



preview

International Council On Systems Engineering UK Chapter Newsletter

August 2005

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International symposium 2005



There was a refreshing sea change relative to previous INCOSE conferences. The papers presented were generally more novel, wider in outlook, and more concerned with the fundamentals of systems science and systems thinking, complexity and change in the real world. (Previous conferences tended to have too many papers describing fairly standard process deployments in specific programmes.) Several speakers said things like "Systems Engineering is about a way of thinking".

The conference was held in Rochester NY in the week of 10-14 July. There were about 150 papers in 4 parallel tracks, with tutorials and

panel sessions also running in parallel. There were 1071 delegates registered by the end of the conference. Of the 829 pre-registrations, 32 were British, 14 French, 9 Dutch, 25 German and 14 Swedish.

I have identified fifteen of the 150 papers as likely to be of particular interest. Their abstracts and a brief commentary are appended to this note, and the papers will be available in the KM portal.

I attended the CAB (Corporate Advisory Board) on behalf of Thales, and participated in planning meetings for the European Systems Engineering conference 2006, to be held in Edinburgh, Scotland, next September. I also signed up for two working groups: Systems Science Enablers working group, and the Network Centric Operations working group.

As President of the UK Chapter

of INCOSE I was privileged to accept on behalf of the Chapter the President's Award for the best INCOSE Chapter worldwide, awarded as a result of the chapter's achievements in 2004.

I spent a lot of time with other UK Chapter members and the INCOSE Certification Action Group establishing a plan to promote INCOSE's Systems Engineering Certification programme in the UK, and on how to adapt it to local needs and the rigorous requirements of the UK "Chartered Engineer" scheme.

There were about 16 UK papers, and 2 UK-led panel sessions.

The BAE SYSTEMS sponsored Systems Engineering Innovation Centre (SEIC) received a strong positive press, as evidence of "a UK National agenda in systems engineering research".

H Sillitto
Thales UK, Land &
Joint Systems Division

European systems engineering conference 2006 to be held in UK

Recent INCOSE Region 3 (Europe, South Africa and Israel) meetings, culminating in the International Symposium in Rochester NY this July, have confirmed unanimously that the forthcoming EUSEC conference will be held in Edinburgh, 18th-20th September 2006. Paul Davies from the UK Chapter will be the General Chair, with a multinational organising committee including the following:

New ideas for EUSEC2006 include:

- ▣ Parallel tutorials and technical paper sessions on all three days
- ▣ Themed 'Toolvendor Challenge' problem – a competitive capability shoot-out
- ▣ An Academic Forum on the Thursday following close of main event

- ▣ Hosting the INCOSE (international) Board of Directors meeting to put UK on the map
- ▣ Papers invited from INCOSE Fellows as well as Keynotes
- ▣ Student paper session

Paul Davies
General Chair

Position	Post-holder	Chapter
General Chair	Paul Davies	UK
Co-chair – UK -Europe	Rick Adcock Paul Schreinemakers	UK NL
Treasurer	Peter Lister	UK
Technical Chair Review Co-Chair	Terje Fossnes Dieter Scheithauer	Norway Germany
Academic Chair	Prof. Phil John	UK
Marketing, Sponsors, Exhibits Chair	Cecilia Haskins	Norway
Proceedings Chair	Jorg Lalk	South Africa
Toolvendor Challenge	Jakob Kagan	Israel
Tutorials Chair	Open	





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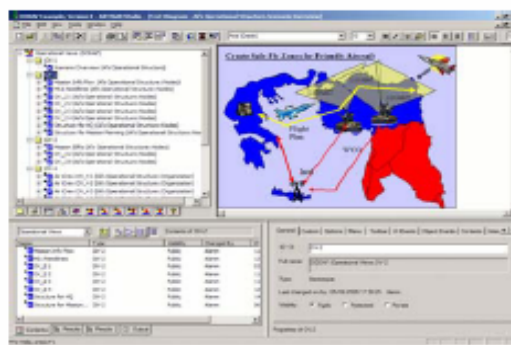
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President's corner



The UK Chapter got a high profile at Rochester. There were about 16 UK papers and two UK-chaired panel sessions. 31 of the 1071 attendees were from the UK. Many of them went up on the platform during the banquet to receive the President's Award. This award reflects huge credit on the enthusiasm and achievements of all our members past and present, and particularly of the past presidents who over the years set the trajectory that led to this success.

