Based SE Process Dr Hans-Peter Hoffman & Graham Ashton
10.40pm Refreshments	10.30 Refreshments	10.30 Refreshments	
11.00 SESSION 2 SOFT SYSTEM METHODOLOGIES	11.00 AN INTERNATIONAL PANEL DISCUSSION ON LIFE CYCLE ISSUES	11.00 PANEL SESSION LIFETIME UPGRADING REQUIREMENTS ON THE ACQUISITION PROCESS	No 3 Scenarios for Acquiring and Validating System Requirements Neil Maiden (Half Day)
		12.00 INCOSE AGM	No 4 Systems Engineering Mark Walker
13.00 Lunch, Exhibition opens	13.00 Lunch	13.00 Lunch	
14.00 SESSION 3 SOFT AND HARD SYSTEMS AND SYSTEM OF SYSTEMS	14.00 REQUIREMENTS ENGINEERING. A REVIEW OF LATEST APPROACHES.	14.00 WHERE ARE SE STANDARDS? AND WHERE ARE THEY GOING?	No 5 Introduction to Systems Design John Williams No 6 Systems Engineering at the Enterprise level. Richard Stevens
15.30 Refreshments	15.30 Refreshments	15.30 Refreshments	
16.00 SOFT SYSTEMS PANEL AND FOCUS GROUP	16.00 CURRENT RESEARCH PROGRAMMES AND PANEL DISCUSSION	16.00 WHAT IS INCOSE TO CONTRIBUTE TO SYSTEMS ENGINEERING?	10.30 Refreshments 13.00 Lunch 15.30 Refreshments
17.30 End	17.00 End	17.00 End	17.00 End
19.00 Exhibition closes			
	19.30 Conference Cocktails and 20.00 Dinner at Abbey Hotel		

Tutorial Details

Details have arrived on two of the Tutorials that were not fully described in the brochure:

ROB COLLINS, ENTELECHEIA LTD

This whole-day tutorial is aimed at Systems Engineers with little or no previous experience of using the Unified Modelling Language (UML). UML is the most popular of all of the 'Object Oriented' modelling methods. It has a rich notation that includes facilities for describing user interactions with systems and modelling data and organisational structures. UML uses a set of particularly powerful notations for defining dynamic, 'real-time'

behaviour of system components and their interactions. It includes a notation for showing the relationship between processes and the hardware that implements those processes and a notation for defining system architectural structures.

UML is 'customisable' and provides users with a clear and concise notation for describing systems. UML is supported by a variety of computer based tools and is rapidly becoming the industry standard 'language' for modelling and analysis of software systems. At least one tool currently available supports dynamic simulation of UML models.

This course provides participants with sufficient skills to 'read' and understand UML diagrams. Participants will

gain some experience at drawing their own UML models and by the end of the session should be capable of producing useful models. The course is pragmatic and will describe both the positive and negative aspects of UML. We will say what can, and cannot be expected from UML and thus this course would be a useful starting place for companies and individuals who are considering investigating the UML. Participants will be guided towards a useful set of further references and resources.

Rob Collins is an experienced presenter of courses and is well known to regular attendees of INCOSE seminars. Rob acts as a consultant to industry on Systems Engineering, Critical Systems and Requirements Management. He has lectured nationally and internationally and teaches the Safety Critical Systems course for Oxford University.

MARK WALKER

Lifecycle Traceability - Model Driven Development

The need for well engineered sets of user and system requirements is well established, but this is only the first tiny part of a modern systems engineering process. A family of well constructed system models is the only way to properly identify and study system functionality, behaviour, environmental interaction, architecture, performance and so on. No single notation is sufficient. OO alone is not a universal pancea. This tutorial discusses the modelling notations available to the systems engineer and explores their semantics and topologies, then explores how they can be used to define system characteristics and highlight emergent properties, and focuses on traceability to all of the different subsets of the requirements base.

AIMS AND OBJECTIVES

The tutorial assumes basic systems engineering knowledge, and focuses on issues that are important at the project and organisational level. The tutorial seeks to illustrate the strengths and weaknesses of a number of modelling notations, and shows how these can be overcome by combining the notations in various model topologies. The tutorial illustrates the modelling alternatives that are available in a number of common situations. The tutorial maps these models onto typical requirements categorisations and thereby seeks to show how requirements should be progressed.

TARGET AUDIENCE

This one day tutorial is intended for chief and senior systems engineers and anyone involved in the definition of systems engineering processes.

Mark Walker is the chief technical officer of 3SL and 3SL Inc. Mark has been involved in the development of large and complex systems engineering projects for the past 15 years in aerospace, defence, process control, manufacturing, transport and telecommunications applications. He is the author of past MoD policy statements on modelling and an external advisor to several major UK and US corporations on the application of modelling techniques as the cornerstone of systems engineering processes.

