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Welcome to this summer edition of Preview which has an international flavour to it. The aim of this edition is to provide some feedback of the two recent INCOSE international events, EuSEC 2010 hosted in Stockholm and IS2010 hosted in Chicago. The articles in this edition also identify some of the range of international opportunities for networking and collaboration that INCOSE, as an international organisation, is uniquely placed to provide as a member benefit. I hope this will give you some inspiration to reach out and get more involved internationally.

Talking of outreach, INCOSE UK was invited to provide a panel session at the recent IEEE System of Systems Engineering conference on Sustainability held at Loughborough University. The panel session was titled "The Practical Application of SoSE Throughout the Lifecycle" and was an industry-led session that provided an End to End perspective of SoS problems. The examples were based on the practical application of SoSE, from the whole lifecycle of a product and service as it contributes to a capability, or to the complete set of activities and system views that must be taken (of a air or rail journey for example). The panel was very successful, even though it clashed with England playing in the world cup - I know which one was more entertaining!! My thanks go to Mike Wilkinson (Atkins) for chairing the session, John Price (EADS Innovation Works), John Jarrett (Atkins), Duncan Kemp (DfT) our panelists, and Geoff Robins (Atkins) panelist and keynote speaker.

The Rail Interest Group, Bristol, London and Scottish local groups continue to be very active, staging various successful events and my thanks goes to all the dedicated volunteers involved in these groups who make them so vibrant. All these activities have helped to ensure that INCOSE UK received the Gold Circle award for the 7th year running.

Finally, most of us will have experienced firsthand the current spending constraints in this challenging economic climate. This is of major importance when one of the key messages of Systems Engineering is upfront investment in correct problem identification, definition and planning, to prevent the costs of having to correct errors. This upfront investment can be difficult to achieve when money is tight. However, Systems Engineering can help in prioritising what is important and where to target scarce resources. Therefore, despite the doom and gloom there are opportunities to take advantage of in these times of hardship.

In this spirit of austerity and to de-conflict the event calendar (especially for EuSEC events), INCOSE UK has decided to provide a new format single Annual Systems Engineering Conference (ASEC2010) based on the successes of its Spring Conference and Autumn Assembly, to address the added value of Systems Engineering in these challenging times. Our exhibitors, paper, workshop and tutorial presenters bring a wide range of experience in applying Systems Engineering in a number of domains that will facilitate the exchange of knowledge in adding value to organisations through Systems Engineering.

I look forward to welcoming you all to the new annual conference, where you will have the opportunity to share experiences, network, and discuss/debate issues with fellow Systems Engineering professionals from a wide range of organisations. It is also an opportunity to enjoy catching up with existing acquaintances as well as meeting new friends from the UK’s SE community.

I would also like to invite you to attend the INCOSE UK Annual General Meeting on Monday (8th November) evening after the day’s events. This is your opportunity to find out from INCOSE UK’s leadership team about the organisation, its activities, and to ask questions or provide feedback.

Call for Nominations

The posts of President Elect, Technical Director and Finance Director will be due for election this autumn. The posts are for seats on the INCOSE UK Council with the President Elect and Finance Director also being legal directors of INCOSE UK Ltd. For those members who wish to be considered for these roles, the election process is as follows.

Nominations, drawn from current INCOSE UK membership and with agreement of the nominee, must be submitted in writing to INCOSE UK Secretariat by Friday 27th August 2010. Nominations must clearly indicate the position being nominated and must include the names and signatures of a proposer and seconder both of whom must be current members of INCOSE UK. The nomination shall also include a 250 word biography communicating the candidate’s qualifications and reasons for candidacy. The biographies will be published on the election pages of the INCOSE UK website for the members to review.

Elections will take place on line through the INCOSE UK website. The voting will commence from Saturday 4th September 2010 and will close on Sunday 17th October 2010. The results will be announced at the AGM during the Annual Systems Engineering Conference on Monday 8th November 2010. Candidates do not have to attend the Conference or the AGM.

In the event of no nominations being received for any vacancy by the INCOSE UK Secretariat by the closing date, the Council may decide to nominate its own candidate for that vacancy, to be announced at the AGM.

Any member who would like to find out more about what is involved with each role, please visit the INCOSE UK website.

INCOSE UK Annual Report

The 2010 INCOSE UK Annual Report is now available on the INCOSE UK website at: www.incoseonline.org.uk
Event Reports

IEEE SoSE

SoSE in Sustainable Systems for 21st Century

The IEEE's 5th International Conference on System of Systems Engineering was held over three days between the 22nd and 24th June at Loughborough University – the first time the conference had been held outside of the USA. The theme of the conference was "SoSE in Sustainable Systems for 21st Century", reflecting growing recognition that this is a key concern for policy makers and that significant changes in large-scale systems integration are needed to address it.

The conference attracted a hundred participants and just over half of these were academics, with a good spread from around the world, including the USA, Europe and the Far East. There was strong INCOSE involvement in the conference, with the INCOSE UK Chapter leading a conference theme on SOS Sustainability and the International Architecture Working Group (AWG) leading a theme on architectures.

The INCOSE UK Chapter's Sustainability theme was given an excellent start with a keynote address by Geoff Robins from Atkins. This highlighted in very clear terms the magnitude of the sustainability issue and how this issue is driving not only the research agenda but also engineering practice in forward thinking businesses. A lively Panel Session followed, involving Geoff, John Jarrett (Atkins), Duncan Kemp (DfT) and John Price (EADS), with a wide ranging discussion and debate – quite an achievement considering the session clashed with a certain critical football game involving England and Algeria!