Behind the scenes we are strongly represented in the Board of Directors and there was a strong UK input into many of the working groups. The competency framework was presented, the final draft Z1 leaflet distributed for comment, and both were very well received.

I write this after returning from the Rochester International Symposium and a well-earned but too-short holiday in the West of Scotland.

The SEIC people got strong positive feedback about the UK having a "systems engineering research agenda", which those with long memories will remember was kicked off during Bill Bardo's presidency by the 1997 Foresight report. "Where next?" is an interesting question.

There seems to be a sea change in INCOSE compared with a couple of years ago. There was a noticeable and welcome shift in focus from "process" to "value". The quality, variety, novelty and interest level of the papers were all high, a tribute to the efforts of the review panel, and perhaps also to the diverse and predominantly commercial nature of local industry in the Rochester area. I am embarrassed to admit that my own effort won a "best paper" award. There was a strong thread of papers by people who displayed a grown-up understanding of complex open systems, socio-technical systems, system of systems issues, complexity theory,

and rapid evolution at the edge of chaos.

We were all grateful to the many of our American hosts who expressed their sympathy for the tragic events in London. Back at home, the Competency Framework and Z1 leaflet are now issued. The Midlands local group has started up. Planning proceeds for the Autumn Assembly and for the 2006 European Systems Engineering Conference. Chapter Membership is about 20% up on this time last year, and near the 500 mark. We have sorted out the organisation of the board, the new structure is bedding down and the various teams are starting to work effectively. Thanks as always to our many dedicated activists who keep the chapter working. And finally I would like to extend my best wishes to all of you and your families, and hope you have had a good holiday season.

Hillary Sillitto
President of the UK Chapter

Events calendar

Aug/Sept

- | | |
|--------------------------|--|
| 29th Aug - 2nd Sept 2005 | 13th IEEE International Requirements Engineering Conference, Sorbonne, Paris.
www.re05.org |
| 19th - 23rd Sept 2005 | 9th IEEE EDOC Conference including Business Interoperability within the Automotive Sector, Enschede, The Netherlands.
http://www.edocconference.org |

Nov

- | | |
|----------------------|--|
| 7th - 8th Nov 2005 | INCOSE UK Autumn Assembly, Loughborough University |
| 16th - 17th Nov 2005 | IEE People and Systems Symposium - Who are we designing for?, The Grange City Hotel, London
http://conferences.iee.org/pas2005 |

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

dcowper@sula.co.uk

Autumn assembly 2005 - November 7th & 8th at Loughborough University

As previously advised the Autumn Assembly is being organised for Monday & Tuesday 7 & 8th November. We had hoped to hold it in the SEIC building Hollywell Park but they have bookings on our dates so we are next door - ish in the Henry Ford College. This is an impressive and unique, dedicated training, conference and exhibition centre with state of the art facilities including 7 training rooms, lecture theatre and 2 large exhibition / display spaces. The auditorium encompasses tiered seating for up to 195 people and is adjacent to the rotunda which is one large room accommodating 150 people. The rotunda can be separated into up to 4 separate rooms with electric dividing walls each with Plasma TV / video power point projection etc. Topics to make the most of this modern

facility with it's potential for break-outs and working groups are being compiled.

What this facility does not have are bedrooms so a number have been booked in Burleigh Court which is also on the Loughborough University Campus and a Quality Hotel situated within a mile has rooms but it will be a case of first come first served and early booking is recommended. If either of these facilities have an event on rooms may be in short supply.

You should find at least an outline of topics most likely to be covered at the event elsewhere in this newsletter together with the opportunity for you to join in the formation of the programme / take a session leadership position if you wish or contribute with views of your own.

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John Mead on 01344 422325 or email: john.mead9@ntlworld.com

INCOSE UK logo competition 2006



Many of you will remember the Logo competition we held last year to celebrate the 10th Anniversary of the Chapter, and to show that the spirit of creativity is alive and well in the systems engineering community. In the best traditions of the real systems engineer, Bob Dale was the clear winner by throwing innovation out of

the window and pointing out that "if it ain't broke, don't fix it". We kept the old logo!

