Preview

The Magazine of the International Council on Systems Engineering UK Chapter

International Updates
Report from the 2017 International Symposium, as well as profiles on the International President-Elect candidates

Chapter News
Your opportunity to contribute to the INCOSE UK Don’t Panic! series and to get involved with the Chapter’s new Quality Management working group

International Updates
Report from the 2017 International Symposium, as well as profiles on the International President-Elect candidates

Extra Features...
From contributors including Luke Edelston, Joe Hawkins, John Lomax and Tim James

Summer 2017
The course was complete and covered the body of knowledge in appropriate detail. It gave me good preparation for understanding their certification process and how to prepare for the exam.” Delegate

CTI’s learning approach is based on over 20 years of sound experience. Instead of presenting a lot of content and hoping that something will ‘stick’, the course utilizes adult learning techniques optimized for the type of content that needs to be mastered.

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Welcome

Hello and welcome to the Summer edition of Preview magazine.

For those of you who were looking forward to reading our ‘Supersized Systems’ feature you will have to hold your anticipation, as due to the summer break we are still gathering content and this will now be included in our Winter 2018 edition.

In the meantime, I am happy to be able to confirm that we have plenty of other Society news and updates this issue.

Following the successful release of INCOSE UK’s latest book Don’t Panic! The Absolute Beginner’s Guide to MBSE, we have an appeal from Technical Director, Prof. Jon Holt. INCOSE UK have the aim to expand this book into a series, and are looking for potential authors to submit proposals for future books. There will be support available with putting the final publication together and it will be published by the UK Chapter, with an attractive and competitive royalty to the author for each copy sold. If you would like to discuss your idea in more detail, please contact Jon Holt directly.

In other Chapter updates, we have an article from Hazel Woodcock about the potential to start a Systems Engineering (SE) Quality Management UK working group. The intention is for this to be aligned with the International Group and run with the active support of Dr Larry Kennedy. You can read about the International group here and Hazel’s article can be found on page 10.

We are delighted this issue to include features from some of the younger members of our SE community. Luke Edelston asks the question of ‘do you believe’, and discusses the issue of how to quantify the benefits of SE.

As SE is a relatively young discipline compared to many more established forms of engineering, the entry routes into this field have often been very varied in nature, with many systems engineers finding that their skills have been formed by experience. However, more academic offerings are now starting to become available. Joe Hawkins is currently enrolled on the ‘Automatic Control and Systems Engineering’ course at The University of Sheffield and has been kind enough to write a feature based on his experiences. He covers the workload and the obstacles that he has faced, as well as where he may take this in the future. You can read the full article on page 22.

On an international level, we are pleased to include profiles on both of the candidates for the upcoming INCOSE International President-Elect elections. Kerry Lumney and Paul Schreinemakers have supplied statements outlining their positions and we would urge all of our members to make sure that they take a few moments to place their votes in November. Their statements are on pages 16 and 17 - you can find further information about the INCOSE International elections via their website here.

Continuing on the international focus, Richard Beasley has written a report on his attendance at this year’s INCOSE International Symposium in Adelaide, Australia. He writes about the common themes he noticed during his time in the main sessions, as well as the many contributions that were made by members of the UK Chapter. He also touches upon the social aspects of the Symposium! Read more on page 18.

This issue also sees a return of our regular features. Lynn Davis provides a Professional Development update, accompanied by an interview with Richard Brookes, following his registration as CEng. He gives his views on the professional registration process, and offers advice to other members.

We are happy to have John Lomax for our ‘I am a Systems Engineer and I do...’ feature (page 12), while Tim James - committee member of the Bristol Local Group - takes part in ‘I am a Volunteer and I do...’ (page 14). Both members give up a large amount of their free time to contribute to various elements of the UK Chapter and we are delighted to include their submissions.

Finally, I would also like to remind all of our members that bookings for this year’s Annual Systems Engineering Conference (ASEC) are now open! Hard copies of this year’s brochure are currently on their way out to everyone, but if you don’t have one readily to hand then you can download a PDF version from the event website here.

Last year’s event was a huge success for the UK Chapter and from the way that all of the 2017 content is coming together, we are convinced that this year will be even better. We are excited to be in a brand new venue at the University of Warwick and are very much looking forward to seeing you all there! Full details and bookings are available via the event website at www.ASEC2017.org.uk.
For INCOSE UK the end of the summer holidays focuses our attention on ASEC. This is Ian Gibson’s final year as our Events Director and looking at this year’s programme I am reminded again of the exceptional work the Events Team under Ian’s leadership do, to bring together what is surely one of the best annual gatherings of Systems Engineering excellence.

This year sees the introduction of two new sessions remembering key figures in Systems Engineering, as well as INCOSE UK’s first Systems Summit. I hope to see many of you joining me at the new Slate Conference Centre at Warwick University in November for our annual flagship event.

The end of summer also means the latest edition of Preview and in this edition I am delighted to introduce INCOSE UK members to the two candidates for the role of President Elect of INCOSE; Kerry Lunney and Paul Schreinemakers. Paul and Kerry have given outstanding service to INCOSE and are both excellent candidates for our most senior international role. I hope you will take time to read their respective visions and more importantly take time to vote during the election period. On the subject of elections, I would like to issue a reminder that our own elections for Communications, Events and Outreach Director will soon be upon us and I look forward to welcoming the successful candidates to the INCOSE UK Council team at ASEC.

Yet again our editorial team have been able to draw on excellent contributions from our members and I am grateful to Luke Edelston for asking us if we believe (see page 18) and to Joe Hawkins, who provides an insight to his studies at Sheffield University (page 20). John Lomax shares what he does as a systems engineer, reminding me yet again about the incredible and exciting work our members are involved with across many industries and domains.

Richard Beasley informs us on what looked like a thoroughly good time down under at this year’s International Symposium (IS). Also we hear from INCOSE UK volunteer Tim James, who shares his experiences as a committee member of the Bristol Local Group. The efforts of Tim and our other volunteers are critical to our continued success and I welcome any contact from members who would like to know more about our volunteer opportunities.

Also at IS we heard that our Professional Director, Ian Presland, was awarded an INCOSE Outstanding Contribution Award. Ian has been at the forefront of not just INCOSE UK professional development activities but a leading contributor on the international stage and this award is well earned recognition of Ian’s work over many years.

