

SPRING CONFERENCE 2006 - PROGRAMME MONDAY 24TH APRIL

9.00 - 9.10 **Opening Remarks - Andrew Farncombe, INCOSE UK Technical Director**

9.10 - 12.30 Session 1: The Nature of Systems Engineering

9.10 **Some really useful principles: A new look at the scope and boundaries of systems engineering**
Hillary Sillitto, President INCOSE UK

What are the really useful principles and models that provide the foundation for modern systems engineering? And does the System Value Cycle work in the real world? Using historical case studies we show how outstandingly successful products are produced by a fusion of standard process with creative thinking, and that realising the business benefit of systems engineering requires us to balance the process approach with a focus on value.

9.50 **Bridging Systems Engineering Views with a Structuring Matrix** *David Battersby, Loughborough University*

Design Structure Matrix (DSM) may be used to provide a unified information visualisation applicable across a range of both “hard” and “soft” systems engineering domains. It has uses in the planning and technical architecting of a system and provides a valuable method for visualisation and analysis throughout the systems engineering process.

11.00 **Systems Engineering in the 21st Century** *Professor Derek Hitchins*

The world it seems is going to hell in a hand-basket: dwindling fossil fuel supplies; global warming; global terrorism; population growth; species collapse; increasing tempo of life, warfare; global shortage of fresh water; and that’s just for starters. Add in general process of socio-economic de-civilization often called “popular culture” and the long term prospects for humanity and our biosphere don’t look good. It doesn’t have to be that way we can make it better by employing thoughtful systems engineering in our enterprises, industries and socio-economic systems.

11.45 **Systems Thinking for Managing Projects** *Professor David Stupples, City University*

Through modelling the rework cycle and the feedback loops that drive it, using system dynamics it is possible to analyse and hence improve the dynamic behaviour of our projects. In this paper we show how a system dynamics model of a project is constructed and used to assess project outcome.

13.30 - 15.00 Session 2: Education and Competencies

13.30 **The Core Competencies Of Systems Engineering** *Doug Cowper, Sula Systems Ltd*

This paper describes the work of an INCOSE UK Advisory Board working group, set up to define an agreed set of core competencies for Systems Engineering that would allow individuals and enterprises to establish an effective, transferable portfolio of skills, which can be deployed in systems projects. Such a set of core competencies will also provide a framework for education/training and assessment. This paper offers a set of core competencies for Systems Engineering and guidance on how to use them.

14.15 **Can SE be taught at Undergraduate Level?** *Sue Goodlass, BAE SYSTEMS*

We all know that Systems Engineering is complicated and difficult and the only way to become a good practitioner is by long experience and learning from mistakes.....or is it?

15.30 - 17.00 Session 3: Organisational Aspects of Systems Engineering

15.30 **Systems Engineering the Enterprise** *Duncan Kemp, UK MOD*

Duncan will give an overview of the techniques he uses and insights he has gained in running business transformation projects within UK Defence Acquisition. He will cover the use of systems thinking techniques to analyse systemic barriers to improvement, a simple business systems model to design business improvement projects and his "ten commandments" for running successful transformation programmes.

16.10 **Enterprise Systemics: Systems Thinking for plotting Strategy at the 'Extended Enterprise' level**
Allen Fairbairn, John Boardman Associate

This paper seeks to demonstrate the value of various systems techniques, and the system of systems concept in particular, to the design and management of key Extended Enterprise (or Value Web) activity. We use the term 'Enterprise Systemics' to describe use of a portfolio of systems techniques and we report on work done to develop a design approach that draws from diverse sources of systems type thinking. Case Study material is provided.

**19.30 Conference Dinner. The Uffington Suite bar will open at 19.30 for pre-dinner drinks.
Dinner will be served at 20.00 hrs.**

**Each day will start with registration from 08.00 until 09.00.
Lunch will be at 12.30 and refreshments at 10.30 and 15.00 approx.**

SPRING CONFERENCE 2006 - PROGRAMME TUESDAY 25TH APRIL

9.00 - 9.10 **Opening Remarks - Andrew Farncombe**

9.10 - 11.40 Session 4 : Applications

9.10 **Emergence: Applying the Principles - using Genetic Algorithms to derive schedules**
George McConnell, SELEX Communications UK

The use of techniques such as Genetic Algorithms can assist in avoiding some of the biases introduced and incorrect assumptions made by each of us when solving a problem. This paper discusses the benefits of using such a technique to solve a complex scheduling problem, describing the practical issues and pointing out some of the limitations of such an approach.

9.50 **The development of Tools to help manage railway interfaces** *Clive Roberts, University of Birmingham*

Railway networks are distributed, complex systems with a large number of safety critical interfaces. This paper provides details of recent research work aimed at providing decision support for system designers, manufacturers, operators and maintainers.

11.00 **Synthesis of an Anti-Terrorist Air Transportation Security System** *Professor Mike Woodhead, Loughborough University*

This paper provides a top-level introduction to a systems engineering approach which uses a functionally-based modelling framework to assess the vulnerability of an air transportation system (ATS) to identifiable terrorist threats. The approach illustrates the problem of countering such threats by developing a layered security system concept.

11.40 - 16.50 Session 5 : Processes

11.40 **Safety assessment of system architectures** *John Murdoch, University of York*

This paper considers the application of safety assessment techniques to the architectural aspects of systems. Earlier reported work is reviewed and subsequent developments are discussed, including recent work on the measurement of system safety. The role of safety assessment in relation to system maturity and readiness assessment is also discussed.

