



Body of Knowledge and Curriculum to Advance Systems Engineering

**Second Workshop on
Progress toward SEBOK 0.25
and
Initial Plan for GRCSE**

March 30th and 31st, 2010

Embry Riddle Aeronautical University

Daytona Beach, FL, USA

WORKSHOP REPORT

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1. BKCASE Project

BKCASE is the acronym for the Body of Knowledge and Curriculum to Advance Systems Engineering. The BKCASE project is led by a university partnership between the Stevens Institute of Technology and the Naval Postgraduate School with sponsorship from the U.S. Department of Defense and partnership with INCOSE, the IEEE Computer Society, IEEE Systems Council, ACM, and NDIA Systems Engineering Division. The project scope is to define a Systems Engineering Body of Knowledge (SEBoK) and use the SEBoK to develop an advanced Graduate Reference Curriculum for Systems Engineering (GRCSE).

The ideal outcome is that the SEBoK will be supported worldwide by the Systems Engineering community as the authoritative SEBoK for the SE discipline; and that the GRCSE will receive the same global recognition and serve as the authoritative guidance for graduate degree programs in SE. Systems engineers from across the world have volunteered as authors and reviewers on the project to collaborate over a three year period and to deliver the SEBoK and GRCSE to the public in 2012.

In December, the BKCASE team held an inaugural workshop in Monterey, CA, at the Naval Postgraduate School to determine the basic rules for the project and develop a common set of objectives. In addition, the team developed an initial strategy to begin work on SEBoK version 0.25, which included using ISO 15288 as the initial structure for the SEBoK. The author team broke into subteams to begin drafting materials for review at the second Workshop.

2. BKCASE Workshop 2.

The second workshop was held at Embry-Riddle Aeronautical University in Daytona Beach, FL, USA on March 30th and 31st, 2010. A list of the workshop attendees is available in Appendix A and the meeting agenda in Appendix B of this report. The workshop's slide set is available online for download at the BKCASE website located at <http://www.bkcase.org>.

The objectives of the workshop were to:

1. Increase team bonding, including integration of new authors into the team;
2. Review the strategy and plan for creating SEBoK Version 0.25 to either validate or rework until the team believes it will be successful;
3. Develop the strategy and plan for creating GRCSE Version 0.25;
4. Develop the strategy and plan for creating the Case Studies;
5. Reach agreement on the infrastructure necessary to support Version 0.25 (website, Sakai, style guide, etc);
6. Decide on outreach activities for the next 6 months; and
7. Establish expectations for the EuSEC authors' meeting and Workshop III.

During Dr. Pyster's introductory comments, he reminded authors that the Author Copyright Release form must be completed in order to participate as a BKCASE author. Authors present were asked to sign and returned the form to the core team during the workshop; all authors who have not completed a

form should sign and mail them to Doris Schultz at Stevens Institute of Technology. All authors received a blank copy before arriving to Daytona Beach. Dr. Pyster noted that some authors may require approvals from their organizations before signing. If necessary, modifications to the original form will be considered by Stevens Institute of Technology.

3. Workshop Proceedings

3.1 Review of SEBoK 0.25 Draft Materials

All of the team materials, in addition to the framework and draft introductory materials for SEBoK, were sent to the author team prior to Workshop II. In preparation for the meeting, Art Pyster posed a series of questions for each of the authors to consider as they conducted their reviews. These questions focused on the use of 15288 as the architectural framework for version 0.25 and whether that is an appropriate structure; what application domains might be appropriate for Case Studies; whether the document template used to draft initial materials is appropriate going forward; and what the overarching document structure for SEBOK 0.25 should look like. (For a full list of the review questions, please see Appendix C.)

Each of the team leads presented an overview of the materials drafted by their team and provided an initial response to the review questions. Overall, the sub-teams indicated that while 15288 was a useful construct to start drafting some materials, that it was not sufficient for a thorough body of knowledge.

The author team reviewed the Software Engineering Body of Knowledge (SWEBOK) to determine if that structure might provide an example that could be used for SEBoK. The authors agreed that the organization used in the SWEBOK of Knowledge Areas, topics, and subtopics was an appropriate model for the SEBoK and determined to use that model going forward for version 0.25. The organizational concept for 0.25 is as follows:

- Knowledge Area. Approximately 4 pages of text will provide an overview of what is contained in the knowledge area and the relevant topics in that area.
 - Topics. Approximately 8 pages of text that will provide an overview of the topic along with the relevant subtopics.
 - i. Subtopics. Undefined length of text that will provide detailed discussion of the subtopic, including appropriate tools, methods, and references.