However, there may be a second chance for the creative, artistic and visionary to define the corporate image of the UK Chapter! Over the past few months, the Communications Committee has been working on the INCOSE brand and image, including the logo. After several iterations, this logo has been selected as the best potential candidate, meeting criteria for reproducibility and scalability.

Our competition for this year is to propose a UK Chapter logo that is consistent with this new INCOSE logo and that projects the UK identity to other INCOSE chapters and to organisations beyond INCOSE. The competition is open to all INCOSE UK members, and entries

should be submitted in any format by 1 September 2005. The UK Chapter Board will select the winner, and the winning logo will be revealed at the Autumn Assembly on 7th and 8th November 2005. In addition to immense personal

satisfaction and pride, the winner will also receive a prize at the AGM.

Please send all entries to Simon Hutton (simon.hutton@headmark-analysis.co.uk).



This year's autumn assembly – your chance to tell us how you could do it better!

Some years ago, we tried to distinguish between our Spring and Autumn Events – to provide refereed papers and formal presentations in the Spring, and more interactive workshop-style sessions in the Autumn. For the past few years, space and financial constraints have prevented us achieving any significant "break-out" capability, plus we have been overwhelmed with offers of presentations filling the time available. However, this year the Henry Ford Centre lends itself very well to separate areas for debate. So I would like to take advantage of this and involve you, the members, in working sessions to which you can contribute directly, and maybe take even more of value away with you to use "back in the day job". We have six strong half-day sessions on offer, with the session chairs currently developing the shape and themes of their workshops. The mathematicians amongst you may point out that we can only fit four half-days into a 2-day event; to which I retort that good systems engineering provides redundant capability in case of failure modes. We will down-select to four only if we have to; with the venue on offer, parallel sessions are easily feasible.

The proposed sessions and chairs are shown in the table.

Peter's session 1 grew out of repeated attempts to impose standard SE practice to railway signalling safety practices, and having to navigate round obstacles imposed by traditional methods. But the end result appears to

	Title	Chair	Contact Details
1	Safety Engineering, and Systems Engineering Applied to Safety – the same thing?	Peter Lister, Siemens Transportation	peterlister@f2s.com
2	Competences, Certification, and the role of Academia and the Engineering Institutions	Allen Fairbairn, Ellipsis	allen.fairbairn@btinternet.com
3	The INCOSE UK 1-Page Guides: what next?	Hillary Sillitto, Thales	hillary.sillitto@blueyonder.co.uk
4	Systems Engineering applied in the Automotive Industry	Dr Barbara Jones, Pi Group	barbara.jones@pigroup.co.uk
5	Systems Engineering applied to Nuclear Power and Waste Disposal	Bob Dale, MBDA	bob.dale@mbda.co.uk
6	Systems Engineering Standards – Where are we, what's next?	Jon Holt, Brass Bullet	jon@brass-bullet.co.uk

suggest that "Safety Engineering" as a discipline has few "value-added" practices that would not be found by engineers with a general SE background and a good domain knowledge. We wondered if this were true in other safety-related industries, for example avionics and aircraft design itself, or even nuclear and automotive design as per sessions 4 and 5. If you have an opinion and would like to help lead the discussion, please get in touch with Peter who is looking for different viewpoints and industry experiences.

Allen (session 2) and Hillary (session 3) have already outlined their sessions, see below, but are likewise looking for contributors.

Barbara presented an interesting and well-received paper at this year's Spring Conference on the topic of session 4. This prompted the question that if there are some

signs of SE in the car industry, but it isn't called SE necessarily, what are the perceived barriers to adoption, and how do we overcome them? Is it a language issue? Is there a perception of delays and overspends due to carrying the overheads of Defence-related practices? Or is it that the automotive industry already runs its engineering management efficiently, and the rest of us need to learn from it? If you have experience of 'the way things are done around here', Barbara is waiting to hear from you.

The Bristol Local Group of INCOSE UK have had some contact with the Nuclear industry, which makes it clear that they take the operations and disposal phases of the engineering lifecycle a lot more seriously than perhaps the INCOSE forum has up to now. Bob intends to use session 5 to airing the issues encountered in a way

that we can all capture and analyse for use in our own industries.