The INCOSE International AWG Session, with six papers presented, exposed important ideas about architectures and future development of the discipline (e.g. belief systems and relational model transformations). INCOSE involvement didn't stop there, with Heinz Stower, the after dinner speaker, being a former President of INCOSE – he entertained participants with cartoons about systems engineering at the conference dinner at the National Space Centre.

Conference feedback collected by the organisers was very positive in terms of technical content, the venue and overall experience. In particular, it afforded a good opportunity to bring together the international community from industry and academia with strong support from both IEEE and INCOSE membership.

Mike Wilkinson
Technical Director - Niteworks

EuSEC 2010

Systems Engineering and Innovation

The 7th bi-annual European Systems Engineering Conference (EuSEC) took place in Stockholm on May 23-26 2010 at the joint campuses of the Royal Institute of Technology (KTH) and the Swedish National Defence College (FHS). The conference attracted 192 delegates from 21 nations, with 51% from outside Sweden and 11% from non-EU/Region 3 countries.

The conference theme was "Systems Engineering and Innovation". This theme was well represented in the wide variety of tutorials, technical papers, forums and other activities over the four days of the event.

A highlight for many of the delegates was a reception given by the City of Stockholm at the historic City Hall (home of the Nobel Prize banquet). The obvious jokes about a possible future Nobel Prize for Systems Engineering did not escape us. The more technical (lets face it the Geeks) amongst us also very much enjoyed the conference dinner at the Stockholm Museum of Technology. Once again, thanks to everyone from the UK chapter who supported the EUSEC event. EUSEC 2012 will be in Rome, in combination with the International Symposium.

If you are interested then keep an eye out for chance to get involved over the coming months.

Rick Adcock
INCOSE UK Events Director.
EUSEC 2010

Stockholm, Sweden

EUSEC Delegates pay close attention at the Science Museum.

Stockholm’s Historic City Hall.

Delegates inside the City Hall, dream of Nobel glory?

The Deputy Lord Mayor of Stockholm welcomes EuSEC to the City Hall.

INCOSE president Samantha Brown gives a thank you address.
**Perspectives from the INCOSE International Symposium, Chicago 2010**

This year’s International Symposium was held in Chicago and was also the celebration of INCOSE’s 20th birthday. The event as always was well planned and executed and Chicago really put on a good show, especially as Chicago is considered the home of Blues music, a theme which ran through the event. This included a Blues Brothers tribute band at the banquet.

**From a chapter leader perspective**

Even before the event opened on the Monday, there had been a significant number of INCOSE members involved in a number of INCOSE business meetings. These included two days by the BKCASE group on the Wednesday and Thursday, a full day INCOSE strategy workshop on the Friday, CAB and INCOSE leadership meetings on the Saturday and Sunday, and Chapter leadership and international working group meetings on the Sunday. All these meetings involved input from INCOSE UK members.

The strategy workshop was split into two groups to tackle two key areas:

1. Future direction of the INCOSE financial model;
2. What a future membership model would look like to address the issues arising as the organisation expands globally.

I was involved in the second group exploring the membership model. This group tackled the issues facing the organisation as it expands internationally. It was based on a "fairer" financial model and some of the national, legal and cultural requirements that were discussed at the Region III meeting that was held at EuSEC2010 in Stockholm in May. The conclusions of the group were:

- The group provided a set of objectives for a new member benefit and INCOSE delivery model;
- Establish a working group to develop this model further;
- Develop a benefit driven strategy for membership growth;
- Develop a strategy for communication at the various levels (International, Regional and National/Chapter).

The two groups briefed the whole group on their findings and the recommendations will be taken forward by the INCOSE Leadership Team.

The Chapter Leadership meeting held on Sunday discussed the outcomes of the workshop and had additional input from those Chapter Leaders that were not able to make the Friday strategy workshop. The Chapter awards were discussed and I highlighted that in the quest for more evidence the whole process had become more onerous. The meeting also discussed the work of the Keys To Effective Chapters committee and workshopped some ideas on the challenges that INCOSE faced through its expansion globally.

The Region III meeting was moved from the Sunday afternoon to the following Monday due to a certain footballing event! The main focus of the Region III meeting was a summation of EuSEC 2010 event which was very successful and made a small surplus that will be distributed between the various Region III Chapters involved. The meeting also discussed the forthcoming combined EuSEC and IS in 2012 being hosted by the Italian Chapter in Rome (make a note in your diary).

There was an interesting array of technical papers with our own Hillary Sillitto picking up a best paper award for his paper on “Design Principles For Ultra-Large-Scale (ULS) Systems. This was an excellent presentation and I look forward to reading the paper in full.

At the last INCOSE UK Council meeting Alan Harding (BAE Systems UKAB Rep & UKAB Chair) and I were given an action to talk to Dave Walden about the corporate Certified Systems Engineering Practitioner (CSEP) model (Memorandum of Agreement, MOA) that EADS have in place. Essentially the model allows for in-organisation processing and checking of applications and in return for this, depending on the model agreed, the requirements for the number of references may be relaxed along with other potential benefits.

During the discussion it dawned on me that INCOSE UK could set up an MOA in the same way so that INCOSE UK can block-process CSEP applications (we already do this for membership renewals). This would allow INCOSE UK to access these benefits and, if we can set up in the same timeframe the awarding of CEng through our Engineering Council Professional Affiliate “buddying” with other Institutions, then we would be able to accept a single application from our members and process it for both CEng and CSEP.