Garry Roedler volunteered to develop an example Knowledge Area, including defining the topics and subtopics, and writing through at least one topic and all of its subtopics. This write-up will follow the style guide produced by the core team. Mr. Roedler will provide this by April 7. Ray Madachy, Kevin Forsberg, Dave Olwell, Alice Squires, Art Pyster, Sandy Friedenthal, and Tim Ferris volunteered to review this draft; they will revise the document and distribute it to the author team by April 16.

After the review of current materials and the decision to alter the SEBoK structure, the author team developed an outline for SEBoK 0.25. This outline includes the following (for additional detail, see Appendix D):

1. Executive Summary
2. Introduction (Overview)
3. System Concepts & Thinking
4. SE Fundamentals
5. SE Approach and Practices
6. SE Applications/Case Studies
7. SE Competency (ethics, statistical modeling, etc.)
8. Glossary
9. Other Closing Matter

These are the chapter headings for SEBoK 0.25. The chapters for 2, 6, 7, and 8 are single Knowledge Areas (KAs). Chapters 4 and 5 will contain multiple KAs. (See Appendix D for these KAs) Chapters 1, 2, 9, and 10 will collectively represent the background and reference information for the SEBoK.

There was extensive discussion of how to handle systems engineering (SE) artifacts in the SEBoK. Though some author team members felt artifact material should form a separate section, others felt that it was important to discuss appropriate artifacts in conjunction with supporting processes within SE. For SEBoK 0.25, artifacts will be incorporated into Chapter 5. However, the authors plan to reexamine the issue of artifacts after the external review of 0.25.

An initial set of use cases were also presented at the workshop in the introductory materials for the draft of SEBoK 0.25. The author team reviewed the use cases and discussed possible additional use cases. For version 0.25, it was decided that a discussion of anticipated users and uses, as defined at Workshop I, should be included. The author team agreed that formal use cases should be developed in future versions, but not as part of the 0.25 effort.

It should be noted that the author team anticipates that SEBoK 1.0 will not be a traditional document – it will probably use some form of Wiki structure; however, for SEBoK 0.25, authors will maintain the conventional word processing format decided early on when BKCASE started.

3.2 Determination of Strategy to Develop SEBoK 0.25

The review of current materials and development of the SEBoK 0.25 outline led into the discussion of the strategy to develop SEBoK 0.25. The strategy includes the following steps:

1. **Create a complete example that follows the style guide.** Garry Roedler's section will serve as this example, which will include the Measurement KA under the SE Approach and Practices chapter.
2. **Use the example to draft content for each of the outline chapters.** Authors volunteered to lead and/or write sections of the SEBoK. (See SEBoK 0.25 Staffing Table below.) Authors will provide drafts of their materials for a special one day workshop on May 23 in advance of the European Systems Engineering Conference (EuSEC) May 24-26, 2010 in Sweden. The workshop will be attended by those authors who can participate. This will include having all KA descriptions written (~4 pages), having all topics and subtopics identified, and having at least a few examples of each completed.

BKCASE Workshop 2 Report

3. **EuSEC review of draft materials.** The authors attending EuSEC will review materials at an all-day workshop and provide feedback to the sub-teams. (See section 4.1 *EUSEC Session* below for additional details).
4. **Revision of materials for version 0.25.** Based on the EuSEC feedback, the groups will revise and/or add content as appropriate in preparation for Workshop III.
5. **Finalization of SEBoK 0.25 and Review Strategy.** The author team will finalize SEBoK 0.25 and determine the review strategy at Workshop III. (See section 4.2 *Future Workshops* below for additional information.)

The staffing plan for SEBoK 0.25 work was developed based on the outline developed in Workshop II. For chapter 5, SE Approach and Practices, individuals volunteered for the individual knowledge areas. For all other chapters, authors volunteered for the overarching chapter. The following is a breakdown of the authors participating on this effort; section leads are shown in **bold**, supporting writers in *italics*:

Table 1. Staffing for SEBoK version 0.25, as of March 31, 2010

Section/Knowledge Area	Responsible
SEBoK Version 0.25	Art Pyster/Dave Olwell
1. Executive Summary	Dave Olwell
2. Introduction (Overview)	Barry Boehm/Art Pyster
3. System Concepts	Bud Lawson (lead); <i>Johann Amsenga, Erik Aslaksen, Sandy Friedenthal, Alice Squires, Scott Jackson</i>
4. Fundamentals	Rick Adcock (lead); <i>Johann Amsenga, Alain Faisandier, Scott Jackson</i>
5. SE Approach and Practices	
5.1 Life Cycles	Kevin Forsberg (lead)
5.2 Organization	No Lead
5.3 Management	Ray Madachy (lead); <i>Garry Roedler, Mike Krueger</i>
5.4 Technical	John Snoderly (lead); <i>Jean-Claude Roussel, Alain Faisandier, Garry Roedler, Mike Krueger</i>
5.5 Agreement	No Lead
5.6 Specialty Engineering/Design Considerations	No Lead
6. SE Applications/Case Studies (introduction only)	Sandy Friedenthal (lead); <i>Rich Freeman, Alice Squires, Tom Hillburn</i>
7. SE Competency (ethics, statistical modeling, etc.)	Brian Wells (lead); <i>Ken Nidifer, Rick Adcock, Don Gelosh, Alice Squires</i>
8. Glossary	
9. Other Closing Matter	

Art Pyster will contact authors who did not attend the workshop to fill holes in the staffing assignments.

