



INCOSE UK Newsletter

Midsummer Madness

Midnight(ish) Tuesday 15th May 2001. INCOSE Spring Symposium, Daventry (somewhere near Coventry)

“So you’ll do it then?” asked the president.

“Yes, of course” I said (anything for the president).

And that is about all I remember of the conversation between Pete Lister and myself at the INCOSE Spring Symposium. This, I am afraid, is the result. I am the new chairman of the CM committee and editor of the newsletter, so welcome to my inaugural issue.

Who am I? I am Dr Guy Tugwell, I work for a systems consultancy in South Wales called Brass Bullet Ltd. We work in standards and process modelling as well as general systems engineering consultancy. We also give training courses in many aspects of the application of the UML from beginner level onwards. I’ve been an INCOSE member for a few years now and have found the organisation interesting and informative, so now it’s time to put something back in...

Right, here we go then, firstly my role is to facilitate and enhance communications between members. The most obvious way initially is to use this newsletter. I’d like to see articles from a broader base of people, so far it has mostly been the board members who contribute. Valuable though their input is it would be nice to see more grass-roots contribution. The next route to go down is to reactivate the local groups scene. There is a section of the web-site dedicated to local groups, their events, contacts and interests. This has already been put to good use by the Scottish contingent, so have a look for ideas.

A large part of what INCOSE is involves sharing information and experience, therefore I’d like to investigate the interest in and opportunities provided by a discussion section on the web-site. Any other suggestions on the web-site structure or content are welcome.

OK, I’ll keep it short and sweet on the first issue so if you have any comments, quibbles or suggestions please contact me.

Guy Tugwell
CMC Chairman

President’s Corner

The Autumn Assembly 2001 will mark the end of my Presidential term, and Paul Davies will take up the reins for the next two years. I hope that I will be able to devote more of my ‘INCOSE time’ to technical activities, but I am sure that I will still be involved in Chapter issues.

I began my term by calling for volunteers and it has been a slow process identifying likely candidates and then finding the best way to utilise their capabilities. Guy Tugwell is the latest to be assigned a task, and he has now taken over the editorship of the Newsletter. He has also taken on the CMC (Communications and Membership Committee), and hopefully he will be breathing some life into this long dormant committee.

I took over editing the Newsletter at issue 4, and it is a nice to be relegated to the role of contributor in the 27th issue. In the early days I wrote the copy, laid out the Newsletter, printed 400 or so copies on the Aerosystems International photocopier, stuffed the envelopes, and stuck on the stamps and labels. A couple of years ago 3SL took over the production side of the process, first with Sue Bennet and now Jan McGrath.

INCOSE volunteers often bring not only their own time and energy but also the support of their company. Our companies support us by funding at least some of our time as well as providing facilities such as copying, e-mail or use of a room for a meeting. I would like to thank all those who contribute their time or sponsorship (either in cash or in kind) to assist INCOSE activities in the UK.

Please send any contributions to this Newsletter to The Editor INCOSE UK Newsletter, Guy Tugwell, Brass Bullet, Pemchurch Chambers, 30-32 Cradock Street, Swansea, SA1 3EP
Tel: 01792 417227 Fax: 01792-558729 e-mail: guy@brass-bullett.co.uk

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Ideally we would be able to pay for professional services, however the INCOSE UK turnover would have to increase significantly. Paul Davies is currently investigating an approach to corporate involvement in the UK Chapter of INCOSE, but we will undoubtedly still rely on volunteer assistance. Some feel that volunteers are not appropriate for a professional society, but it is my view that part of the charm of INCOSE is that it is under the control of its members. I would be unhappy if the price of corporate involvement was corporate control of our activities.

It is important that we change to meet the challenges of the future, so we must try new directions and ideas. I hope that through the changes we can retain the enthusiasm and energy of our members which are such key features of the INCOSE culture.

Peter Lister

President of the UK Chapter of INCOSE

Intelligent Enterprise Interest Group forming

The INCOSE Technical Board has approved the formation of an Intelligent Enterprise Interest Group, IEIG. An ad hoc meeting during the 2001 Conference indicates that over 20 INCOSE members are interested.