I discussed this concept with Dave Walden and subsequently with John Thomas (INCOSE President Elect) and both were very excited by the idea. John would like to use the UK as an example of how this might work for other chapters. Obviously the details of this need to be worked up further, however, I cannot see any obvious financial or other risks to INCOSE UK for this opportunity.

The various technical meetings I attended included the Capability and the Competency Working Group. These meetings explored whether there is interest in forming international versions of our UK working groups in the same way the In-Service Systems group have expanded internationally. Watch this space for future developments on both these groups.

I also attended the Transportation Industry Roundtable “Assessing State of the Practice” which was facilitated by Anne O’Neil (New York City Transit) and Duncan Kemp (Department for Transport). This was a very successful discussion involving a large number of transportation industry senior representatives. The discussions and subsequent breakout groups identified a number of topics for the Transport Working Group to take forward, including:

- How to improve the quality of transportation requirements?
- How to improve SE awareness across the organisation?
- How do we use SE to reduce costs?

These were duly followed up at the working group’s meeting held on the following day and identified as key topics for the working group to address.

The IS2010 was a great opportunity to catch up with my international colleagues, some of them I have not seen for a number of years. It was also a good opportunity to exchange ideas and help with other Chapters, meet new friends and network. I am already looking forward to Denver next year!
From a member perspective

If you put several hundred Systems Engineers and four days of conference together there is going to be a real mix of personalities and ideas. At the Chicago International Symposium 2010 there was some excellent material to pick up and share. I was particularly taken with the progress reported from the Lean Enablers for Systems Engineering - some excellent and accessible ideas, and advances in the analysis of the value of Systems Engineering. Also there was a diverse range of very interesting and smart people with widely different experiences to share ideas and experiences with, and who could challenge and expand my points of view concerning the practice of Systems Engineering. So I found the event great value.

In the past there has been a degree of tension in the interpretation of Systems Engineering - two views divided by a common language perhaps. So there has been a worry that the US / International are going in a different direction to the UK / European view - diversity of view is always good, but variation in direction / definition more worrying. My view is that the US priority has been defining what to do, and the UK focus has been more on how and the skill needed. The process viewpoint is well represented by the SE handbook, and the version 3.2 is much better and more accessible than previous versions. Happily at this conference I felt a strong “accommodation” growing between these different worldviews (to draw on Checkland’s SSM). There were strong calls from across the board for more and faster development and accessibility of the body of knowledge. Perhaps it is just my understanding growing, but it did feel that there is a momentum that is more truly international growing in SE.

The UK numbers were lower than usual, but the input was high. As usual we got a gold circle award, and picked up a best paper award. Quote of the week for me came from a UK member “good process cannot compensate for poor people”.

Next year the IS will be in Denver. I certainly urge you to try and go to the event and contribute to continue making INCOSE truly international.

Richard Beasley
Systems Engineering Specialist and Corporate Skill Owner
Rolls-Royce

From a corporate member perspective

This was my first International Symposium stateside – with a distinctly American flavour. As well as CAB and INCOSE leadership meetings I attended the Capability and Competency Working Group meetings where both US and Australian INCOSE colleagues were interested in our ideas and keen to get involved. This is great news as it will both spread the word, and will improve the assets available to INCOSE UK members.

The CAB meetings were dominated by US representatives this time; however UK was energetically represented by me, Richard Beasley (Rolls-Royce) and Hillary Sillitto (Thales).

In discussions on Human Capital we focussed on developing the SE’ers of the future by leveraging INCOSE products and expertise to provide authoritative guidance to universities on courses, and mentoring advice to individuals looking to develop their careers. While there are potential pitfalls when offering paid services due to both charitable status and conflict of interest, there is potential to offer pro bono support as part of INCOSE’s contribution to wider society. As one example, John Gill (BAE Systems Inc. and a member of the Michigan Chapter) offered to establish a pilot mentoring scheme locally in his chapter, and to report back to the CAB at IW11.

In a second breakout we worked with Cecilia Haskins to help identify opportunities to improve INCOSE Connect, both quick wins and advice on how in the longer term the IT infrastructure should evolve to better support the membership.

We had a very interesting case study presentation from Luciano Fornasier of EADS N.V. on the first two years of their CSEP MOA, and how they have established 38 CSEPs during that period. This provides a useful practical adjunct to the information on CSEP provided by Dave Walden.

The Sunday INCOSE Joint Leadership Meeting (Board, CAB, Technical Operations and Member Board) was an opportunity to share views on how INCOSE should evolve, including the perennial topics of IT Infrastructure, Transparency, and how to best serve our individual and corporate members. This is an open and constructive forum, and as a CAB company I feel we have an important voice in helping steer the INCOSE ship.

As one of three Platinum Sponsors, BAE Systems had an exhibition booth where we met old and new INCOSE friends. We also branded the symposium portfolio, a great way to promote our company. Sponsors were able to host tables at the Conference Banquet - and amongst our guests we were delighted to entertain the INCOSE UK President and our UK CAB reps, though in reality for the most part they entertained us!

While sponsorship is a significant investment, we believe that it is good value for money, and an excellent way of promoting our company commitment to INCOSE, Systems Engineering, and also of providing financial support to a successful symposium.

Next year BAE Systems will be once again sponsoring the International Symposium, exhibiting, and fully engaged in the CAB at both IW11 and IS11. From a personal perspective I look forward to next year’s events and to seeing how our various discussions this time have helped advance INCOSE.

Alan Harding
BAE Systems CAB & UKAB Rep
UKAB Chair
When the editor told me this issue was to have an international theme, it got me wondering. What are the best international systems engineering projects currently being used? Well here goes with my list of suggestions...