And many congratulations to our new ASEP’s and CSEP’s (see page 7) and to Richard Brookes who shares his advice on becoming professionally registered, having been awarded Chartered Engineer status earlier in the year.

I hope you will enjoy this issue of Preview and I look forward to seeing you at ASEC in November - bookings are now open!
As part of INCOSE UK's commitment to publishing disseminating Systems Engineering best practice and guidance, we are delighted to announce the launch of a new series of books, known as the 'Don't Panic!' guides.

INCOSE UK already has a good track record publishing Z-guides, Omega-guides, posters and white papers and published its first formal book, 'Think Engineer' in November of 2015. Recently, however, there has been a growing number of people asking for short, thorough and easily-digestible guides to specific areas of interests within Systems Engineering. This has been the driving market need behind the 'Don't Panic! Guides.

The first to be published is 'Don't Panic! The Absolute Beginner's Guide to Model-based Systems Engineering', written by established MBSE authors Jon Holt and Simon Perry.

The book is written in a reader-friendly style, keeping the technical language to a minimum whilst still ensuring that the knowledge contained in the book is correct, thorough, yet accessible to people new to the area.

'Don't Panic! The Absolute Beginner's Guide to Model-based Systems Engineering'

This book is intended to be used as a primer for MBSE for people who are new to the area. With this in mind, there are a few key aims that book addresses:

To nip in the bud bad practice and common pitfalls that we have learned the hard way

To dispel some of the many myths and misconceptions associated with MBSE

To spell out some of the fundamental concepts that must be understood

To alleviate people's fears concerning MBSE and its adoption in your business

To highlight some of the many benefits (some obvious, but many not-so-obvious) associated with MBSE

The book is intended to be simple enough to give to anyone with good common sense and a modicum of technical knowledge a clear understanding of exactly what MBSE is and what it isn’t.

The book is also intended to be a stepping stone into the more advanced areas of MBSE, such as implementing MBSE into business, getting involved with the wider MBSE community and generally getting people's hands dirty on real projects.
Style of the book

Each title in the series will focus on a single area of Systems Engineering, assume no prior knowledge on behalf of the reader, and present the subject matter in an engaging and simple way.

In order to allay reader’s initial fears about the subject matter, there are several friendly icons used throughout the books that highlight specific areas of interest, including:

This theme continues throughout the book and will also run through the whole series of ’Don't Panic!’ guides.

The entire series will have the same look and feel and be written in the same distinctive style to enable the ’Don't Panic!’ brand to be recognised throughout the whole series.

The 'Don't Panic!' Series

Each book will be written by established experts and authors on specific fields of Systems Engineering. All proposed titles will also be put through the INCOSE UK peer review process to ensure that the subject matter is relevant, that the content and style is correct and accurate, and that the book maintains the brand of the ’Don't Panic!’ series.

If you are interested in writing a 'Don't Panic!' guide, please get in touch with the INCOSE UK Technical Director to discuss your idea, at technical-director@incoseonline.org.uk.

Each book in the series will be published, marketed and sold through INCOSE UK, with INCOSE UK owning the IPR to the book. Each author will receive an attractive and competitive royalty for each copy sold.


Jon Holt Visits Local School

Following the popularity of his previous publications Think Engineer and Don’t Panic!, Jon Holt visited Greenfylde school in Ilminster, Somerset as part of their Engineering Week event.

Jon’s presentation to the children comprised of a reading of Think Engineer, followed by magic tricks and an example of a game that could be used to help commit new words and concepts to memory.
Professional Development Update

Words: Lynn Davis, Professional Development & Membership Manager, INCOSE UK

Certification

The number of INCOSE members applying for SEP through the UK online system continues to grow.

Below are numbers of members achieving SEP Certification through the UK online system along with total number of UK Chapter members who are certified.

<table>
<thead>
<tr>
<th>Level of SEP</th>
<th>UK accredited</th>
<th>Total UK (from INCOSE central records)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASEP</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>CSEP</td>
<td>20</td>
<td>56</td>
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<tr>
<td>ESEP</td>
<td>1</td>
<td>7</td>
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</table>

In recent months there have been two opportunities for INCOSE UK members to participate in the certification knowledge examination.

A paper-based exam was held in association with the INCOSE UK Training day on June 7th 2017.

Two INCOSE UK members, Philip Savvides and Colin Bach, were successful in attaining their ASEP qualification following their preparation and participation in this event.

The INCOSE International Symposium held in Adelaide in July 2017 brought an additional opportunity to participate. Three more INCOSE UK members were successful in achieving their ASEP with two of them already planning to move forward and upgrade to CSEP. Congratulations to Clifford Cheesman, Tim Kerby and Grant More.

INCOSE offer regular examination opportunities to encourage wider participation as part of national and international events as well as in support of educational establishments. It is also possible for companies to pay for INCOSE UK to administer and invigilate the certification knowledge examination on their company premises in support of their employees' professional development. If you would like more information on this opportunity please contact Lynn Davis on 01460 298217 or email profdev@incoseonline.org.uk.

ASEC 2017 Exam Questions Workshop

Following on from the last two ASECs where we have had successful Professionalisation slots, this year’s session will be looking at "Helping to develop the Training/Guidance session on the certification exam": Writing a good test question is harder than you think, and the correct answer is not always (or even usually) "C." Learn how to write test questions like those found on the INCOSE knowledge exam. Whether you’re already certified, studying to take the exam, or just want to learn how to write test questions for another purpose, you’ll enjoy this session.

The first 90 minutes will teach you how to write questions, and in the second 90 minute session you’ll apply those skills by generating your own test questions. This is a great way to improve your understanding of the INCOSE Systems Engineering Handbook, version 4. If you would like more information on this opportunity please contact Lynn Davis on 01460 298217 or email profdev@incoseonline.org.uk.
Professional Registration

New Systems Engineering guidance

INCOSE UK is now in the process of publishing domain specific guidance for systems engineers beginning an application for professional registration. The guidance links specific guidance to each area of the UK-SPEC assisting systems engineers in documenting their experience. It recently gained the approval of the Engineering Council and will soon be available to members via INCOSE UK professional development and as a hard copy to buy through the INCOSE UK online store.