The tentative intent (pending approval of the SEATC and Technical Board) of the IEIG is:

PURPOSE:

The IEIG will explore and demonstrate the utility of system engineering for evolving intelligent enterprises. Enterprise intelligence is indicated by an enterprise's capabilities of agility, dynamic stability and goal-seeking behavior. The utility of systems engineering will be measured by its contribution to;

- 1 the appropriate initialization of such enterprises as well as
- 2 the rate and parsimony of their evolution.

BACKGROUND:

Enterprises, whether in business, the public sector or elsewhere, are systems. Each enterprise is most effective when its content, structure and behavior is aligned with its context and when it demonstrates adherence to systems principles, both static and dynamic.

Enterprises tend to be higher order systems than are usually encountered by practitioners of systems engineering. This is because an enterprise system includes a) people - individuals interacting via a large variety of explicit, implicit and tacit relationships -- and b) a broad spectrum of other component types. Also

enterprises tend to higher order because all aspects, external and internal, typically are in flux and large part of their success is determined by their ability to change, proactively as well as reactively, yet maintain full integrity.

Enterprises are increasingly distributed and virtual. The on-going convergence of several technologies enables enterprises to collaborate in patterns that transcend respective legal or national boundaries.

Several consequences result. One is that enterprise concepts such as the theory of the firm, organizational theory, and even the purpose of enterprises are being overtaken by new concepts. Likewise practices such as corporate structures, governance and compensation are producing unsatisfactory results. Similarly, business models, processes and practices as well as their automation systems are not only obsolete but key impediments to enterprise evolution. Finally, managers are increasingly overwhelmed by complexity and are "preying" on subordinates or "praying" for leadership.

Only the more intelligent enterprises will survive - those with the better agility, response-ability and goal-seeking behavior. Survival is too important to be left to managers who are not also well versed in systems thinking, identification, design/architecting, engineering, adaptation and learning.

Systems engineering of Intelligent Enterprise is not about creating systems that enable or improve an enterprise but about creating an enterprise as a high performance whole system.

Due to the law of requisite variety, the intelligent enterprises applications domain calls for a type of systems engineering that is larger in scope and more robust in semantic span, design method/technique and system order than is required of system engineering in other domains. In fact, the system engineering that will suffice for creating intelligent enterprises must be accomplished by an intelligent enterprise.

OBJECTIVES:

The IEIG intends to:

- Construct a model showing the relationship of enterprises' intrinsic and extrinsic attributes to degrees of enterprise intelligence.
- Determine how enterprise intelligence can be assessed and diagnosed.
- Determine the interventions and/or environments appropriate for evolving enterprise intelligence.
- Clarify how system engineering enterprises can be matched to the challenges of their mission and nature of their organizational context.
- Contribute to the INCOSE objectives and goals from this perspective. This may entail expanding the INCOSE view of systems engineering.

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- Directly experience the implications of an Intelligent Enterprise by operating the IG and sponsor sessions as an IE.
- Prepare practitioners of systems engineering to perform the type and span of systems engineering activities needed by intelligent enterprises.
- Have fun.

Inaugural Co-chairs are:

(US), Jack Ring, jring@amug.org

(Euro) Allen Fairbairn, agf@applesys.demon.co.uk

(Pacific Rim) venerable old "tbd"

If you'd like to see a copy of the proposed, constitution, work programme and goals for the IEIG, or if you'd like to join or just be kept informed of progress, contact Allen Fairbairn.

Soft Systems Interest Group

UK Chapter members will know that a soft systems interest group (SSIG) was formed some two years ago, but activities have been restricted to sessions at the annual symposium or Autumn Event and preparation of a programme of work on which little has been done.

We plan to breathe some new life into the SSIG, particularly in view of the new Intelligent Enterprise Interest Group that is just starting up (reported on elsewhere in this issue).

These groups are now intended to complement one another. Whereas SSIG was originally premised on taking a broader view of SE, bringing in what are usually referred to as "soft" systems techniques, to inform and

support the more normal, or "hard" SE, the IEIG is more focussed on bringing a broader set of systems techniques, including "hard" SE, to the problems and challenges of building intelligent enterprises - organisations that are better adapted to the increasing demands of the marketplace, where agility and a culture of innovation, rapid adaptation and organisational learning are key to success/survival.