First, is the longest international bridge. The idea to connect mainland Saudi Arabia with the island of Bahrain was officially mooted in 1965. However, 28 kilometre King Fahd Causeway was not inaugurated until 1986. Why the wait? Well, a lot of committee work and design expertise had to be brought on board in the early days. The main motivation was to improve the links and bonds between the two countries. Yes, there are longer bridges within one country, but they do not have the added complication of needing an international engineering integration and agreement.

The longest operational international tunnel is the Channel Tunnel linking the UK and France at 50.45 km. The idea for the Channel has been around since at least 1751 and was driven by the desire to make the crossing between France and England easier. Lack of financial backing, fear of invasion from France and engineering difficulties all helped delay its construction, but it was finally operational in 1994. In the end the main push for it came from the general political desire to integrate Britain more into Europe.

Staying with transport infrastructure, I would add the St Lawrence Seaway to this list. The desire to use the St Lawrence River to go further inland was expressed as early as 1535 when Jacques Cartier stood on Mount Royal looking down at the Lachine Rapids that barred his way. Its canals and locks between lakes and rivers in Canada and United States had a dual purpose: shipment of heavy goods into and out of the Great Lakes, and production of hydroelectric power. Despite advantages to both countries, it took over 30 years to negotiate an international agreement, and even then it took the threat by Canada to ‘go it alone’ to get it off the starting blocks. When agreement was finally obtained it only took from 1954 to 1959 to complete the work.

Transport by necessity requires the ability to navigate, making a natural fourth choice of system the Global Positioning System (GPS). True, this system was developed and implemented by one country, the United States, but it is used worldwide. Its genesis goes back to a meeting of military officers at the Pentagon in 1973, who decided to combine the best of navigational aids developed by the Navy and Air Force into one system for military purposes. Then serendipity took a hand. Korean Air Lines flight 007 strayed into the USSR’s prohibited airspace around Sakhalin and was shot down in 1983. This spurred Ronald Reagan to issue a directive to make GPS freely available for civilian use once it was sufficiently developed. GPS reached full operational capability in 1995, with civilians being given access to the more accurate positioning capability in 2000.

The internet, like the GPS, is an amalgam of technology breakthroughs and developments, which started in the defence sector. There was the 1960s development of packet switching aimed at making computer networks more survivable. It had the added benefits of improving bandwidth utilisation and response times over the then current technology of circuit switching. Several distinct computer networks developed from the 1960s onwards, the earlier ones for specific purposes, the later ones for more general communications use. The internet was created from merging individual networks. The question was: how? What was needed was the Transmission Control Program / Internet Protocol (TCP/IP). This emerged in the early 80s in almost its final form, and the rest of the 80s saw major extant networks adopt TCP/IP. Internet commercialisation was allowed and took off in the 90s with e-mails, world-wide-web and search engines. It had become accessible to people at a price that they could afford. We are now well into the evolution of using wireless communications, such as mobile phones, to have easy access to the internet and what it can provide.

My next choice is the 1976 Montreal Protocol. It banned the use of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) that were destroying the Earth’s ozone. At first sight this may seem an odd one to suggest, but it needed the cooperation of many people to make it happen, all with a common goal in mind. Furthermore, it also needed technology to replace the CFCs and HCFCs. We are now seeing hints that this Protocol is working with the ozone holes getting smaller, which in time will lead to fewer skin cancers. This is what I call environmental engineering on the global scale. I am sure we will see more of this with tackling global warming as the next priority.

I would have included Concorde with her graceful aerodynamic curves just for her sheer elegance. But she’s been grounded. Hold on a minute… aren’t they looking into getting one of the Air France planes up in the air for the 2012 Olympic Games fly past? Or could they quietly be doing the same when the Concorde at Bristol undergoes maintenance checks in October 2010?

I am sure that the engineers who read this can add their own favourite project to this list.

This sample alone has such a variety of technologies, development paths and uses that you begin to wonder what is the common ground between them that defines what international systems engineering is? O.K. Let us start with a simple question: what are the common engineering attributes between these projects?

The obvious one is that they all involved proactive cross-border collaboration and political backing. Without the will there, none of these projects would ever have happened. This all goes to support the idea that systems engineering is a societal discipline.

As an aside, you could through the use of pure logic argue that if there is no systems engineering, then there is no society. I will leave you to argue for or against this hypothesis.

A less obvious commonality was they all involved investigation of some sort before the project could proceed. For instance, the bridge needed the sea currents and their impact on bridges to be understood and the tunnel needed a full geological survey. Even the Montreal Protocol had to identify suitable replacements for the CFCs.

A more difficult question to answer is: what are the future international systems engineering projects going to be?

Your guess would be as good as mine. I will give you two suggestions for starters. The first is some sort of space elevator to get stuff and people from the Earth’s surface into at least Low Earth Orbit (LEO). The second is a combined wave energy and wind farm that crosses international sovereignty boundaries in the middle of a sea. One good place would be in the North Sea.

O. B. Server
INCOSE International and Regional Structure
by Stephen Fisher

As this issue of Preview has an international flavour it may be of interest, in this context, to look at the structure of INCOSE itself to see how the regional and international Systems Engineering communities are structured. The information provided here is a summary of information from the INCOSE International and UK websites.