Applications

An SEE approval meeting for professional registration applications is scheduled for mid-September.

Forty-five INCOSE UK members have now downloaded the forms to begin work on their professional registration applications. If you are ready to submit we may still be able to include you in the September cohort, otherwise December 6th is the next approval date. Please remember there are INCOSE UK mentors available if you require support with the draft application.

Professional Registration Transfers

INCOSE UK has recently approved two professional registration transfers from other institutes. If you are currently registered through another engineering institution but find that your main work domain is Systems Engineering it may make sense to consider a transfer.

If you are interested in finding out more about the process please contact Lynn Davis on 01460 298217 or profdev@incoseonline.org.uk.

Richard Brookes became professionally registered through INCOSE UK earlier this year. He explains what drew him to professional registration, shares his thoughts on the application process and offers advice to any other prospective candidates.

1. Please describe your current role.

I am an Engineering Manager working for DE&S, MOD. I manage Design Review Programmes to measure system maturity against its requirements, integration, verification and validation. These design reviews ultimately identify technical issues of systems across cross-disciplinary engineering teams to inform the level of extant technical risk in the programme. My overall goal is to ensure the system of systems being design are fit for purpose and the capability is delivered to my customer - the Armed Forces.

2. What attracted you to become registered as a CEng?

It has always been on the horizon for me - to obtain recognition of what I have done. It shows what I am capable of doing. It marks a level of achievement for not just my qualifications but the application of my skills in accordance with an internationally recognised standard. It certainly has the ability to open doors in the future.

3. What is your employer's attitude towards professional registration?

It is seen as a standard to hold at different levels of the organisation within the Engineering Function of DE&S. The grading structure recommends Engineers hold EngTech, IEng or CEng and some areas its desirable for Fellowship.

4. How did you find the INCOSE UK application process?

It differed slightly from what I had seen before. Requiring both the CV element but also statements against each of the UK Spec competencies. At first this can be daunting and it did take quite some time to sharpen these statements. In going through this however it really cemented what each competence is looking for which paid dividends at the interview stage. The best part for me, as a Systems Engineer was having an interview panel made up of System Engineers - the same specialism - where we could have a technical conversation. This made me feel at ease and it was more of a guided conversation than an interview. From application submission to interview result was very efficient which made the whole process feel individual and personal rather than just being a number going along the conveyor belt.

5. What advice would you give someone considering professional registration as a CEng?

The hardest part is putting pen to paper, thinking of concise examples and writing to sell yourself. Speak to others in your teams who have IEng or CEng (the process is the same) get others to review your application but technically but also does it make sense to those who don't understand what your job is. I spent lots of time removing acronyms and using plainer language. Try to hit the competencies - knowing the interviewers will use this as prompts to dive deeper where required to help you meet the specification and be successful.

Richard Brookes became professionally registered through INCOSE UK earlier this year. He explains what drew him to professional registration, shares his thoughts on the application process and offers advice to any other prospective candidates.
Introduction

It is intended to set up a UK working group, aligned with the International Group, and with the active support of Dr Larry Kennedy. You find further information on the International Group here.

This has been covered in an INCOSE webinar (Webinar 91: Engineering Leadership: the call for a second Quality revolution, 17 August 2017), presented by Dr Larry Kennedy

SE and QM - WG Mission Statement

INCOSE has defined a set of processes and competencies. But is that enough to get Systems Engineering carried out effectively? The objective of this working group is to investigate the Quality Management "mind-set" that is needed behind the Systems Engineering processes, tools and competencies - so people understand WHY they are doing what they are doing, and hence WHY they are using appropriate tools and processes.

This working group will explore the links between Quality Management and Systems Engineering, looking at Quality Management being a cornerstone of professional development for Systems Engineers. This will enable individual Systems Engineers to achieve a greater level of personal professionalism and influence, and help fully embed Systems Engineering as a leadership discipline, and to fully integrate Systems approach into the whole of an organisation (by considering the organisation as a system). QM in this context is seen as a values based, facts-driven systems thinking approach; much more than audit, bug fixing, six sigma, and getting to a deliverable

SE and QM - WG General Information

This is a UK based working group focused on making some quick progress in this topic. There is an International Working group in existing, and this UK group is intended to support and complement that group.

The long term goal of the international group is to develop a SE-QM leadership standard, integrate this into SE certification and to develop SE-QM leadership training for INCOSE membership; and to integrate the Quality Management ethos into the rest of INCOSE work.

Compared to other parts of INCOSE, Systems Thinking has a greater acceptance as a significant part of Systems Engineering. Therefore it is felt that more rapid traction can be made amongst a group of UK INCOSE members to "set the direction" for the international group

Dr Larry Kennedy has offered to support the UK group by conference call.
Burge Hughes Walsh is an established consultancy and training provider. We have considerable experience in training and helping organisations deploy and embed Systems Thinking and Systems Engineering.

We are one of the very few providers of practical Systems Engineering and Lifecycle Management training and consultancy and are preferred providers in the aerospace/defence industry to several world leading organizations.

Since our inception in 2000, we have been designing and developing company specific Systems Thinking and Systems Engineering training courses. For the first time, we are offering two of our most popular courses to everyone on an open basis.

The emphasis of both courses is on educating and training delegates to do Systems Thinking and Systems Engineering, and so are aimed at the practitioner. The learning philosophy employed, in both courses, is based on the Kolb learning cycle with a good proportion of the course set aside for exercises to reinforce the learning. Indeed, the key mechanism is a case study that provides a practical focus enabling the delegates to practise the tools and processes presented.

TRAINING COURSES

For 2017 we are offering open training courses in both Systems Engineering and Systems Thinking. Both of these events will be held at Kents Hill Park Training and Conference Centre in Milton Keynes. Overnight accommodation will be available at a discounted rate.

COURSE SCHEDULE 2017

A 2-day Systems Thinking Open Course
17th - 18th October 2017

A 5-day Systems Engineering Fundamentals Open Course
20th - 24th November 2017

COURSE BOOKING

Please contact Sharon King on +44 (0) 1788 550015 or book online on our website at: www.burgehugheswalsh.co.uk.

10% DISCOUNT for INCOSE UK members

www.burgehugheswalsh.co.uk
I Am a Systems Engineer and I Do...