13.30 **The 'Learn from Experience' (Lfe) journey in Systems Engineering** *Brian Meakin, LFE Solutions*

This paper is about the development, retention and re-use of tacit knowledge or wisdom as a generic process. As Systems Engineering can be expressed as a Socio-Technical activity it is appropriate that Systems Engineers utilise Lfe to inform the Enterprise, Project and the personal knowledge base as early as possible in the project life to ensure the chosen system solutions are those with the best opportunity for success.

14.15 **RACE for Faster, Better, Value** *Professor Phillip M'Pherson*

This session will place the earlier RACE (Rapid Assessment of Cost Effectiveness) paper in the context of "SMART" Acquisition obtaining at the time of original publication and state what RACE was and is. Used in the early stages of system engineering projects, RACE helps select system solutions that extract real value rather than just minimising costs.

15.30 **How does AP233 support a Systems Engineering process (eg ANSI/EIA-632)? An update**
Dr Julian Johnson, SEIC - BAE SYSTEMS

This paper explains how the Systems Engineering data standard ISO 10303 AP233 provides support to a practical systems engineering process, in at least two ways: firstly by providing clarity to systems engineering concepts, and secondly by enabling practical support to interoperability of systems engineering support tools. The support is illustrated primarily in the context of ANSI/EIA 632. This re-presentation will conclude with thoughts on current status, challenges and opportunities.

16.10 **System Test Metrics on a Development-Intensive Project** *Paul Davies, Thales*

This paper quantifies the effectiveness of system testing procedures, as a metric to be used in assessing fitness for delivery, with the aid of a case study. A similar metric to assess fitness of a statement of requirement as a basis for procurement, or release for design, is derived and measured. The presentation will include some additional findings, and correlations with project manpower profiles, analysed since original publication.

16.50 **President's Closing Remarks** *Hillary Sillitto, President INCOSE UK*

Any subsequent changes to this programme will be displayed on our website <http://www.incose.org.uk>



Booking - please book early

Use the Registration form within and available on the website to book conference and dinner by 17th April. Bookings may be accepted after this, subject to availability and INCOSE discretion. INCOSE rates do not include accommodation.

Membership

The event is open to all subject to you becoming an INCOSE member before entry if you are not an existing member. See booking form inside. A membership form will be sent to you automatically upon receipt of your registration. Please complete and present to the registration desk on arrival. A full years membership fee of £72 is included in the non-member fees shown.

Included

A buffet lunch is provided and tea / coffee / biscuits during registration periods, plus am and pm refreshment breaks.

Cancellations

Provided these are received by Support Shop in writing by the 17th April there will be no charge. After this date an administration charge of £100 will be due. If no cancellation in writing is received by Friday 21st April no refund will be given. Substitutions from the same organisation may be made in writing provided they are received by 21st April.

Contact us

For information on your registration call Support Shop on 01344 485111 or email: bookings@workcentres.com

For other questions email: john.mead9@ntlworld.com

Venue

The Swindon Marriott Hotel SN3 1SH is pleasantly situated amidst mature woodlands just to the south of Swindon town centre. It is close to Junction 15 of the M4 motorway giving easy access from London and the West. Nearest major airport is Bristol.

Facilities

The hotel boasts a cosmopolitan restaurant offering Mediterranean style cuisine and a casual Café Bar featuring European food. The leisure club includes heated swimming pool, spa bath, sauna, steam room, gym, health and beauty studio. Things to see in the area include The Cotswolds, GWR Designer outlet village, STEAM museum and Bowood House.

Accommodation

Please book your accommodation direct with the hotel. Unless you have advantageous corporate rates with the Marriott chain please mention INCOSE when booking. Ring 0870 400 7281 Rate B&B £110. Early booking recommended and that means at least two weeks before the event because they expect to be full up by then.



Sponsor

These organisations are members of the INCOSE UK Advisory Board:



All information contained in this brochure is believed to be correct at the time of going to print. INCOSE accepts no responsibility for any costs incurred due to changes to programme beyond our control. We will endeavour to advise of any changes on our website www.incose.org.uk as soon as they become available.

The International Council on Systems Engineering is a not for profit organisation dedicated to furthering the disciplines and practice of Systems Engineers.



The International Council on

SYSTEMS ENGINEERING

INCOSE UK SPRING CONFERENCE 2006

'The Best of British - A Reflective Update'



The INCOSE UK Spring Conference takes place on Monday 24th and Tuesday 25th April at the Marriott Hotel, Pipers Way, Swindon, Wilts, SN3 1SH.

We have collected International Award Winning papers which were authored in the UK and invited the authors to repeat them with an update to current practice.

The papers cover a wide range of topics and provide something of interest to all Systems Engineers.

Full programme inside



A message from INCOSE UK President Hillary Sillitto

Systems Engineering is the application of big picture thinking to ensuring the success of complex projects involving people, things and information. Its importance, and the cost of NOT doing it, is increasingly recognised in Government and the higher echelons of business. Less widely recognised is the level of excellence and international recognition already achieved by the UK Systems Engineering Community.

This year's INCOSE UK Spring Conference gives you an opportunity to celebrate "the Best of British" and hear at first hand both speakers who have won "Best Paper" awards, plus authors of highly-rated papers presented at INCOSE's International Symposia over the last few years. They will present, for the first time to a home audience, their papers, and update them with lessons learnt since publication. They cover a wide range of interests and are applicable to all industry sectors.

One of the key things about systems engineering is its "transdisciplinarity". Systems Engineering principles and good practice transcend disciplines and business sectors, and we all have much to learn from each other. I look forward to welcoming you to the conference, which will be an exceptional opportunity to meet, network and share experience with systems engineering professionals from a wide range of backgrounds.



We thank these two organisations for their sponsorship of this brochure.