A brief history
In 1989, a meeting was held at the University of California, San Diego, to discuss the apparent shortage of qualified engineers, those who could think in terms of a total system and could implement a systems engineering process. The meeting concluded that this shortage was of national scope and therefore agreed to recruit more representatives from government, industry, and academia to examine the problem. A follow up meeting was held during the summer of 1990 at the Battelle Conference Center in Seattle. This meeting was attended by over 30 individuals who identified similar concerns and agreed that a national organization was needed to address these concerns. This group then adopted a charter, set up a number of ad-hoc committees and formed the National Council on Systems Engineering (NCOSE).

NCOSE continued to grow and in 1991 a meeting was held in Los Angeles at which over 60 individuals attended. This meeting included working sessions and a few selected papers and at this point the initial committees reorganised into a Communications Committee, a Systems Engineering Practices Committee and a Systems Engineering Development Committee. A focus on defining the process as well as educating and training systems engineers was maintained.

The first annual conference of NCOSE was held in cooperation with the American Society for Engineering Management (ASEM) in Chattanooga, Tennessee, during October 1991 and attracted over 100 attendees.

In 1995, as a result of growing involvement from systems engineers outside of the U.S., the name of the organisation was changed to the International Council on Systems Engineering (INCOSE).

Now, international workshops and symposia are held annually in all of the regions where INCOSE has members, as well as the USA, this has included Toulouse in France, Utrecht in the Netherlands and Singapore. This year, 2010, the 20th Anniversary symposium is being held in Chicago, IL USA.

Membership
Since that initial meeting in 1990, INCOSE has grown to a thriving professional organisation of more than 7,000 members with 58 chapters located worldwide. More than sixty Corporate Advisory Board members from industry, government, and academia provide guidance and recommendations, acting as the voice of the consumer for INCOSE.

Building on the 1991 report on systems engineering practices, INCOSE’s technical activities are now led by a Technical Board with oversight over forty working groups operating under the umbrella of eight assistant directors focused on Initiatives: Standards and MBSE & Knowledge, Processes, Government. Examples of products now available that advance the practice of systems engineering include the Systems Engineering Handbook v3.2, the Metrics Guide, and the online SE tools database.

In the UK, membership numbers have grown steadily, with 50 at our inaugural event in September 1994 in Shrivenham and rising between 2003 and 2010 from 350+ members to currently over 700 members.

Members come from diverse backgrounds covering purchasers, system developers and academics. Industries represented include aerospace, defence, transportation, construction and telecommunications. A goal for the UK Chapter is to achieve a steady and sustained increase in the number of members and to further broaden the base of that membership to include new industries. If you undertake tasks which are characterised by the interaction of multiple factors across multiple domains, often exhibiting less obvious behaviour, you’re either doing or need to be doing some systems engineering, and INCOSE exists to help you.

International Structure
In line with its development history, the INCOSE structure shows a heavy North American content. However, the international community is growing.

Region I - Northwest North America
U.S. states of AK, IA, ID, KS, OR, MO, MN, MT, ND, NE, SD, WA, WY
Canadian provinces of Alberta, British Columbia, Manitoba, Nunavut, Saskatchewan, and Yukon

Region II - Southwest United States
U.S. states of AZ, CA, CO, HI, NM, NV, UT

Region III - Africa, Europe, Israel, Russia, Turkey
Note that Region III now has its own website that can be found at: http://www.incose-region3.org.

Region IV - Northeast North America
U.S. states of CT, IL, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, WI, VT

Region V - Southern North America
U.S. states of AL, GA, MS, SC, TX, VA

Region VI - Pacific Northwest
U.S. states of WA, OR

Region VII - Central North America
U.S. states of CO, ID, MT, NE, ND, SD, WY

Region VIII - Canada
Canadian provinces of BC, AB, MB, SK, ON, NB, NS, PE, NL, MB, SK, ON, NS, PE, NL, NT, NU

Region IX - South America
U.S. states of PR, PU, VI

Region X - Latin America
U.S. states of PR, PU, VI

Region XI - Asia Pacific
U.S. states of HI, AK, GU, MP, PW, AS

Region XII - Arab World
U.S. states of KY

Regional and International Symposia
INCOSE hosts symposia in the regions and internationally in a range of places and locations with growing attendance from around the world. The first symposium was held in 1992 in Las Vegas and since then have been held in most countries in Europe, North America, Asia and Australia and a number of other places.

INCOSE supports symposia via financial sponsorship, in-kind support and publications. INCOSE also supports regional meetings, conferences and workshops, especially those at the regional level, as a way of encouraging community growth and development.

The INCOSE International and UK websites.

INCOSE International and UK websites.
Canadian provinces of New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, and Quebec.

**Region V - South America, Central America and South Eastern United States**
U.S. states of AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV.

**Region VI - Australia, Asia, and the Middle East**
Excluding Israel and Turkey.

**UK National Structure**
The UK structure mirrors the general international structure of INCOSE.

There are various links between the UK and international parts of the organisation and at the top level there is a Region III UK representative on the board of directors.

The national structure is illustrated in the diagram below.

**Groups**
INCOSE UK supports a number of local groups and working groups to provide its members with opportunities to play an active part in the development of systems engineering in the UK.

**Local Groups**
Recognising that not all members are able to make the main showcase events each year, but may still wish to be active participants in the various live issues that INCOSE addresses, INCOSE UK has actively encouraged members to form local groups where it is felt that a sufficient number of members (and potential members) are located within a reasonably well defined geographical area.

INCOSE UK currently has five Local Groups:
- Bristol;
- Scottish;
- Midlands;
- South Coast;
- London.

Local group events are increasingly becoming the first point of contact that some attendees have with INCOSE UK, and it is a testament to their growing success that many attendees join INCOSE as a result of going to local group events.