John Lomax from Airbus discusses how he started his career in Systems Engineering and his tips for those who are just starting out themselves.

Words: John Lomax, Programme Systems Engineer, Airbus  Images: John Lomax

Why did you choose to be a systems engineer?

I didn't! It chose me! I started my working life as a graduate developing software for Flight simulators in the Defence Industry. I had a career choice limited to either a hardware or software engineer, and so I chose software as it seemed to be progressive at the time. I soon found out that the software was a minor, albeit complex, pervasive distributed entity of the system.

Next I moved into Avionics Ground Based Testing for Military Aircraft and then into Systems Process Research & Development, where we undertook research activities across the Avionics systems development life-cycle, looking into various enhancements such as animation and automation.

After this, I took up a position as a Programme Systems Level Engineer, working at Lockheed Martin, on the Air-System and Air-Vehicle Prognostics and Health Management System of the F35 Programme. This experience combined with my Advanced Systems Engineering degree course piqued and focused my interest into the whole systems development life-cycle.

I now realise that my initial work experience combined with my undergraduate degree, set me on a path towards 'whole systems thinking', thus I have evolved as a Systems Engineer. Lately, my thinking has progressed further into Large Scale Integrated Systems, System of Systems and Enterprise Systems Engineering domains.

Education / qualifications to become a systems engineer?

On reflection, when I look back at my education and work experience, I realised that the first time I came across the words 'Architecture', 'Requirements' and 'Life-cycle' was many years after university! This realisation, combined with the launch of the INCOSE Academic Group (Schools Thread), motivated me to volunteer for this activity.

Though I had a minor role, I was eager to suggest that if we managed to introduce these familiar engineering words into the school curriculum (via such mechanisms as STEM net, for example) then that would be a big win!

I graduated with a degree in Controls Systems and Computer Science and then much later gained an Advanced Systems Engineering Diploma. Once I was confirmed as a 'systems thinker' then this, combined with my F35 Programme Systems Engineering experience, lead me to formalise my experience further and so I undertook INCOSE certification for the Certified Systems Engineering Professional (CSEP). I have been certified since 2010 and soon after that, I was selected to become an INCOSE Certification Application Reviewer (CAR), for which I was awarded an INCOSE Outstanding Service Award, in 2015 for improvements to the UK CSEP Review process.

What is it about Systems Engineering that you find so compelling?

In one word 'Complexity!' In my view the current state and thinking around Systems Engineering, is crudely similar to the state of the science of Chemistry prior to the discovery of the periodic table!

My current personal interest is focused on Large Scale Integrated Systems and Enterprise Systems Engineering, and this has been enforced by my direct engagement with the Single European Sky Air Traffic Management Research (SESAR) Modernization Programme. This programme is truly an Enterprise! To this end, I gave a presentation to the Review process.

“In my view the current state and thinking around Systems Engineering, is crudely similar to the state of the science of Chemistry prior to the discovery of the periodic table!”

INCOSE UK Enterprise Systems Engineering Interest Group in 2014 - 'The SESAR Enterprise (An overview and observations of SESAR in the context of Enterprise Systems Engineering and Systems of Systems Engineering).”

In my view future systems development life-cycle activities will require new Systems Engineering thinking, techniques and methods (e.g. bottom-up vs middle-out vs top-down approaches) to address international collaborations and the subsequent and significant complexity issues and emergent development behaviours related to these Enterprises that are impacted by Geo-political issues.
What advice would you give a systems engineer just starting out in their career?

My observation is that whole systems thinking, expands your horizons across many domains that you may not have realised existed, and that you uncover relationships between topics and activities that on first inspection, were not obvious!

“In my opinion, for the future we will need people who are multi-faceted and have a broad spectrum of interest in many topics and like to explore these relationships.”

In my opinion, for the future we will need people who are multi-faceted and have a broad spectrum of interest in many topics and like to explore these relationships. Future systems are increasing in complexity at a pace, and when combined with the Geo-political ramifications required for the development of Large Scale Integrated Systems E.g. systems to address climate change or a mission to Mars, these will require Systems Development capabilities and skills that will require an understanding of e.g. Economics and Natural systems, to name just two.

So my advice is when looking towards the future, while developing your SE skills and capabilities, think of future proofing your business and building resilience by trying to understand these unlikely relationships and if you get the time, try to learn another language.

Biography

John Lomax is a Programme Systems Engineer with over 30 years of experience gained mainly across the Aerospace, Defence and Air-traffic Management Domains and currently works for Communications, Intelligence & Security (CIS), AIRBUS.

He has previously worked for BAESYSTEMS and for periods at Lockheed Martin and at the SESAR Joint Undertaking. He has worked in various countries including Saudi Arabia, USA, Belgium and France. John has recently returned from 7 years expatriation providing direct Customer Liaison to the SESAR Joint Undertaking (SJU) European Commission Agency of the Single European Sky Air Traffic Management Research (SESAR) Modernization Programme, located in Brussels, Belgium. He is a INCOSE CSEP and INCOSE CAR.
I Am a Volunteer and I Do...

Tim James talks about how he first started volunteering with INCOSE UK’s Bristol Local Group, and the benefits that he feels he has taken from this.

Words: Tim James, Assistant Primary Care Development Manager, NHS North Somerset CCG  Images: Tim James

What activities have you undertaken as part of your volunteering?

I am a committee member of the Bristol Local Group (BLG) and have specific responsibility for communications and take my turn to organise events, along with other committee members. The purpose of the committee is essentially to put on talks and other events we think will be of interest to our local INCOSE membership.

As a committee, we try to meet every other month, and to put on an event between those meetings. This means we try to meet six times per year and to put on six events per year, but it doesn’t always work out like that of course. I think we put on six events in the first six months of this year because we had the good fortune to find a series of speakers in short succession. We have given ourselves a bit of a rest over the summer, but are now beginning to plan events for the autumn.

What originally inspired you to volunteer for INCOSE UK?

I first started attending BLG events in 2005 when I was working in the aerospace industry as a quality engineer. I had learned about Systems Engineering on the post-graduate course I had been doing previously and heard about the INCOSE local group through that. I found the events interesting and enlightening, and also enjoyed meeting the other community members. I wasn’t a systems engineer though, so at that point didn’t become a paid-up member. I just thought it was brilliant the group existed, and I was able to attend events for free.