Finally, in response to the returned Spring Conference questionnaires, there is clearly a demand for more briefing on the status and usage of standards: CMMI, DODAF and MODAF in particular. What can we do to summarise their applicability and guidance for application? In session 6, Jon will encourage opposing viewpoints, in an effort to demolish or justify the use of standards.

In addition, we will squeeze the annual Chapter AGM into proceedings, along with a feedback session on events and best papers from the July 2005 International Symposium held in Rochester, NY.

Paul Davies
Events Director

Autumn assembly sessions

SE core competencies and engineer's certification / chartering

The recognition of systems engineers as competent professionals in relation to a defined body of knowledge has always been considered a hot topic within INCOSE - although not one that has seen much progress over the years. All of this has changed within the last few months with the publication of a 45 page Systems Engineering Core Competencies Framework document prepared by members of the UKAB (INCOSE UK Advisory Board) and now available to

chapter members for downloading from the UK web site. Final details for the half-day session will be published later but as a guide, expect:

- ✚ an outline of the framework document and its future by one of the contributors;
- ✚ a critical view of what is not included;
- ✚ a discussion of the certification

routes open to UK members, including contributions from the IEE;

- ✚ speaker(s) from academia on incorporating suitable provisions into full and part time courses;
 - ✚ views on how we can also spread this very welcome initiative outside of the defence and aerospace sectors.
- Expect to take part in vigorous plenary or break out sessions. This is now an initiative that has reached

its tipping point and the views of members in the UK will influence what happens in the UK on this initiative. As Chapter Board member with responsibility for this issue I welcome and encourage in advance of the Autumn meeting any contributions, lobbying, haranguing, special interest pleas and the like by e-mail to allen.fairbairn@btinternet.com or by phone 01303 850255.

Allen Fairbairn

The INCOSE UK one-page guide(s) to systems engineering: making SE work for you

The recognition of systems This year the UK Chapter launched the initially-titled "Bart Simpson Guide to Systems Engineering" project, now renamed "Z1". The Z1 leaflet has been published and has received an enthusiastic response. It is hoped that it will be the first of a series of simple and useful 1-page documents, to promote and explain effective and useful systems engineering.

Various topics have been proposed for future guides, including

- ✚ "evolving and sustaining successful systems - SE is not just for initial development"
- ✚ "applying SE to socio-

economic (and/or Enterprise) systems"

- ✚ "systems engineering standards"

This session concentrates on three topics of key interest to many of our members:

 - ✚ SE that works for SME's - Mike Sussman
 - ✚ The value of systems engineering - Paul Davies
 - ✚ Tailoring Systems Engineering - how much SE is enough? - Hillary Sillitto

Each theme lead will prepare a skeleton or "straw man" leaflet in

advance for others to critique, and give a short minute presentation of their topic, identifying what they see as the key issues and some alternative ways of presenting them. A panel discussion will follow, to get coherence across the group and in particular to get a degree of consensus on format and layout. This is an opportunity for the minority who did not like the Z1 layout to show that their ideas are better!

We will then split into smaller groups, one or two per key topic (or some groups may choose to tackle another topic of agreed to be of value). Each group will debate the best way to present its topic, key issues to be addressed,

and key points to be made in the 1-page leaflet.

A rapporteur from each group will then provide feedback on their conclusions and recommendations in plenary session, with opportunity for further discussion. The discussion will be captured, the different approaches compared and contrasted, and if there is sufficient interest, signups for small teams to produce improved draft leaflets will be offered. All participants will benefit from this rare opportunity to share with and learn from fellow practitioners from outside their normal "domain".

Hillary Sillitto

Coping with complexity

Following on from the recent Midlands Local Group inaugural event, INCOSE UK has been approached by one of our members with an invitation to contribute to a systems engineering oriented research project commissioned by BIW Technologies. BIW Technologies provides supply chain integration services to the architectural, engineering and construction industries, primarily as an application service provider through a centrally managed facility.