**Working Groups**
Over the years INCOSE UK has also initiated a number of working groups to address issues of relevance to particular sets of practitioners. Working groups may be disbanded once the participants feel that they have adequately addressed whatever issues they were looking at, or the group may stay together to build upon what they have done.

Currently INCOSE UK has five working groups:
- Architecture;
- Capability;
- In Service Systems;
- Rail Interest;
- Systems Engineering Competencies.

These working groups are encouraged to work towards the production of reports or other deliverables which can then be made available to other INCOSE members as part of a growing body of recommendations and best practice.

**The UK Advisory Board (UKAB)**
The UKAB provides a forum for UK Systems Engineering organisations (within industry, government and academia) to influence the activities that INCOSE UK undertakes, and the systems engineering best practice that INCOSE UK promotes.

The UKAB was established in order to bridge the identified gap between INCOSE UK and the employers of its membership. The purpose of the UKAB is to allow UK Systems Engineering Enterprises (Industry, Government & Academia) to have their say in influencing the practice of Systems Engineering and to see directly the benefits of INCOSE UK.
Local Groups and Working Groups

INCOSE UK supports a number of local groups and working groups to provide its members with opportunities to play an active part in the development of systems engineering in the UK. Further details are available from the INCOSE UK website www.incoseonline.org.uk.

Bristol Local Group
Safer, More Secure and Easier to Use

The Bristol Local Group held their final meeting of the 2009-2010 season on Wednesday 14th July, taking a "warts and all" look at how systems engineers interact with the transverse disciplines of human factors, security and safety – and what steps could be taken to improve matters. Three guest speakers provided their own take on "the top 5 things that systems engineers do that messes up my work", with a brief to be provocative and not spare the blushes of the audience (including a number of attendees from these other disciplines), which they all managed in an entertaining and informative manner – although there were complaints that only being allowed a "top 5" was a bit limiting...

For the second half of the event we opened the floor to general discussions with the panel about what the underlying issues were, and how they could be mitigated. A common thread that returned on several occasions was that the three transverse disciplines are all effectively engaged in reducing risk to the project and the eventual delivered systems, and that maybe an approach to project activities which embraces risk reduction across all technical areas might provide a common ground for engaging with transverse disciplines, and for making trade-offs between them.

Several common symptoms and causes were observed, as shown in the diagram below:

- An attitude that it's too much hassle to find out about all of these other disciplines.
- Project team structures that fail to integrate the transverse disciplines.
- Belief that the system to be developed is sufficiently unique or novel that specialty disciplines have little to add early on.
- Lack of planned activities involving SE and the specialty disciplines.
- Organisational "blame" culture that encourages staff to stick to their own job and not collaborate across boundaries.
- Lack of communication between SE and other disciplines.
- Tick in a box mentality to planning activities involving specialty disciplines.
- HF, Safety. Security issues not considered within the system boundaries.
- Specialisms end up coming in at the end and fire-fighting, treading on toes, or rubber stamping.
- Specialisms exist in their own stovettes with their own customer working groups etc.

Some potential mitigation activities were suggested, such as breaking down the barriers by holding awareness sessions, planning projects so that transverse engineers are involved early and often, iteration at the working level to avoid an "over the wall" mentality, and moving to an integrated assurance regime, potentially using the risk based approach outlined above. The ultimate cure was seen as a well informed chief systems engineer with the breadth of experience to understand the range of the disciplines (rather than just their own technical speciality), the ability to take a step back and see things from a capability point of view, and the delegated authority to make the hard decisions on trade-offs. Sadly, nobody in the room claimed to have ever met such a person, which probably tells its own story.

All in all, this was an enjoyable and thought provoking event, best summed up by one of the feedback responses from a regular attendee: "This was one of those meetings that on the face of it should have been dull and utterly boring. The fact that it turned out to be totally the opposite is a credit to all those who organised and presented". Thanks must go to Rob Cummings (Atkins), Rik Kershaw-Moore (Tsolkovksy Solutions) and Colin Brain (SE Validation) for their excellent presentations and erudite answers during the discussions.

Ian Gibson – Bristol Local Group
London Local Group

Systems Engineering and Academia: What Next?

Report from London Local Group meeting held on Tuesday 13th July, 2010 at UCL:

The idea behind this session was to get an understanding of what the issues were, within academia, relating to the field of Systems Engineering and in particular how this related to the aims of INCOSE.

It was hoped that this would reveal the need for a more coherent action plan to address these issues and provide the evidence for the need of an academic working group, within the INCOSE UK chapter, perhaps even supporting a wider Region three academic community. However, it is safe to say, I picked the wrong week; too close to summer, coinciding with an INCOSE international event and not giving enough notice. Despite that, the few that did attend had an interesting discussion on the issues and the figure below highlights some of those areas that it was felt that there was real work to be done. This ranged from supporting a community lead research proposal to try to determine the value of SE, preparation of evidence for the SEASON evidence base and supporting UK involvement in the BKCASE common curriculum project.

I was encouraged that all those who attended were keen to support any future working group and I was also encouraged by all those who expressed an interest in the event but couldn’t attend. There are other initiatives in the UK looking at many of the issues that were discussed but I believe an INCOSE academic working group would provide a valuable focus to these activities. So, rather than quell your enthusiasm now by discussing these issues in more detail now I will seek UK council support to form a working group, arrange a kick-off meeting (with plenty of notice) and start the work in earnest. It just leaves me to thank those that did attend, and watch this space.

So, let’s have a look at my diary, there doesn’t seem to be anything on the week of 8th November ....