3.3 Initiation of GRCSE

Art Pyster began the discussion by reviewing the value proposition for GRCSE developed at Workshop I. Namely, that there is currently no authoritative source to guide universities in establishing the outcomes graduating students should achieve with a master’s degree in SE. Likewise, there is no guidance source on reasonable entrance expectations, curriculum architecture, or curriculum content. This results in unnecessary inconsistency in student proficiency at graduation, makes it harder for students to select where to attend, and makes it harder for employers to evaluate prospective new graduates. The goal for BKCASE is to develop a set of curriculum recommendations which will fill this gap and provide the primary reference for universities within to develop, modify, or evaluate graduate programs in SE.

Because the *integrated Software and Systems Engineering Curriculum (iSSEc)* effort for a graduate curriculum in software engineering (SwE) was recently completed and has been adopted by many of the international organizations targeted by BKCASE, the authors felt that this effort would provide a useful model for approaching GRCSE. The authors reviewed this curriculum, Graduate Software Engineering 2009 (GSWE2009), and felt that at least for version 0.25, GRCSE should be similar to GSWE2009 in form, scope, and content themes and that the GSWE2009 approach would provide an appropriate starting model for GRCSE.

The authors in attendance recognized two types of existing Systems Engineering programs: the systems-centric approach and the SE domain-centric approach. All agreed that both are correct concepts. After discussing the differences between the two, the authors decided to center the initial development of GRCSE on a systems-centric approach. Several of the author team members volunteered to support the project and begin drafting materials as the initial approach for GRCSE. The basic outline for GRCSE is similar to that of GSWE2009, and can be seen in Table 2 below. Tim Ferris volunteered to lead the GRCSE version 0.25 effort, and he is supported by a team of nine individuals. Four of these individuals supported the GSWE2009 effort, and will provide context and background on GSWE2009 content to support GRCSE. The current GRCSE team has representation from a number of countries, but does not have the desired level of industry participation.

Table 2. Breakdown of GRCSE version 0.25 organization along with team members.

Section	Responsible
GRCSE	Tim Ferris
Introduction/Front Matter	<i>Support Team:</i> Alice Squires, J.J. Ekstrom, Mary van Leer, Dave Olwell, Tom Hilburn, Massood Towhidnejad, Guilherme Travassos, Rick Adcock, Eric Bonjour (new member), Lockheed Martin representative (new member)
Objectives	
Outcomes	
Entrance Expectations	
Curriculum Architecture	
Core Body of Knowledge (CBOK)	
Assessment	
Maintenance/Refresh	
Closing Matter	
Appendices	

As a way ahead, the GRCSE team will use GSWE2009 as a model. The GRCSE team will begin drafting sections of the curriculum which will include the Introduction, a set of Outcomes and Entrance Expectations, an initial concept for the proposed Curriculum Architecture, and the introduction to Assessment and Maintenance. For GRCSE, the author team agreed that it would be appropriate to draft a set of curriculum objectives that deal with what capabilities a student should achieve within 3-5 years of completing a master's in SE.

The GRCSE team will provide draft materials for Workshop III (see section 4.2 *Future Workshops* for additional information about Workshop III).

3.4 Initiation of Case Studies

Version 0.25 of the SEBoK will be domain independent. For SEBoK, case studies are meant to provide a model of how SE knowledge can be modified and implemented within a specific domain. In the BKCASE project, the case studies initially will be treated as companion documents to the SEBoK. The decision to use case studies as the only means to capture domain specific knowledge will be revisited following the completion of version .25. The purpose of these case studies is to demonstrate differences in domain, help solidify the concepts presented in the SEBoK by using examples, and address additional depth, pitfalls, best practices, and past successes and failures. The author team indicated that it is their goal to develop case studies which motivate the application and understanding of good SE in relevant disciplines.

Alice Squires presented materials on case studies to the author team. She discussed past case study efforts which might provide useful models for Case Studies to support SEBoK. These included Harvard Business Review (HBR) case studies, Project Management Body of Knowledge (PMBOK) extensions, and cases studies conducted by U.S. government-funded organizations, such as the Air Force Institute of Technology (AFIT) and the National Aeronautics and Space Administration (NASA). The author team recommended that as an initial step, using existing case studies as the basis for determining guidance on domain applications for SEBoK 0.25 is a useful way forward. In addition, the author team provided additional potential case studies for examination. (For a full list of case studies being considered for the SEBoK 0.25 case studies, please see Appendix F.)