They have also developed the PlanWeaver toolset (www.planweaver.com) to analyse complex Work Breakdown Structures (WBS) using Dependency Structure Matrix techniques. Following work with the Aerospace and Defence sectors, BIW are now looking to develop their WBS analysis tool to better understand Product Breakdown Structures (PBS). The interest in systems engineers as a stakeholder group comes from INCOSE INSIGHT, October 2004, which reported that 90% of delegates questioned at

the 2004 International Symposium agreed that tools for coping with complexity are needed.

The Rapid Innovation Group is conducting the research, in order to:

- ✚ Understand the challenges faced by Systems Engineers in breaking down complex product structures and how they currently overcome them;
- ✚ Develop a list of requirements for a tool that can help with this process;
- ✚ Establish whether there is a fit between these requirements and PlanWeaver, and ascertain how much development is required to close any gaps;
- ✚ Determine suitable project types for such a tool, and calculate the benefit a tool could bring to these projects.

Chris Stebbings of BIW Technologies, and Paul Higgins and Peter Hemsall of Rapid Innovation Group, have asked if any INCOSE members interested in contributing

to their research could contact them as soon as possible at Paul.Higgins@rapidinnovation.co.uk. Whilst the research and the analysis tool are not INCOSE sponsored or endorsed technical products, some members may find the opportunity to participate interesting and of benefit. In return, BIW Technologies and Rapid Innovation have offered to share their findings in this fascinating and complex subject with INCOSE UK.

Simon Hutton
Communications Committee
simon.hutton@headmark-analysis.co.uk



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:

dcowper@sula.co.uk

or write to:

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c/o Sula Systems Ltd.
Old Crown House,
Market Street,
Wotton-Under Edge,
Glos. GL12 7AE

New INCOSE UK board structure

For a number of years the INCOSE UK Board was organised around 2 committees: "SEPCD" (Systems Engineering Practices and Development Committee) and "CMC" (Communication and Members Committee). Latterly the two committees essentially fused into the main board and lost their identity. Part of the reason for this is thought to be that the scope of the two committees had become too big, and too many people were in both committees. But it was clear that trying to run the whole chapter from the board, without a subordinate committee structure, is unwieldy and inefficient. Board meetings were too long and attendance at them was variable, sometimes poor.

We have now introduced changes intended to allow the chapter to operate more efficiently and make better use of volunteers' time. The new committee or "team" structure is based on the groupings that were emerging naturally within the old organisation.

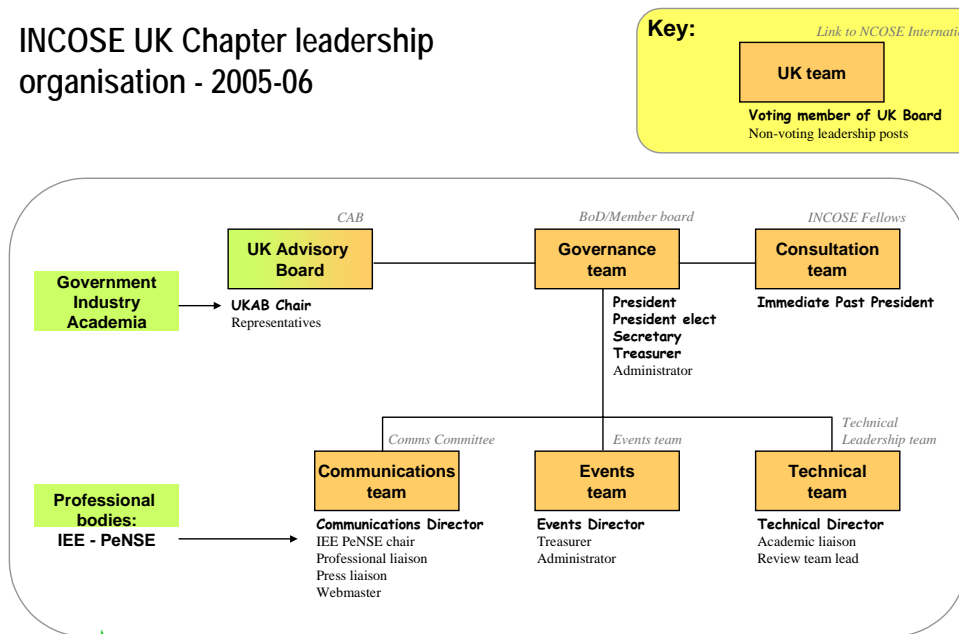
The first diagram shows the new structure, which turns out to align well to the new structure established by INCOSE international. The second shows the job of each part

of the organisation. The current post holders are shown on the

back page of each copy of Preview.