The synergy between the two groups seems to be quite clear. There was always an intention that the SSIG would eventually move from discussing and developing broader techniques for informing classical SE towards using those techniques synergistically in a broader set of problem spaces, ie the group would start to look not just at delivering (and supporting through the life cycle) the product "project", but also at the interrelated people, process and organisational issues ie the correlative, other "projects" that ought to be treated concurrently. On the face of it, the IEIG would seem to be targetted only to address the organisational issues but that is not so. Concurrency of action would be required merely to understand and contend with the factors relevant to an Intelligent Organisation, so, in that sense, both IG's were heading towards expansion and development of both the set of tools and the application areas for a systems based approach.

The two groups can and should now co-exist without nugatory overlap on the basis of their presently stated aims and objectives with, perhaps, just some minors adjustments, to recognise each other. The SSIG need not now be driven towards the broader application areas, although it will not always be able, or appropriate, for it to ignore them. The SSIG can concentrate more on the development and application of soft system techniques in support of "hard SE" realisation projects, whilst the IEIG builds on this and other resources to provide the systems based frameworks and tool sets necessary for putting IE's together. The SSIG will be working on the promulgation of Soft Systems, focusing on theories, methods, techniques, etc. for creating soft system models regardless of scale, whereas IEIG is "in the large." Of course, the IEIG can also provide a "laboratory" for enterprise level experiments on soft systems techniques

So, where does the group go from here?

For those with further interest in the SSIG - and/or the IEIG, please contact Allen Fairbairn in the first instance allen@elipsis.com who can send you:

- the original basis of the SSIG and its initial programme of work (which did not get very far)
- the IEIG's scope of interest, work intentions and provisional set of deliverables.

Note that the SSIG was/is subsumed under the Modelling and Tools Technical Committee; the IEIG is proposed as

part of the Systems Engineering Applications Technical Committee.

A joint session is planned for the UK Chapter's Autumn Event that will address the scope and interests of both the SSIG and the IEIG

Allen Fairbairn

Autumn Assembly 2001

Make sure that you set aside the 12th and 13 of November in your diary for the Autumn Assembly 2001. This year we are holding the event at the Four Pillars Hotel in Abingdon and planning is already in full swing. The session chairs are sorting out the details of their sessions and its time to give you a first preview of what will be on offer.

The format is the same as last year's highly successful event; four half day sessions that provide an in-depth view of four key topics. Audience participation is a major feature of the sessions, with plenty of time for questions and discussions. On the Monday we are scheduling two sessions that should get you thinking about Systems Engineering in the widest context.

To start with there is "Understanding And Dealing With Systems" chaired by Prof Philip John. It is evident at every systems engineering event that there are many people working on what we might call the 'process, method and tools' side of things (witness the number of papers on UML etc at SS2001). This is interesting but it is certainly not sufficient. In order to develop systems engineering as a true discipline, rather than a 'copier' of methods from, say, software engineering, we must develop an understanding of, and ways of dealing with, SYSTEMS. Systems are, after all the defining issue of systems engineering.

If we do not address this issue then we risk developing elaborate processes, methods and notations and applying them to the wrong problem and addressing the solutions in the wrong way!

There will be a brief interlude at the end of the morning session to allow us to complete the minimal but necessary formalities of the INCOSE UK AGM. This will confirm the main officers who are responsible for managing our activities in 2002, and present the annual accounts.

On Monday afternoon Allen Fairbairn will be bringing you "Systems Engineering the Enterprise". Complex projects and the enterprises that execute them can benefit much more than at present from an intelligent application of systems techniques. Whilst classic systems engineering will always be of use, a more broadly based set of techniques is required, especially to deal with the people systems and complex interactions with stakeholders.

Arguably, these considerations have been ignored in the past, in the interests of simplifying the problem space to be considered for the system of interest. Such an approach is no longer tenable for organisations that wish to learn from their current projects and adapt swiftly to the increasingly volatile market changes that are now emerging. The session will examine ways in which techniques are now being developed to address the greater complexities involved in taking a much broader view of project realisation.