By 2008, I changed industry to take on a leading role in an airport construction and logistics business and then when the recession struck I moved away from Bristol to be closer to the centre of operations at Heathrow and Gatwick. I then lost touch with INCOSE and the BLG.

After we sold the business and I moved back to the Bristol area in 2014 to take up a more socially focused role in the NHS, I picked up where I left off and attended a BLG event in early 2015.

It was here that, while giving the Parish Notices, Paul Handisides the BLG Chairman, said the committee could do with an additional member or two as they were short and needed more help. I wasn’t particularly looking for something to be involved in, but at the time it just seemed like the right thing to do. I felt the local group was a fantastic thing to have available, and didn’t want to see it suffer or disappear.

What do you feel that you get out of volunteering?

“I wasn’t particularly looking for something to be involved in, but at the time it just seemed like the right thing to do. I felt the local group was a fantastic thing to have available, and didn’t want to see it suffer or disappear.”

I really enjoy it. I think it satisfies an entrepreneurial element of my personality that working in a large organisation can’t satisfy as easily. It’s a bit like we are running a franchise. We have to treat the INCOSE brand and ethos with respect and work to positively enhance it, but we get a good degree of freedom and autonomy to put on whatever events we think our members/audience will appreciate. It’s been a lot of fun trying to find speakers, arranging the talks, working on developing how we promote talks and strengthening things like the standard templates we use. It is a bit like trying to develop and grow a business.

I’ve enjoyed the curatorial aspect of organising events. My particular interest and background is more in the area of services and organisations than hardware and products, so it’s been nice to be able to find interesting speakers in those areas and to bring that flavour to the programme. Of course, we’re always mindful to keep a balance in the programme and to cater for those who are more pure engineering in focus. Mixing things up a little has been interesting and seems to have paid off and we’ve attracted some big audiences.

I have also enjoyed working with the other committee members and getting to know the regular attendees at our events. I find the INCOSE crowd to be a diverse and interesting one, and have found it really helpful to be able to build a network of like-minded people. So inspired have I been with the field and the people I’ve met, that I’ve established a systems thinking learning group where I work, and several contacts I’ve made through BLG have kindly come to speak to us. I write up our sessions here: www.systemsthinkersanonymous.com.
Do you have any advice or feedback to offer anyone who is considering volunteering?

Just do it. You have nothing to lose. You can do as much, or as little as you want.

I've discovered something about myself through doing this. That is, I am the type of person who volunteers and gets involved with things, and enjoys doing so. Previously, I'd always thought that applied to some other group of people, but not really me. Since stepping forward, and enjoying it so much, I've also become involved with a few other unrelated groups on a voluntary basis.

“INCOSE is a well-established organisation, but as it and the discipline of Systems Engineering are relatively young, there is an opportunity to be part of a growing and developing thing and to be able to influence it and add to it.”

I think INCOSE membership is incredibly good value. I used to be a member of another professional membership organisation, and paid about four times the amount in annual membership, but felt I gained only a fraction of the benefit I gain from INCOSE.

Having said that, what makes the membership really fantastic value are the opportunities to get involved as a volunteer and the benefits you get from that. INCOSE is a well-established organisation, but as it and the discipline of Systems Engineering are relatively young, there is an opportunity to be part of a growing and developing thing and to be able to influence it and add to it. It's great.

Biography

Tim attended the University of Leeds and completed a bachelor’s degree in Materials Science and Engineering, before going on to complete an MSc degree in Aerospace (Management) at the University of West of England.

He has since gained experience in both the private and public sectors, with a fundamental understanding of the Healthcare, Aerospace, Aviation Support, Logistics, and Construction fields. Originally starting his career as a Quality Systems Engineer with Stirling Dynamics, he then progressed to taking responsibility for the management of projects - ranging from small to very large in scale and complexity - at Amalga. Further progression at Amalga resulting in him taking a leading role in directing the company through and out of recession, helping them to expand into new markets by developing and delivering new services.

In his current role as a Assistant Primary Care Development Manager, he helps to transfer Systems Thinking and Systems Engineering methodologies into practice within the NHS.
Hello Everyone.

Well it is that time of the year where INCOSE goes to the ballot to vote on a number of its key Board positions. This year it includes the President-Elect role which I have the honour of being nominated. As such, I would like to thank everyone for this nomination and the faith you have that I can lead INCOSE. It is both humbling and exhilarating to be considered.

INCOSE has identified the values and principles on which our vision of "A better world through a systems approach" is built upon. Likewise, over 27 years we have invested in meaningful products and programs, such as in texts like Vision 2025, SeBOK, and Integrating Program Management with Systems Engineering; similarly in programs such as GRCSE and the SE Certification, to name a few. These initiatives we must continue to support with professional focus, energy and passion to grow and expand globally, whether this is by increasing the number of members, Chapters and/or Corporate Advisory Board (CAB) organisations, or by expanding into new industries, domains and/or technical advancements, or simply reaching out to others who may or may not be aware of their need for a systems approach. None of these are mutually exclusive and all are of equal importance.

Building on these foundations, I have listed below a snapshot of my ideas to advance INCOSE. (My full detailed vision paper will be circulated by INCOSE in late September 2017.) I will:

- Strive to advance INCOSE in "all things systems", taking Vision 2025 to 2025++;
- Endeavour to prioritise and provide more support to activities in the technical operations arena in order to produce meaningful artefacts;
- Strengthen the link between Chapters, Working Groups and Outreach;
- Continue to "open up" our terminology to communicate across industries and domains;
- Look into different avenues for participation, targeting younger demographics;
- Seek additional paid professional support where appropriate, for timely outcomes;
- Continue to review and refine budgets, particularly to seed opportunities;
- Open new communication channels for members to access key Board members.

If we are to achieve any of these it is important to recognise and foster qualities of the individual and collectively, of our members and which I believe I demonstrate. These qualities are:

- **Inform** - spread the knowledge and applications of "all things systems";
- **Nurture** - through education, training, mentoring, coaching, from entry to expert levels;
- **Collaborate** - work as a team to increase our success and break down barriers;
- **Orient** - pursue our goals and objectives with fairness, respect and honesty;
- **Sell** - and sell, sell, sell; whether it's an idea, or INCOSE itself, or even for raising revenue;
- **Excel** - in all our undertakings, striving to do our best to achieve our goals.