Ady James, Academic Liaison

Railway Interest Group

AGM

The RIG is taking a Summer break but we are putting together a series of events for September to December inclusive. We’ll be in touch again with further details. Our next event is ‘SE before the “V” cycle’ by Sylvia Churba on the 22nd of September which will be preceded by our AGM. This will be short and we don’t twist anybody’s arm to join the committee so it’s perfectly safe and does provide an opportunity to influence the RIG. We hope that you can come along a few minutes early and join us for the AGM.

More details are available on the events page at the INCOSE UK website: www.incoseonline.org.uk

Gaining Access to INSIGHT

Those of you who have been members of INCOSE for many years will probably remember receiving a copy of INSIGHT, the INCOSE central magazine, every few months. Free hardcopies of this quarterly magazine were made into an optional extra for members back in 2008 and many of you may never have seen a copy of INSIGHT since.

It doesn’t have to be this way though. INSIGHT is available to all INCOSE members free of charge through the INCOSE website, and those of you who have maintained your contact details will receive an email shortly before publication alerting you to its arrival, which will look something like this.

To access the INSIGHT area on www.incose.org, simply click on the link and provide your login details to INCOSE Connect at the prompt...

So how many of you know about INCOSE Connect and actually know your login details? See “Accessing INCOSE Connect” for details of how to find out what your INCOSE Connect username is, and how to apply for a password reset.

So, back to the job in hand. Submit your username and password for Connect when prompted, and the next screen that you see should look like this:
Using this webpage it is possible to access copies of *INSIGHT* going all the way back to 1993, which is well before the “I” went into INCOSE, and long before it took on its current quarterly frequency.

Finally, if you select the most recent issue and open it, you should get something which looks like this:

The more observant of you will notice that the current issue of *INSIGHT* ties in nicely with this issue of Preview, as it provides coverage of the Conference on Systems Engineering Research that was held at Loughborough University last year, which was the first ever CSER to be held outside of the United States.

Particular highlights of this issue include insights from some of the INCOSE Fellows and reports on some of the activities that INCOSE gets involved in on the International scale. It’s often easy to forget that INCOSE UK is part of a much bigger international Systems Engineering community. Logging onto INCOSE Connect (even if it’s a bit of an involved process) and reading the latest issue of *INSIGHT* is just one way of staying in touch with the wider systems world.

### Accessing INCOSE Connect

All current INCOSE members will have been made aware of their INCOSE Connect username and password at some point, either once their membership has been processed by INCOSE Central, or when Connect was first introduced for those who have been members for quite a while.

If you have forgotten or mislaid your login details, you can request to have them sent to you by logging onto this webpage - [www.incose.org/membership/requestPWreset.cfm](http://www.incose.org/membership/requestPWreset.cfm), which looks like the following:

Simply fill in your username, which will be of the form *firstname.surname*, then click on the “Request New Password” button, and a new password will be sent to the email address that INCOSE central have on their database for you. This will of course be a problem if you have lost access to the email address that you originally provided (if you’ve changed jobs for example), in which case you should send an email to info@incose.org with “Request for New INCOSE Password” in the subject line, including your name, address, membership number, and the email address that you wish Connect to use should you forget your login details and need a password reset.

### So what else is there on INCOSE Connect?

Once you have a valid username and password enabling you to log into *INCOSE Connect*, you will be able to log into your homepage, which will look like this:

The main part of this page provides links to areas of *INCOSE Connect* that are open to all members, such as publications, the discussion forum, guidance documentation and membership directories. The left hand pane provides links to areas of *INCOSE Connect* that you have been given access to. There are some areas which you can access by default, and other areas where you need to get permission from the administrators of the group (such as Working Groups and individual Chapters).

To be brutally honest, *INCOSE Connect* suffers from the typical problems of these collaborative sharing sites, in that there is a lot of information in there, but it is not always up to date and can be difficult to find. This is one of the reasons why we host our own website for INCOSE UK events, information and publications.

INCOSE Central has recently started a number of initiatives to put in a more effective information management regime, so INCOSE Connect should start to look more structured in due course. That being said, it is well worth having a look through the website as there are some useful things in there.

### STOP PRESS

The In-Service Systems Working Group report is now available online at: [www.incoseonline.org.uk/Documents/Groups/InServiceSystems/is_tr_05_report_v1p0.pdf](http://www.incoseonline.org.uk/Documents/Groups/InServiceSystems/is_tr_05_report_v1p0.pdf)
News from the UK Advisory Board (UKAB)

The UKAB provides a forum for UK Systems Engineering organisations (within industry, government and academia) to influence the activities that INCOSE UK undertakes, and the systems engineering best practice that INCOSE UK promotes.

For more information about UKAB Membership please contact the INCOSE UK Secretariat.

Alan Harding, BAE Systems
UKAB Chair

UKAB Members
Events Calendar

The INCOSE UK events calendar is shown below. For updates, more information and registration visit the INCOSE UK website at www.incoseonline.org.uk