Maximum number of registrants: 20

Detailed Programme for the Soft Systems Day at the Autumn Event

9.00 Registration and Coffee

9.30 Welcome by Mr James Kirby Director SEC DERA

SESSION 1

09.40 to 10.00 hrs:

1.1 Introduction to the topic and the programme for the day

Allen Fairbairn, JBA - INCOSE UK Chapter President

10.00 - 10.40 hrs:

1.2 The Emergence of the Holon Methodology

Gary Bell, South Bank University School of Computing

Part 1	Hard Systems Methodologies
	The Essence of Hard Systems Thinking
	A Limitation of Hard Systems Thinking
Part 2	Soft System Methodologies
	The Essence of Soft Systems Thinking
	Soft Systems Methodology
	A Limitation of Soft Systems Methodology
Part 3	Holon Methodology
	The Post-Mortem Approach
	The Visioning Approach
Part 4	Conclusion

10.40 to 11.00 hrs:

Break for Refreshments

SESSION 2

11.00 to 11.30 hrs:

2.1 Hard Problems - Soft Solutions

Richard Pratt, DERA

The development of 'soft' techniques to study systems has its origins in the late sixties, with the growing realisation by a number of researchers that conventional systems engineering practices were unable to address so-called 'messy' problems. Such problems are characterised by uncertain or changing objectives and the need to accommodate the requirements of different stakeholders. This paper will examine how 'Soft Systems Methodology' (SSM) and 'Multi-Criteria Decision Analysis'(MCDA) have been used successfully in the

procurement cycle for military equipment. SSM has been used to determine the requirements for the Information Exchange Requirements for Command and Information Systems by building logical models of military operations as a set of tasks. These tasks are then analysed to determine the information required to prosecute the tasks as well as the sources and sinks for the information. MCDA has been used to explore the performance trade-offs that users are prepared to accept in a CIS. The paper will further explain how information from more conventional 'Hard' analyses may be used in support of these soft models.

11.30 to 12.00 hrs:

2.2 The Balanced Score Card - a Soft Systems Methodology?

Cecelia Haskins

The balanced scorecard is now a tried and tested technique in business for measuring performance for a variety of purposes. However, taking the maxim that it's not "that" you measure but "what" you measure that is important and considering that the overall purpose of the improvement initiative could get lost in the measurement detail, how is the balanced scorecard to be used in an effective and systemically rigorous manner?

Following presentation of her paper "What's the Balanced Scorecard got to do with Systems Engineering" at INCOSE's Brighton 99 Conference, Cecilia Haskins will take this discussion further and consider the potential synergies with the broader range of systems based approaches.

12.0 to 0 12.30 hrs:

2.3 BSSM - The Boardman Soft Systems Methodology

Ben Clegg, De Montfort University

BSSM successfully addresses complex systems problems with analytical and graphical techniques. The widely copied but often misused "systemigram" is part of this methodology. The basic elements of BSSM will be presented together with consideration of the ways in which the technique can be further developed.

12.30 to 13.00 hrs:

2..4 Panel Type Discussion of Soft System Methodologies

13.00 to 14.00 hrs:

Lunch

A buffet lunch will be provided in the Exhibition Area adjoining the main lecture hall.

SESSION 3

14.00 to 14.45 hrs:

3.1 'Soft and Hard Systems put into Perspective using

a New Model of the SE Problem Space'

Prof. Peter H Sydenham, Defence Engineering Group, Systems Engineering Team

University College London.

First, a new model will be presented of the Systems Engineering problem space. It is framed in pragmatic terms of optimising a many person design activity having a common goal.

This model will then be used to distinguish between hard (reductionism) and soft (phenomenological) systems approaches and to show where they are each essential elements in making better progress in optimising systems solutions. Included will be and account of where the knowledge on Soft Systems Methodology (SSM) resides.

This modelling approach is able to highlight, and clearly demonstrate, key barriers to progress. Discussed will be the difficulty engineers face in getting to grips with this duality of thinking; the lack of experience with the application of SSM to engineering problems; and discipline groupings that lack of enough transdisciplinarity activity.

To complete the presentation some suggestions on how to introduce the necessary cultural changes will be given.

14.45 to 15.30 hrs:

3.2 System of Systems

Mike Prince, BAe Christchurch and SEPDC Chair, INCOSE UK Chapter

There has been a lot of discussion of "System of Systems" as a subject distinct from Systems Engineering. What is the subject, what are its distinctive features and where does it sit in relation to the spectrum of activities that make up systems thinking and the systems approach to problem solving? Specifically, the presenter will consider the relationship between SoS and soft systems methodologies.

15.30 to 16.00 hrs:

Break for Refreshments

SESSION 4

16.00 to 17.30 hrs:

Soft Systems, Hard Systems and INCOSE - The Way Ahead (16.00 - 17.30)

A two part Panel based discussion will close out the day.

The first part will consider the substance of the day's presentations as a whole and reflect further on what is understood by soft systems and how it relates to hard systems and the other branches of systems based thinking.