Together, think of what INCOSE can be with the marriage of such qualities supporting the vision! And I would love for you to give me the opportunity as President-Elect.

On that note, please do vote in November as every vote counts!

INCOSE 2017 Council Elections

As this year's INCOSE elections are approaching, we are delighted to include statements from the two President-Elect candidates; Kerry Lunner and Paul Schreinemakers.

To read further details, you can visit the Nominations page on the INCOSE website - voting will take place in November 2017!

Kerry Lunney
My Vision Statement

I'm passionate about INCOSE and about being a Systems Engineer. My vision for INCOSE has three themes of strategic focus: our members, our impact and our flexibility & adaptability.

Our Members

INCOSE is a successful and growing organisation. Success comes from the enormous range of Working Groups, CAB and the chapters that represent distinctive communities. Whether individual members, corporate members, or academic members, they bring much energy and enthusiasm and form the bedrock of our organisation.

I am committed to continuously listen to you, using your needs as the basis for plans that the Board of Directors formulates and rapidly implements. I want to make sure that INCOSE's focus and direction connect with the local Chapter's needs. I have experience with transforming the needs of our stakeholders into actions for change within INCOSE. For example, based on comments from members I led the effort to re-architect the structure of Technical Operations.

Our Impact

Over the years, the Working Groups of Technical Operations and the UK-Chapter have generated many excellent products. At this point in time we are recognized as the authority for Systems Engineering. However, we are still confronted with policy makers that have never heard about us and the value we can bring.

I'm committed to reach-out to the policy-makers to grow awareness about the benefits of our discipline and to attract these policy-makers in our community. I wish to achieve this by setting up policy-makers specific events under the umbrella of INCOSE or by attending events at which these policy-makers share and discuss their views.

I believe that INCOSE must speed up the implementation of the Vision 2025 and widen its horizon. As an example, I led a 2016 effort by the Netherlands Chapter to project the Vision 2025 on the country's specific Systems Engineering needs, and to widen it's horizon to 2035 where possible.

Our Flexibility and Adaptability

The world around us is changing and is confronted with ever more challenging and complex system problems, like the digital evolution. I believe we will need to continuously evaluate and adjust our course of action to remain the world authority in Systems Engineering, while expanding our collaboration with others like the IEEE, PMI and IET. Leveraging our diversity and global footprint will enable us to become a more effective organisation.

I'm confident that my long-term experience in INCOSE, while serving as Chapter President, Associate Director for Events, and (Deputy) Technical Director, being a member of the Board of Directors and by having worked in multiple domains for both industry and government, has provided me insight from multiple perspectives regarding the drivers of our organisation and the changes needed to keep INCOSE and our discipline relevant. If elected, these insights will help to equip me to serve in this demanding role.

Thank you and please vote in November.
This year the INCOSE International Symposium (IS) was in Adelaide, Australia - a long way from home and a massive contrast to the proximity we had in 2016 when the event was in Edinburgh, in our home chapter.

The point of any Systems Engineering event is it is a gathering of systems engineers. The purpose is both to share and understand recent developments in Systems Engineering. But there is a greater purpose beyond the mere 8 - 5 of technical content.

The photograph to the right was taken in the early hours after the conference banquet. Yes we were having a good time. The point is we were having a collective good time, with Systems Engineering as a common bond. In this photo there are 4 nationalities (Swedish, Australian, USA and British), being contributors to about 10 papers, panels and tutorials at the Symposium.

The joy of attending an event such as the International Symposium is meeting a wide range of people who share a belief in systems engineers. They come to share and discuss the practice of Systems Engineering; contacts and relationships are formed and these people can be approached for guidance and advice well after the event. Being a systems engineer in the ‘real world’ can often be a lonely and difficult role, and it is good to have a support network of like-minded people.

See social media for further examination of the ‘extra-curricular’ activities, in which UK chapter members took a leading role.

So onto the event itself.

The event was held in the Adelaide Conference centre, from 15th - 20th July. It comprised a weekend of tutorials and workshops, and four days of full multi-track conference. The event had an attendance of around 630 delegates, which whilst lower than the numbers in Edinburgh in 2016, was a good achievement given the distance to the venue.

A review of the various journeys to Adelaide would be an interesting systems study in itself, with many prizing comfort over journey time, and others suffering significantly from a lack of resilience in transport systems. There were four days of full conference with a key note every day, and then six tracks of various Systems Engineering content.

The UK attendance was (obviously) lower than last year in Edinburgh, but at least 21 chapter members were there, making the UK the third largest national group present. Behind the USA and Australia. There was UK contribution and/or authorship in approximately 17 out of the 126 different papers and panel discussions in the conference programme. We also should not forget the contribution Claire Ingram made as the IS 2017 Technical Chair, coordinating and managing the technical program.

In terms of reward, Duncan Kemp was a contributor to one of the best papers, and Ian Presland received an Outstanding Contribution award. As Ian couldn’t be present I was delighted to pick up the award on Ian's behalf, and we will have to find an appropriate opportunity at a UK event to pass on the award, and properly celebrate Ian's contribution.

The technical content was diverse, as usual. My own personal feeling was that there were more new
ideas, and explorations of new themes than there have been at previous Symposiums, which made the event exciting and simulating.

As usual there was a major keynote speech each day - there are videos of these available on the INCOSE YouTube channel. These were on the diverse topics of; "(Australian) Force Design: Evolution not Revolution"; "The Japanese Bullet Train ‘Shinkansen’ System"; "Systems Engineering and Autonomy: Opportunities and Challenges" and; "Space Weather: Understanding and Mitigating Impacts on Our Interconnected and Interdependent Critical Infrastructure". All of these contained both interesting Systems Engineering concepts, and challenges to Systems Engineers, provoking a lively debate. Note that the UK involvement was strong, with our own Duncan Kemp asking the first question of the conference.

It is not possible to give a full description of the technical content of the Symposium. The social media discussion (#incoseIS) gave a good running commentary on the content, and kept me informed of the excellent content I missed in my personal selection of sessions to attend. However, as a summary here are the themes (recognising this is one observer’s biased point of view):

1) There was a continuation of lots of international grappling with the application of Systems Approaches to military force design - seen very much in terms of capability rather than individual systems, and examples of this approach being used in other capability areas.