H Sillitto
President of the UK Chapter

INCOSE UK Chapter leadership organisation - 2005-06



Key:

Link to INCOSE International

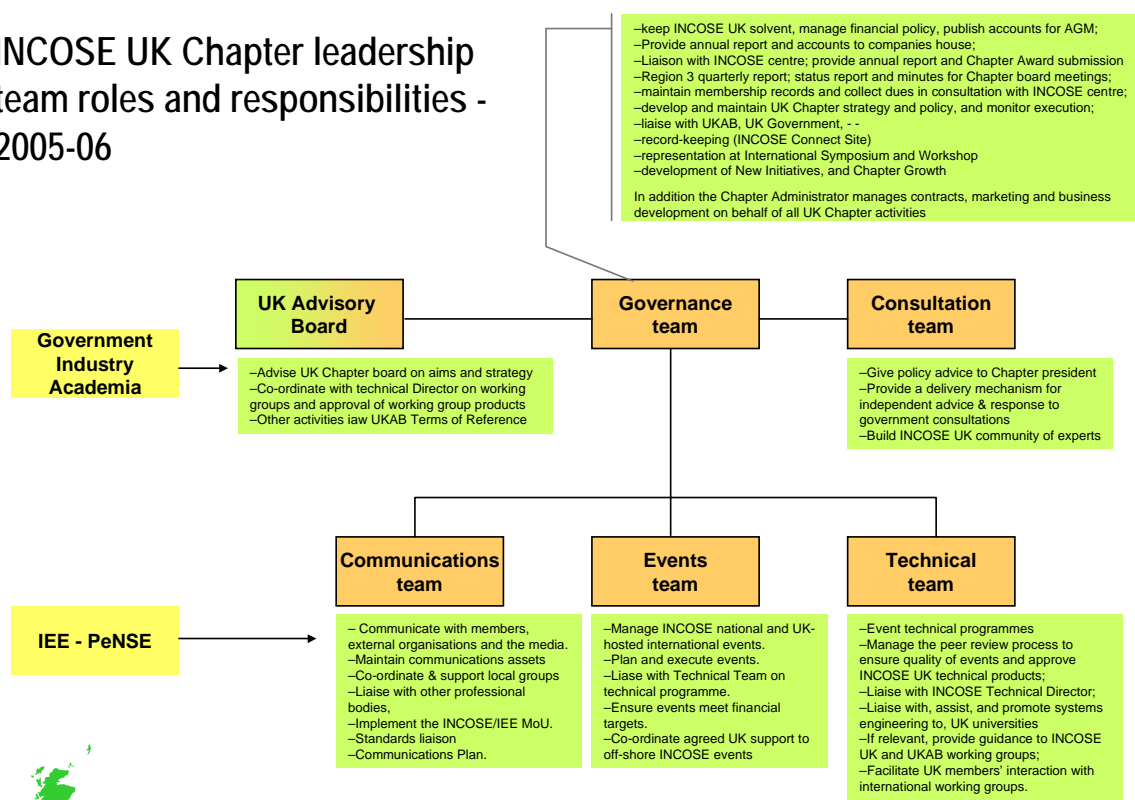
UK team

Voting member of UK Board
Non-voting leadership posts



This is the "permanent" organisation of the UK Chapter of INCOSE (International Council of Systems Engineering). Working groups and local groups are of a varied and dynamic nature and so are excluded from the diagram.
Issue 1: 14 July 2005

INCOSE UK Chapter leadership team roles and responsibilities - 2005-06



Around the regions

Bristol

The latest event put on by the Bristol Local Group was the eagerly awaited "Architectural Frameworks - How MODAF will change my life!". An event concerned with MODAF has been requested from the very first set of event feedback forms, so consequently there was a high turnout of people on the night, ready to be educated and enlightened. The evening kicked off with an overview from Rick Adcock (Cranfield University), showing how architectural frameworks have evolved, and how system architecting fits into contemporary systems engineering as described in ISO15288. This helped to set the scene for what architectural frameworks are, how they should be used, and where MODAF has come from.

