INCOSE International Symposium 2015

The BKCASE team was busy putting the finishing touches to version 1.4 of the SEBoK in the run up to the 25th annual INCOSE International Symposium. There are 6 new articles and 26 articles with significant updates, alongside small edits and updates to references in 70 articles. For an in-depth look at the specific edits throughout the SEBoK, please visit the Acknowledgements and Release History page.

The release of this new SEBoK version was slightly delayed by the need to synchronise with version 4.0 of the INCOSE handbook. Both the handbook and SEBoK in turn being aligned with the 2015 update of...
the ISO/IEC/IEEE 15288: Systems Engineering Life Cycle Processes standard. All three of these critical resources are now fully aligned and play related but distinct roles in setting the baseline descriptions of Systems Engineering.

Other technical activities at the IS focused on describing and discussing BKCASE plans for further evolution of the Body of Knowledge and associated curriculum products. The SEBoK panels this year described the alignment discussed above and highlighted key areas of future work. These include better alignment with related disciplines and specialist areas, both technical and people and organisation focused.

**BKCASE 2016**

Areas of focus for 2016 will include Model Based SE, Agile Life Cycle, Systems of Systems and Enterprise SE.

Plans are also in hand for an update of the GRCSE master’s reference curriculum in 2016. GRCSE will be reviewed and updated to align it with changes to SEBoK. We will also revisit the original GRCSE survey to understand how GRCSE is being used and to re-assess the need for SE reference curriculum.

We ran our second panel at an IEEE SE event in September 2015 and are planning a workshop session at the 2016 IEEE SysCon to explore possible synergies with IEEE SE technical activity. We continue our strong links to INCOSE technical working groups. We will have a strong presence at the INCOSE International Workshop in 2016, more detail to follow in future newsletters.

We are looking for three kinds of interaction with working groups from across the community:

1. To help bring areas of the SEBoK up to full maturity with the available knowledge sources. This is improving with each SEBoK release but some areas still need work. **Do you know of a SEBoK section in need of more development and of a working group willing to help?**
2. To take the lead in regular review and maintenance of mature sections of the SEBoK. This is working well in some areas but needs to be extended. **Are you part of a working group which might be able to take such a role?**

3. To work with areas of emerging knowledge for mutual benefit. **Are you involved in a working group in a knowledge area such as MBSE, Agile, SoS, etc. and interested in helping us target the most important knowledge in your topic?**

If the answer is yes to any of the above, or if you are aware of any other possible link between the SE community and SEBoK, please contact me at R.D.Adcock@Cranfield.ac.uk.

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**BKCASE Sponsors**

We are extremely pleased to announce that the BKCASE project has received an individual sponsorship from:

**Mike Pafford, Maryland, US**

He and our other current sponsors are listed on the BKCASE website under [Sponsors](#).

The BKCASE project invites both individuals and organizations to become BKCASE sponsors. We are seeking sponsors from across the community to expand BKCASE’s value and impact globally.

If you are interested in becoming a sponsor or want to know more, please visit the [sponsor page](#) on the BKCASE website.

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**Featured Editor**

**Rick Hefner, Ph.D**

**Why is the BKCASE project important?**

Systems engineering is gaining importance, as companies...
worldwide seek to design and develop increasingly complex systems to more demanding performance and quality requirements and constraints. Having a widely-accepted, community-based, and regularly updated baseline of SE knowledge helps the systems engineering community communicate the value of SE concepts and methods to the wider audience involved in developing and operating systems. And the accompanying standard graduate reference curriculum helps bring new practitioners into the field, where they can contribute their ideas and enthusiasm. The GRCSE curriculum also provides a transition path for working engineers and technical personnel seeking to broaden their knowledge and perspectives.

**How would you like the BKCASE project to develop?**
The BKCASE project needs to seek both individuals and organizations to use, sponsor, and contribute to the knowledge base. We need to better understand the current and potential application of systems engineering concepts and principles in the wide array of real-world settings and domains. For too long, systems engineering has been associated with large, defense systems. We are now starting to demonstrate the value in applying the concepts, scaled appropriately, to commercial product development, service systems, and enterprises.

We also need to further explore interfaces with related disciplines, like software engineering, project management, and supply chain management. A better understanding of the interconnections with inform both sides, and allow us work more collaboratively.

**Why did you chose to become an editor?**
I am blessed to have spent my career working with some incredibly knowledgeable and dedicated individuals, and to have benefitted from their wisdom and experience. This has allowed me to contribute towards a variety of system development efforts, where the tools and methods I was taught allowed my teams to make the systems better, cheaper, and faster. I want to pass on what I have learned to a new generation, and help them contribute to current and future systems. My greatest opportunity for reaching the widest possible audience is through the BKCASE effort. Selfishly, it also gives me the opportunity to work with and learn from fellow practitioners, and to be inspired by their passion.

**You are editor of Part 5, what is this part about and why is it important to have in the BKCASE project?**
Part 5, Enabling Systems Engineering, is about how an enterprise prepares and positions itself to effectively perform the systems engineering (SE)
activities described elsewhere in the SEBoK. Having spent a lifetime watching individuals, teams, and enterprises struggle with learning and using new practices, I know that adoption is more than simply publishing a reference document. Individuals must understand the various roles and competencies required, have the means to assess their own knowledge, skills, and experience, and determine appropriate approaches for personal improvement. Teams must identify the needed SE capabilities for a given application and determine the most effective organization and leadership approaches. Organizations must understand industry best practices, assess their current practices against them, and determine the right strategies to develop a culture and infrastructure supportive of SE.

What are the current activities in Part 5?
We are currently updating each of the sections (individuals, teams, businesses and enterprises) to reflect recent advances and proven practices in SE adoption. We are also considering different ways to structure the information, to better compare and contrast the differences in adoption strategies at the three levels.

How would like to see Part 5 develop?
In my role as Program Director for Caltech, I have worked with numerous companies in designing and implementing system engineering training programs for their employees. These companies know that education is key to improving their business performance. But adoption requires more than training; it also demands the right organizational support. Most SEBOK readers have technical backgrounds, and know comparatively less about organizational culture, infrastructure, and adoption. Part 5 needs to provide a clear roadmap to aid organizations, and the individual change agents supporting them, in selecting and implementing effective adoption strategies for their own context. Ideally, these strategies should be illustrated with case studies of successful adoption efforts.
An equally important goal is to ensure that future generations of system engineers recognize the characteristics of systems engineering enabling teams and organizations. This will facilitate more informed decisions them choosing supportive companies for employment, and help them recognize and acquire the needed skills to prepare themselves for these environments.

Editor Résumé
Rick Hefner  
Program Director  
California Institute of Technology  

Rick Hefner, PhD, serves as the Program Director for the Center for Technology and Management Education at the California Institute of Technology, where he designs and delivers training programs for technology-driven professionals and companies. He has over 40 years of experience in systems engineering, project management, Lean Six Sigma, and process improvement, working with companies in the aerospace/defense, communications, electronics, and health sciences industries. Previously, Dr. Hefner served as director of process management at Northrop Grumman Corporation, where he managed corporate process initiatives related to Lean Six Sigma and program management.

Dr. Hefner is credited with over 200 publications and presentations. He earned his PhD from UCLA in mechanical engineering, and his MS and BS from Purdue University in interdisciplinary engineering. He is a Lean Six Sigma Black Belt and a CMMI High-Maturity Appraiser and Instructor.

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