The by now traditional event dinner will take place on Monday evening. The dinner provides a great opportunity to make new friendships, renew old ones, and continue to discuss the issues of the day. An invited speaker completes the evening.

On the Tuesday the sessions cover slightly more down to earth topics, but still ones that concern Systems Engineers in their daily business. Paul Davies will chair a session on Requirements Management. Despite being a frequent topic in INCOSE events, Requirements management continues to exercise many peoples minds (including mine!). Several volunteers took one pace forward at the Spring Symposium when Paul promoted the prospect of forming a UK 'cell' as part of the Requirements Management Working Group. Paul will be looking at the latest developments in Requirements Management and exploring how these can be applied to real world requirement development.

To conclude the event, Bob Briggs will lead a session that addresses the topic of System Modelling. RDD-100 introduced a comprehensive integrated modelling environment over 15 years ago. The linkage between behavioural, physical and functional models is a powerful way of ensuring that all aspects of a system are correctly designed. Other tools have followed a similar route, but still many systems are developed solely on the basis of a set of requirements. The move to Object Oriented approaches may alter the characteristics of these viewpoints, but doesn't change the fact that they must all be addressed. The session will review approaches to modelling and see how they can help the system designer.

There are still details to be worked out, but you can be assured of an interesting and useful two days. We will be circulating full brochures at the end of September, but the registration information will be posted on the UK website from early September if you want to book your place early. Prices will be similar to last year and so will represent excellent value.

Choice of Venue for the Spring Symposium 2001

Clearly the catering services at the Landmark Hotel, Daventry were not up to any of our expectations. The venue did have an awful lot of features that tend to be taken for granted and not appreciated by the majority of delegates.

When we start looking for a venue, because we have never yet found one that exactly meets our requirements, we only have a general plan and expectation of the numbers of everything to be accommodated. That includes, not only how many delegates will we attract, but how many conference rooms do we require, how many in each room, how many diners, how many bedrooms etc, etc. It is therefore difficult to be positive with a hotel in order to negotiate a good rate, INCOSE cannot afford to take the financial risk of booking the rooms itself.

There were quite a number of conference rooms that we did not use, but it was very good to know that they were there if required. Like the Bridge Room, which until the day of the dinner was not going to be used, we were going to be in the hotel restaurant. When we had our last minute rush of bookings for the dinner they agreed that we could have the separate room.

I suppose that I should therefore take some blame for the, not entirely satisfactory, dinner arrangements. I should not have taken all of those extra bookings on the day. I did however want us to have the separate room and I was not to know that the hotel did not have the

necessary extra staff available to cope with the late move. So, partly my fault for taking late bookings, partly yours for booking late, and partly the managers for trying desperately to keep up with our ever changing requirements.

Another benefit of the conference centre flexibility was the ability to take several extra tutorial bookings during the preceding week. This may not be the view of the tutorial presenters who just before they left work on the Friday before the event had to rapidly produce extra copies of their delegate packs. In some cases this was more than double the number, and in others they did not get the request until the Saturday, when their offices were closed.

To the biggest complaint of all- the none appearance of coffee (hot) just when you wanted it. No excuses just an explanation. It appeared worse because it happened on two days running. The first, the only experienced waitress, who had been provided with recently recruited juniors who had never worked before, fell while carrying a large tray of cups and saucers into the registration area and had to go for first aid. You should see how far bouncing cups (or parts thereof) can travel when dropped onto a solid floor. The waitress also appeared to bounce.

On the second day everything was ready 10 minutes before the appointed time, now spread over two serving areas in different rooms to avoid a crush, although the boy that brought the coffee appeared not to know this. No delegates turned up until some while later because of over-run of the Opening Session. When everyone turned

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up late desperate for their coffee the very limited staff had gone onto other duties and were slow and I must say not keen to produce coffee all over again. One young lady actually declined but was no longer on the staff by end of the day.