2) There was an amount of discussion on development of Systems Engineering competencies, including reports from the international working group, who are refreshing and extending the existing INCOSE UK Competency Framework.

3) There was a refreshing amount of conversation and discussion on Systems Thinking and Design Thinking - recognising that these are complimentary and overlapping, but different to Systems Engineering. This (in combination with item 2) shows a significant development in the international discussion from 5-10 years ago, where the discussion was predominantly about variations in Systems Engineering processes.

4) There was the usual raft of MBSE papers - many of which showed practical use of the modelling (rather than focusing on modelling practice).

5) Activities showing linkage of Systems Engineering to Asset Management - which was a continuation from a keynote at UK ASEC 2016 - and Program Management.

6) Research starting into the idea that different innovation and intervention strategies work better in different situations - going beyond the simple concept that the SE handbook processes need tailoring.

7) Two of the key notes (Autonomy and Space Weather) emphasised the scope and size of the challenges to the world, that Systems Engineering can play a large role in solving.

Overall IS 2017 in Adelaide was an informative and tremendously enjoyable and informative event.

Next year the IS is in Washington DC, and there are plans to make it the largest IS ever (some talk of 1,500 attendees). It is closer to UK, but before that we have our flagship UK Event, ASEC 2017, at Warwick on 14th -15th November - see you there?
Do You Believe (in the Value of Systems Engineering)?

Luke Edelston addresses the issue of how we justify the costs involved with Systems Engineering, such as placing a definitive value on the benefits gained.

From my infancy as a fledgling engineer, I have been taught the core values of Systems Engineering (SE). My elders gave me stability and order through the Systems Engineering Lifecycle. There was no doubt in my mind that it was the true and righteous path. I believed. Hallelujah! Praise the process!

In some ways, it appealed to my scientific mind, in others, it just felt right. I liked the idea of a correct answer, and a verifiable test. That's science...right? But then someone asks whether you're asking the right question. Or, even worse; they don't even understand why you're asking the question at all.

Belief

Belief is accepting something is true without concrete evidence. We, as systems engineers, accept that Systems Engineering is valuable, even though no one has conclusively proven that Systems Engineering is valuable. For example, it isn't clear how much Systems Engineering is required for a given situation. Systems Engineering sits between the certainty of science and the ambiguity of psychology.

We have a handbook which outlines a methodical process. However, it has no formulas or theorems. It is more of a philosophy than a certainty. The benefits are often intangible and un measurable. On the other hand, we can calculate the additional costs of our meetings, documentation and labour. How much benefit did writing that requirement bring?

We bring extra cost, unanswerable questions and intangible benefits... so why bother?

Nothing New

The funny thing is that people have been doing Systems Engineering for years without realising. You can't design a railway without understanding local geology. You can't design a radiotherapy system without understanding the human body. In other words, you can't design a system without understanding the bigger picture. We've just crafted an unsaid art into a specialised discipline.

Systems Engineering has grown out of the need to understand complex systems, to understand the emergent properties of systems and the way humans interact with them. The Internet, and now the Internet of Things, has opened the door to complexities rivaling those of the human mind. And it is only getting more complex.
Improve your results and your company

PPI’s training embodies a strong focus on interaction, variety, the social aspects of learning, and integration with the delegate’s existing knowledge framework. Each delegate receives personal attention in the workshops; the objectives of each delegate are revisited daily.

“One of the best and most valuable professional development classes I have ever taken; relevance, substance & depth and breadth of presenters expertise. Wish I would have taken it earlier” - delegate

Upcoming courses 2017 & 2018

**Systems Engineering**
Eindhoven, The Netherlands
Amsterdam, The Netherlands
London, United Kingdom

20 Nov - 24 Nov 2017
12 Feb - 16 Feb 2018
05 Mar - 09 Mar 2018

**Requirements, OCD & CONOPS**
Amsterdam, The Netherlands
Amsterdam, The Netherlands

16 Oct - 20 Oct 2017
12 Mar - 16 Mar 2018

**Requirements Analysis & Specification Writing**
Amsterdam, The Netherlands
Eindhoven, The Netherlands
Ankara, Turkey

05 Feb - 09 Feb 2018
02 Jul - 06 Jul 2018
21 May - 25 May 2018

**Systems Engineering Management**
London, United Kingdom
Amsterdam, The Netherlands

30 Oct - 03 Nov 2017
06 Nov - 10 Nov 2017

**Software Engineering**
London, United Kingdom
London, United Kingdom

04 Dec - 08 Dec 2017
09 Apr - 13 Apr 2018

**Architectural Design**
London, United Kingdom

06 Nov - 10 Nov 2017

Please visit our website for full course details, including learning objectives, course outlines and for course registration:

www.ppi-int.com
"It was the best of times, it was the worst of times..." To quote the opening lines of Charles Dickens', A Tale of Two Cities, may seem overly dramatic, but I think they accurately describe the fluctuation of my feelings during my first two years at university.

This month, I will begin the third year of my Automatic Control and Systems Engineering course at The University of Sheffield. This is not a pure Systems Engineering course, however, as Sheffield is one of the few universities to run an undergraduate course that includes any Systems Engineering, I feel that I'm getting as much experience and exposure as I can at this stage of my life.

Like many teenagers beginning their lives at university, I started my course with mixed feelings. A combination of excitement and fear. Excitement as I was entering a new phase of my life and trepidation at the intensity and complexity of my course.

I must admit that initially, my excitement manifested itself by my drinking deeply of the temptations on offer. Joining the rugby team, long evenings spent in the student union bar and a sports tour to Barcelona combined to take up far too much of my precious time.

It also turned out that my concern wasn't misplaced. My previous knowledge of Systems Engineering was limited to a four-day course at Loughborough University. It was this course that captured my imagination and led me on the path that I am now following. While I found the course compelling, it failed to impress on me how hard I would need to work to graduate with a worthwhile degree.