For the second part, support will be sought for a soft systems focus group to be established initially (it is proposed) within the UK Chapter of INCOSE. The

constitution of this group, its aims and objectives and an outline agenda for further activities will all be up for discussion. A primary aim for the group (it is suggested) is to redress the present imbalance within INCOSE where there is a very strong emphasis on hard systems processes, methods and tools and the development of practices, such as CMM's and hard systems standards that its corporate members value. Arguably, this emphasis may have missed out on the benefits of getting a vital synergy between soft and hard methods working, blindsiding members and corporations to the prospects of a better way of achieving faster, better, cheaper!

Allen Fairbairn

Other Events

A Profitable Relationship of Systems Engineering Applied to Project Management

Monday, 29 November 1999, 17.30 hrs at Savoy Place London, organised by Professional Group M5 (Organisation and systems Management) and PG A6 (Systems integration)

SCOPE

The discussion meeting aims to show, by example, how project management has profited by systems engineering. There is a tendency to sep arate systems engineering and project management such that their objectives appear to be conflicting. As a result project management loses the profitable benefits that systems engineering can bring to a project. By ignoring systems engineering, many projects are denied the fundamentals for success. This meeting shows how benefits can be gained even when systems engineering is introduced after a project has started.

Those who work in project engineering and systems engineering will gain from the practical experiences, shared by the speakers, of making systems engineering work as well as being productive in large projects.

REGISTRATION

This evening discussion meeting is free and open to all. Registration is not required in this instance. To receive further information on the event please contact the IEE Events Office, Savoy Place, London WC2R 0BL, tel: +44 (0)20 7344 5732/5733, fax: +44 (0)20 7497 3633 or email events@iee.org.uk

SYSTEMS ENGINEERING THE PYRAMIDS

Masterclass given by Professor Derek Hitchins and EurIng Paul Budgen

To be held on Tuesday, 16 November 1999, 17.30 hrs (Tea at 17.00 hrs) at Savoy Place

Organised by Professional Group PG M5 (Organisation and systems management)

OBJECTIVES

This masterclass provides a fascinating insight into the history and building of Khufu's Pyramid at Giza, Egypt (better know by its Greek name, the Great Pyramid of Cheops), and makes use of this wonder of the ancient world to provide a light-hearted introduction to some engineering and management techniques. The lecture will first concentrate on current thinking regarding the purpose of the pyramid. It will cover ancient Egyptian culture and will examine the concept that it was a sophisticated astronomical time clock, used to fix the dates for religious festivals. Some of the theories regarding the building of the pyramid will then be examined, using interactive methods to illustrate a number of modern systems engineering concepts. The lecture is not only for engineers, but for all those excited by the fascination of the wonders of the ancient world. The masterclass is designed to popularise systems engineering in such a way that both specialists and lay people may enjoy and be entertained, intrigued, and even, perhaps, educated. Education is intended to be low-key, but has proved to be effective.

TARGET AUDIENCE

Anyone, from school children to retired, any discipline, no discipline

BIOGRAPHICAL DETAILS

Professor Derek Hitchins has recently retired from full time work, and is now a practising consultant. Formerly, he held the British Aerospace Chair in Systems Science and the Chair in Command and Control, Cranfield University at RMCS Shrivenham. His current research is into system thinking, system requirements, social psychology & anthropology, command & control, system design and world class systems engineering. His abiding interest is in Egyptology and he has found many ways of utilising this hobby to illustrate his unrivalled expertise in Systems Engineering.

EurIng Paul Budgen is currently the CEO of OCB Germanischer Lloyd Ltd, a European company that has worldwide interests in the oil and gas and other energy related industries. Paul originally qualified as an electrical engineer, but has practised as a risk analyst for most of his technical career. He has held senior posts in both industrial and consulting companies. His primary interests are in promoting engineering as a valuable profession and in developing and expanding the use of risk and systems engineering in modern management practices.

CONTACT

The event is free and open to all. Registration is not required in this instance. If you require further information please contact Katharine Hardman.

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    - All notations can be traced to the requirements and throughout the entire project lifecycle

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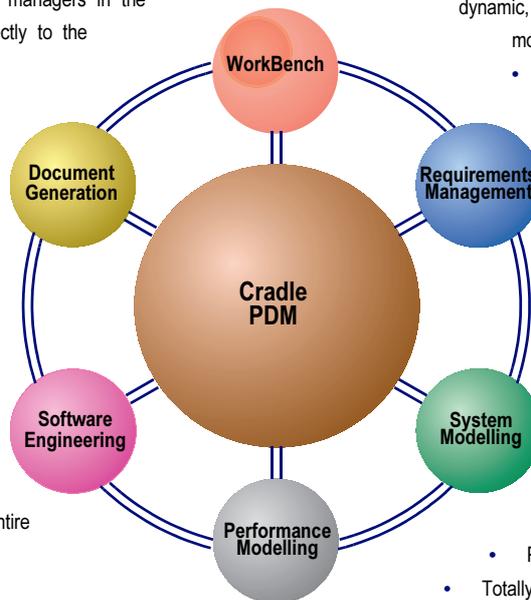
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