It is sad when everyone is expecting hotel services and the new, inexperienced, recently recruited conference centre staff are not up to the job. However the venue continues with its renovation programme, a new fitness and training centre and plush new conference facilities were about to be built as well as improvements to the part we occupied. I feel sure that we will look at the venue again because of it is one of the few around that appear to offer what we want –most hotels do not. If the catering has improved we may well be going back there – if we can afford it. This time we were given a very special price and although they failed to meet all of our expectations they tried their hardest to meet our requirements however many times I had to change them.

Another message here is - if you want to come please book early as we may have to be less accommodating to last minute additions in the future.

John

SS2001 Symposium Improvement Questionnaire

First of all let me thank those 46 of you attendees at the Spring Symposium in Daventry for completing the questionnaire. We do look at all of the answers and compile an analysis showing which of the many things we asked for comments on at this event were popular, and what was not. We also consider what improvements we can make in the future based on this popular vote and on the suggestions received.

You cannot expect all of your suggestions to appear next time of course because yours may not be the popular view. Poor catering service was a fairly common view, but on others there is always totally opposing attitudes. E.g. the hotel Central location excellent which was the prevailing view with “Too far off the beaten track”. See separate article about venue selection.

However in a slightly more detailed view opinion was as follows.

About marketing. Virtually everyone thought that it was adequately advertised however we did of course only ask those that knew about it. Comments such as “by accident, someone left a brochure on a desk” are very helpful and is positive feed back for all of those who volunteered to take a few brochures for circulation, putting into company libraries or *leaving them on a desk*. It clearly has some positive results and probably contributed to the 30 plus new members that joined to

come to the event. We will be seeking assistance like this again for the next event.

Considering the symposium in general on each topic the majority thought that the event was “about right”.

About the technical sessions and how valuable they were to you the voting was;- First -Lifecycle issues 3, 2nd -Life cycle issues 2, 3rd - Opening session. Where we invited you to nominate your favourite sessions we clearly have to reword the question because there are, according to Systems Engineering logic so many different ways of answering it that they defy sorting a consensus. There was however a lot of support for the Keynote /opening session.

To what items would you eliminate from the registration fees to reduce the costs there were no suggestions but a question as to why should presenters pay the same as delegates. It was not immediately clear as to whether the questioner thought they should pay more, so as to reduce costs, or less. There is clearly in many cases a definite advantage in presenting a paper; this could be assisting in the sale of products, or adding to the list of published or presented papers on ones CV or just in having an audience to try out your views upon and I am sure that there are others. Should these people all pay more, or less, and if so how much. My view is that they should pay as they get to listen to all the other papers, the same as all of the other delegates, and they also get to present a paper for free. Once one does start to offer discounts, everyone believes that they are entitled to one, and the price for the average delegate, if there is such a thing, goes up!

There were quite a number of suggestions as to what should be added to future events and while some of them will almost certainly appear at a future event others most definitely will not!

Tutorials received Good or Excellent on every feature and will *definitely* receive most people’s recommendation to their colleagues to attend next time. There were a number of comments on them, such as “spoke too fast” etc but none that provided a consensus problem.

It was pleasing to note that those who do not plan to come to the Autumn Assembly or the next Spring Symposium were in the definite minority.

The most valuable part of the questionnaire response could well turn out to be the “Do you have any suggestions / ideas for?” part. There were many and mostly of a positive and helpful nature. The event planning committee have heard /seen /discussed these and some will certainly be acted upon.

John Mead.

Where have all of our members gone? (Please send payment)

A recent (9th July) edition of a membership report from INCOSE Central Office shows UK as having the second highest number of members of any chapter. We have 415 against the third largest having (only) 221, but still some way behind Washington Metro at 521. These numbers include those on the register in May plus any new ones joining this year.

Our 415 comprise 406 full professional members and 8 students. I will ask who the other one is and why they have been unable to be fitted into either category.

You will be aware that our membership year commences on 1 June, so May, June, and even July are the main months for renewals to come in. A report emailed on 27 July from HQ says that we have 227 members currently paid up for this year. I suspect that this is about right as 188 have come direct to me and been passed on.