Trying hard to fit in a full university social life, I took too long to discover the reality of how much commitment my course requires. The party lifestyle in which I indulged severely compromised my performance in my first year, leading to a retake of one of my modules. The shock of how close I had come to failing my course was the wake-up call I needed to get back on track. Although the difficulties I faced were of my own making, it is difficult to articulate how stressful it became. It is not an exaggeration to say that I found it very difficult to cope and it was only the support and encouragement of friends and family that got me through.

The reality is that I need to work at full capacity, one hundred percent of the time to stay on top of my workload. I have also found that as Automatic Control and Systems Engineering is a fairly new course, its structure is not completely developed and is still evolving. This leads to problems with the spread of work and the credit value of some modules. For instance, in an attempt to make the course more hands on, an additional
module was added which was predominantly laboratory work. While clearly, the aim was to develop the course in a more practical direction, the amount of work involved was completely out of kilter with its value. Each week we were required to produce a detailed report of that week's laboratory - regularly six or seven pages of analysis - which, as it included a pre-lab, lab and post lab, could take at least five days to complete. This in itself is no problem if it is all that one has to do. However, this was supposed to be one sixth of last semester's work, which actually required 85% of my time. To illustrate the situation, within two weeks I was required to produce two pre-labs, two labs, two post lab reports and complete a C++ assignment. In an ideal world, I would have wanted to devote a full two weeks to the C++ assignment alone.

In addition, attending lectures is really important. My friends on other (non-engineering) courses, tell me that they only need turn up for 50% of their lectures to be able to understand their subject fully, but I have found that if I miss just one lecture, I fall behind and don't have time to catch up.

However, it is not all doom and gloom and I don't want to sound as if I am not enjoying my time at university; The University of Sheffield is a brilliant institution. It is said that anything worthwhile comes with a price and that is how I view my course. It is immensely hard work, the subject is complex and it challenges me in completely new ways. But also, I find it interesting and stimulating and it motivates me to fulfil my potential.

“It is said that anything worthwhile comes with a price and that is how I view my course. It is immensely hard work, the subject is complex and it challenges me in completely new ways. But also, I find it interesting and stimulating and it motivates me to fulfil my potential.”

I have recently successfully completed my second year's exams and I spent the summer working for the civil service organisation with which I completed a Year in Industry internship during my gap year. I am fortunate because they are sponsoring me through university and if I complete my degree satisfactorily, I will be offered an interview for permanent employment. In addition, I have also just been offered a place on the MEng degree course.

So, although my life at university isn't as much fun as some of my friends who are taking less demanding subjects. And maybe I don't get to see my girlfriend every weekend or even every month. And maybe I could do with a less exacting workload and a little more sleep, but I realise how lucky I am.

I am under no illusions that in this increasingly competitive world, where new technologies are leading the charge and many graduates are struggling to find their place in the world, Systems Engineering has provided me with a platform to make my future as secure and as interesting as I could reasonably expect.
INCOSE UK Upcoming Events Calendar
This calendar is a summary of events at the time of going to press - UK Chapter events are shaded blue. For the latest, up-to-date information please visit the Events page on the INCOSE UK website.

<table>
<thead>
<tr>
<th>Railway Interest Group</th>
<th>Architecture for Complex Systems</th>
<th>MBSE Interest Group</th>
</tr>
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<tbody>
<tr>
<td>Monday 18th September, 17:45 - 19:30</td>
<td>Tuesday 19th September, 10:00 - 16:00</td>
<td>Tuesday 26th September, 10:00 - 16:00</td>
</tr>
<tr>
<td>London Underground, 55 Broadway, London, SW1H 0BD</td>
<td>Rolls-Royce Leisure Association, Derby, DE24 9HY, United Kingdom</td>
<td>Changan UK R&amp;D Centre, Building 3500, Birmingham, B37 7YG</td>
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**Operational Concept to Working Railway: Developing an Effective Collaboration Between Operators and Engineers on a Major Railway Upgrade Project**

Effectively engaging operations personnel in the very earliest stage of railway projects is essential if we are to avoid extensive rework or having to live with operational workarounds for sub-optimal decisions at the beginning.

Michael Coultharde-Steer, Lead Operational Development Manager at LU, will describe how and where significant benefits accrue from involving Operational input in the context of major upgrade programmes and how User Requirements Specifications are derived by a small team that includes operational end-user representatives and LU’s system engineers.

To find full details and to book your place, please visit the INCOSE UK calendar here.

**Bristol Local Group**

**Drone Systems: How Bad Could it be?**

Dr. Steve Wright is a senior lecturer in Avionics, Systems, and Electronics in the Engineering Design and Mathematics Department at the University of the West of England, with special interest in drone technologies.

Steve will explain how the evolution and convergence of a number of separate technologies allowed for a revolutionary step change in consumer/prosumer drone capability and affordability.

Full details and booking are available via the INCOSE UK calendar here.

**EMEA Workshop**

Tuesday 19th September - Thursday 21st September

**Congress Center Rosengarten, Mannheim, GERMANY**

The INCOSE EMEA Workshop 2017 is an event for Systems Engineers from the EMEA region to contribute to the state of the art in Systems Engineering. Unlike the International Symposium and the national conferences, there are no paper, panel or tutorial presentations. Instead, attendees spend three days working alongside fellow Systems Engineers who are there to make a difference. Systems Engineers at all levels and from all backgrounds are encouraged to engage in working sessions, and to contribute their knowledge and experience to take the discipline forward.

Find out more information and book your place, via the website.

**INCOSE UK Annual Systems Engineering Conference 2017**

Tuesday 21st November - Wednesday 22nd November

The Slate, Warwick Conferences, University of Warwick, Coventry, CV4 7SH

This year's theme is ‘Pushing the Boundaries of Systems Engineering’.

The Annual Systems Engineering Conference (ASEC) is INCOSE UK's flagship annual event and brings together a wide range of professionals from a variety of backgrounds, with the common interest of building upon their Systems Engineering (SE) knowledge and sharing ideas with their peers.

INCOSE UK hosted its first annual conference in 2010, with the aim of creating the premium annual SE conference in the UK. Now in its 7th year, ASEC has indeed grown to become the UK's foremost SE conference.

Keep an eye on the event website for updates.

The INCOSE UK AGM will also be held at this year’s ASEC, on Tuesday 21st November.

All events are correct at the time of publishing.

To keep up to date with all upcoming events, please check the Events Calendar on the INCOSE UK website.