We were fortunate enough to

have three of the MODAF Partners (Dave Mawby, Fariba Hozhabrafkhan, and Ian Bailey) presenting their latest thinking at the event, so in some cases the information was even more up to date than that on the www.modaf.com website. Dave Mawby started off with an introduction to MODAF, and an explanation of its target audience. He then went on to explain the differences between MODAF and DODAF, covering both the newly introduced diagrams and the modifications to existing ones. Then followed an explanation of some of the enablers to MODAF including the six step architecting process, the documentation set, and the "patchwork quilt" effect that should emerge as MODAF compliant models are captured in the set of architectural repositories. A number of comments from

the floor were raised during this, querying where industry fitted in, and what level of training support would be provided. It was stated that industry involvement was up to the IPT to decide, but that the MODAF guidance (backed up by mentoring and targetted desk-books) would provide an appropriate steer, based upon feedback from the MODAF pilot projects.

Ian Bailey then went through the MODAF meta model and taxonomy, touching upon issues such as alignment with SysML, model data exchange between MODAF modelling tools, and how to enable a heterogenous set of architectural repositories to share data using OWL (Web Ontology Language), since there are likely to be many existing sources of data that could be pulled through into MODAF models. He also cov-

ered the ongoing work with tool vendors to support the framework, finishing with the statement that whilst there are three "MODAF convergent" tools, none of them are MODAF compliant as yet.

Overall, the presentations and discussions provided a good overview of the current state of MODAF and how it will be rolled out over the coming months. Copies of the presentations should be available on the INCOSE Bristol Local Group website (www.incose.org.uk/bristol) soon, hopefully well in advance of the next event on Wednesday 28th September - the tool vendors' response to the MODAF challenge!

Ian Gibson
(on behalf of the INCOSE Bristol Local Group)

Collaboration gets INCOSE local group off to a flying start

The East Midlands Local Group inaugural event at the Systems Engineering Innovation Centre (SEIC) on Thursday 21 July explored the theme of collaborative e-business trading enabling mutually productive relationships between large companies and SME's in the supply chain. In keeping with the theme, the event was held in collaboration with the Institution of Electrical Engineers (IEE) and was facilitated by the SEIC. The event was extremely well attended, and the non-INCOSE members in the audience appreciated the introduction given by the organisers, Ken Astley and Paul Davies. Paul gave an excellent overview of Systems Engineering and the role of IN-

COSE, and outlined ways in which people could support the local group.

Paul was followed by Guy Oliver and Joel Williams of Exostar, an e-business solutions provider offering secure on-line trading and collaboration. Guy and Joel presented Exostar's capability, and gave us an insight into the direction they are moving to support an increasingly complex supply chain situation. Alec Cassells of IBM then shared his views of the current state of collaborative product development, and of future trends in this fascinating and critical aspect of e-business. Alec showed how more companies would have to 'buy in' to being part of an e-business network, increasing the

complexity not only of the engineering but also the commercial aspects of supply chain management. The event concluded with an excellent buffet, giving an opportunity to discuss the finer details of e-business with the guest speakers. The SEIC are to be thanked for providing such first rate support, including the facilities, the refreshments and the event management.

Although the next meeting has to be scheduled, potential topics include the use of systems engineering to solve real world problems and save money throughout the project lifecycle, a student evening, and a systems engineering tool exhibition. These topics will be of interest to a broad range

of systems engineers, and aim to improve the awareness and application of systems engineering by SME's within the region, as well as large organisations.

Further details of the INCOSE East Midlands Local Group and future events can be found on the INCOSE web-site at www.incose.org.uk/EastMidlands.htm. Contact Ken Astley (k.r.astley@lboro.ac.uk) or Paul Davies (Paul.Davies@uk.thalesgroup.com) to find out how you can support the East Midlands Local Group, either by attending future events or by assisting with running the group.

Simon Hutton
Headmark Analysis

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 837334 or email: simon.hutton@headmark-analysis.co.uk

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