Our number also includes some from far off places who may not reside in UK but have selected to be allocated to us. These include Brazil, USA, South Africa, Australia, Italy, Finland and Scotland! Mostly they are from countries that do not yet have a chapter of their own.

This year we made a special attempt to improve the integrity of our data base by sending the details recorded against each member as part of their renewal reminder, requesting them to return this, corrected as appropriate, with their cheque or Direct Debit form. As only 227 of you have bothered to renew, including those on Direct Debit, we appear to have lost nearly 200 in the process. Why? How can you all go off on holiday with a clear conscience if you have not renewed your INCOSE membership before departure???

Please send back your corrected renewal reminder with your Direct Debit form completed or your £60 cheque attached or someone is going to have to write again to those who have not responded. INCOSE UK can do without this extra burden, and so can I!

We now have a replacement volunteer to manage our database. After Mary at iLogix did sterling work for some time she finally became too over-loaded with the day job and resigned earlier this year. Many thanks to Mary, and to iLogix for providing this service.

Andrea, who works with Allen Fairbairn at Elipsis has been busy recently, I hope, compiling the database from scratch with the corrected contact details that some of you have sent in. So thanks to Mary and welcome Andrea.

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Contact address

Jean-Claude Rault

c/o CNAM-CMSL

Chaire d'Intégration de Systèmes

292, rue Saint-Martin

75141 Paris Cedex 3

France

Fax: +33 (0) 1 40 27 23 77

E-mail: rault@cnam.fr

Investing in the Future

Organisations (government, commercial and academic) have become increasingly aware of the importance of systems engineering and a systems approach to the way complex entities are formed, especially in a rapidly changing environment. As a consequence, organisations are investing in systems engineering skills and knowledge that are required to compete in future market places. University College London's (UCL) Centre for Systems Engineering was formed in 1998 in recognition of this need for systems engineering research, development and teaching. The centre's approach is to draw upon expertise from across UCL's departments with a view to advancing the state-of-the-art in systems engineering and to provide inter-disciplinary teams that will serve the needs of industry and the wider community.

University College London has invested further in systems engineering by recently appointing a Business Development Manager for the Centre, to facilitate the interaction between UCL and industry. The Business Development Manager's role is to look beyond traditional academic departmental boundaries, helping commercial partners to take a strategic and holistic view of what UCL's research base has to offer. In addition, the Business Development Manager will develop close relationships with leading companies in systems engineering, staying abreast of their needs for expertise and technology, to ensure UCL's work has industrial relevance and to aid knowledge transfer from academia to commerce.

For more information please contact:

Mr Douglas Cowper
Business Development Manager
UCL Business
University College London
2-16 Torrington Place
London WC1E 7HN
Tel: 020 7679 6825
Fax: 020 7679 6825
E-mail: d.cowper@ucl.ac.uk
Website: www.ucl.com

Contact Details

President of the UK Chapter

Pete Lister Siemens Transportation Systems Limited
4 Highlands Court
Cranmore Avenue
Shirley
Solihull
B90 4LE

Phone: 0121 713 4311
Fax: 0121 713 4360
e-mail: listerp@plcsun.siemens.co.uk, or
 pete@lister.globalnet.co.uk

INCOSE UK Administrator

John Mead 20 Beehive Lane
Binfield
Berks, RG12 8TU

Phone: 01344 422325
e-mail: John.Mead9@hemscott.net

Chairman of the SEPDC (Technical issues and queries)

Mike Prince BAE Systems
Grange Road
Christchurch
Dorset, BH23 4JE

Phone: 01202 404840
e-mail: michael.prince@bae.co.uk

Editor of the INCOSE Newsletter and Chairman of the CMC (Communication issues within and outside INCOSE UK and membership strategy)

Guy Tugwell Brass Bullett Ltd
Pemchurch Chambers
30-32 Cradock Street
Swansea
SA1 3EP

Phone: 01792-417227
Fax: 01792-558729
e-mail: guy@brass-bullett.co.uk

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1.04	01	A	Photodiode Digitisation Range	The photosensor array's photodiode output voltages will be digitised into the range 0 (black) to 255 (white).