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Organisation &amp; Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 September</td>
<td>Railway Interest Group</td>
<td>AGM The RIG is taking a Summer break but we are putting together a series of events for September to December inclusive. We'll be in touch again with further details but please find attached a flyer for our next event on 22nd September - a date for you to put in your diaries. Sylvia Churba's talk will be preceded by our AGM. This will be short and we don't twist anybody's arm to join the committee so it are perfectly safe and it does provide an opportunity to influence the way the RIG. We hope that you can come along a few minutes early and join us for the AGM.</td>
</tr>
<tr>
<td>23 September</td>
<td>INCOSE International</td>
<td>R U S E C - 2 0 1 0 &quot;SYSTEMS ENGINEERING CHALLENGES A INTERNATIONAL WORKSHOP IN RUSSIA&quot; The international Workshop is expected to increase awareness of Systems Engineering in our country, promote exchange of experience in the relevant fields of systems engineering and highlight the breakthrough trends in systems engineering development and related engineering achievements.</td>
</tr>
<tr>
<td>08 November</td>
<td>UK Chapter</td>
<td>Annual Systems Engineering Conference 2010 (ASEC10) - &quot;Systems Engineering: Adding Value in Challenging Times&quot; In 2010 INCOSE UK will introduce a new 3-day conference format offering a combination of the plenary presentations, tutorials, workshops and discussion sessions which have made up the previous Spring Conferences and Autumn Assemblies.</td>
</tr>
<tr>
<td>08 November</td>
<td>UK Chapter</td>
<td>2010 AGM The Annual General Meeting of INCOSE</td>
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</tbody>
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Upcoming Events

ASEC 2010

Systems Engineering: Adding Value in Challenging Times
Leading-Edge Project Training in United Kingdom

Systems Engineering for Technology-Based Projects and Product Developments

This is a world renowned short course in Systems Engineering (SE), delivered over five intense days. Relevant to beginners and seasoned veterans alike, the course provides an outcomes-focused approach to SE from cradle to grave.

More information: www.ppi-int.com/training/systems-engineering-course.php

OCD & CONOPS in Capability Development

This course is a 5-day immersion in the development of military capability, with a focus on problem definition, Operational Concept Description (OCD - how the capability and each element of its solution will be used), and the concept of operations (CONOPS - how military outcome is to be achieved).


PPI also delivers our courses on-site and worldwide.
For more information e-mail: contact@ppi-int.com

PROJECT PERFORMANCE INTERNATIONAL

15

Tel: +61 3 9876 2664
Fax: +61 3 9876 1995
www.ppi-int.com
contact@ppi-int.com
**Opportunities**

**Cranfield Defence and Security**

**Senior/Principle Research Fellow in Systems Engineering for Defence Capability**

£38,011 to £42,369 per annum (up to £50,605 per annum, depending on experience)

The Cranfield University Department of Engineering Systems and Management at the Defence Academy of the UK has a post available for a Senior/Principle Research Fellow in Systems Engineering applied to Defence Capability.

The post will be based in the Centre for Systems Engineering (CSE) which provides education and research to support the UK MoD Systems Approach to Capability. Candidates should have detailed knowledge of Systems Engineering, and a good understanding of Human Sciences and Defence Technology.

The role will involve developing and coordinate research activities along with lecturing, supervision and other academic duties. Applicants are expected to have at least a first degree in a relevant discipline and to be able to demonstrate some relevant experience. There are opportunities for staff to study for further postgraduate qualifications.

For further details and to apply please go to [www.cranfield.ac.uk/hr](http://www.cranfield.ac.uk/hr) or alternatively, application forms and further details may be obtained from the HR Department, Cranfield University, Defence Academy of the United Kingdom, Shrivenham, Swindon, Wiltshire, SN6 8LA. Tel (01793) 785758, quoting Ref R/DESM031.

Closing date for receipt of applications is: 30th August 2010

Valuing People

**Election for Region III**

**Election of Region III representative on the Member Board**

For those members who are not aware INCOSE breaks the world up into regions to encourage more local activities. The UK Chapter falls in Region III, which covers Africa, Europe, Israel, Russia, Turkey and has two representatives on the member board.

The Member Board (MB) Regional Representative is an elected official representing the INCOSE members and chapters of the particular region from which he/she is elected. Regional Representatives need to know the leadership of, strengths and needs of the chapters in their respective regions. They should be available to receive member and chapter questions and seek out answers from various sources. They are also a vital conduit of information between INCOSE, the chapters, and the members. Regional Representatives should be available to attend both IS and IW each year, including the Saturday before each event.

For more information please visit the INCOSE Central Website

We ask you, the members to help us to identify INCOSE Members for this election. You may nominate yourself. Please send the name of your proposed candidate to the Chair of the Nominations & Elections Committee: David Wright or to Paul Davies as soon as possible, and no later than 1 September 2010.

And finally …

If you haven’t already done so please remember to renew your membership.

Also, remember the 2010 AGM on the 8th of November.

Members you are always welcome to contribute to your Preview by submitting your Systems Engineering news, views, contributions, etc. for publication. (Email to: Steve.fisher@incose.org).

**Not an INCOSE Member?**

**Join INCOSE UK To-day!**

**How do I join?**

Fill in the on-line application at [www.incoseonline.org.uk](http://www.incoseonline.org.uk)

**What does it cost?**

Full members pay £72 per annum (reducing to £68 if paying for a full year by direct debit). Students pay £20 per annum.

Membership subscriptions are eligible for tax relief. The UK Chapter has been approved by the Board of Inland Revenue under Section 201 Income and Corporation Taxes Act 1988.

**What are the benefits?**

- A UK and world-wide forum for systems engineering
- UK and International Interest groups, Working Groups and Conferences
- A chance to influence the way Systems Engineering develops
- The opportunity to network and learn from other Systems Engineers

**Preview** is the Quarterly Newsletter of the UK Chapter of INCOSE, the International Council on Systems Engineering. All INCOSE UK members receive a copy of Preview, in addition to the regular e-mail bulletin ePreview. INCOSE UK Members may also subscribe to the quarterly Systems Engineering Journal, and INSIGHT, the INCOSE Newsletter.