Sandy Freidenthal will lead the review of the current list of case studies and select two to move forward with as models for version 0.25. Prior to selecting the two case studies, the case study team will first determine an approach for categorizing the case studies and then select the two case studies from the current list. Members of the author team agreed to assist with specific aspects of this work. Sandy Friedenthal volunteered to evaluate the case study from the INCOSE SE Handbook. Alice Squires volunteered to help develop an approach for categorizing the potential case studies. Tom Hilburn also agreed to help review case studies.

3.5 Wiki Structure and Governance

Dave Lempia from Rockwell Collins provided a brief on wiki structures and governance in his corporation. In order to be successful, a wiki needs support from experts in electronics, network-centric

operations and display systems. Mr. Lempia's wiki structure supports a community of over 7,000 geographically dispersed engineers. The wiki is the corporate method for knowledge sharing and management. Prior to using the wiki structure, there were a number of different locations for storing and accessing information within Rockwell Collins; projects used different books, databases, and forums and often data was stored on individual employees' computers.

The Rockwell tool is based on the Wikipedia engine and has three topic areas: People, Process, and Tools. It is designed to capture lessons learned and best practices, training resources, templates, checklists, measures, etc. In addition to the basic wiki structure, there is an overlaid forum for asking specific questions that can't be answered in the wiki content.

To build the wiki, the writing processes are distributed throughout the expertise in the company. However, there is a significant workload for manual tagging of entries for cross-references, providing technical support, maintaining and resolving issues from the forum, and updating and maintaining wiki content. Information Stewards act as overarching content managers, though all employees can update the wiki. This requires a 1-2 full-time equivalent (FTE) for the level of effort at Rockwell Collins.

After Mr. Lempia's presentation, the authors agreed that they would still pursue a wiki structure as a possible way to deliver the final SEBoK. However, they raised the following concerns:

- The wiki structure is not as automatic as desired and may require significant staffing for maintenance. This raises concerns about whether the desired sponsors could provide the necessary ongoing level of staffing.
- The author team needs to carefully consider how to apply wiki technology to a body of knowledge that is evolving at a very rapid rate and ensure that governance mechanisms are in place to allow evolution while maintaining quality of content.

The author team agreed to discuss the wiki structure further at a future workshop (TBD).

3.6 Project Infrastructure Requirements and Resources

Stephanie Enck presented four main toolsets for the author team to use in support of BKCASE. She reviewed the public website, what materials are available there, and recommended that authors provide the website to individuals interested in the project. In addition, the author team was invited to submit their organization logos along with a permission of use statement for inclusion on the Partnerships page of the website.

Stephanie Enck also reviewed Sakai, the project's web-based document repository; she indicated that the structure of the Sakai site would be updated based on the discussion to reflect the new team structures (see *Appendix E. Project Staffing*) In general, Sakai is the main repository for the author team,

and includes references, draft materials, guidance documents, etc. Ms. Enck reviewed the access procedures for Sakai and asked the author team to provide feedback on functionality.

Stephanie Enck also discussed the BKCASE Style Guide, which was sent to the author team in February 2010. She indicated that she would revise some of the structure to reflect the workshop discussion. Primarily, this would include methods for labeling and formatting KAs, topics, and subtopics. In addition, she will revise the document template, which can be used by all authors to draft their materials. This template includes all the formats specified in the style guide and will facilitate integration of all the different materials. The author team expressed concerns about the different versions of Microsoft Word available. The consensus was to develop a Microsoft Word template in the Office 2003 format so that the entire author team could utilize the template.

Finally Stephanie Enck and Alice Squires reviewed the methods for keeping track of references. The BKCASE project is considering utilizing Refworks software for keeping track of all references as well as creating an annotated reference list. The tool would be able to output the references in whatever format the author team utilizes, which would help to standardize the reference set.

3.7 Outreach Activities

Nicole Hutchison provided an overview of the outreach activities for the BKCASE project. She reviewed a list of conferences which members of the BKCASE author team are planning to attend, and highlighted the conferences where special BKCASE sessions, panels, etc. were to occur. (Please see *Appendix G* for a complete listing.) There is a BKCASE flyer available on Sakai which all authors may print and use for any events they plan to attend or for their own personal contacts. There is also a generic BKCASE slide deck, also available on Sakai, that authors may use if they wish to present information on BKCASE at local events. Authors are asked to provide information on any local events they attend when promoting BKCASE to Stephanie Enck. There are currently no journal articles being developed for BKCASE, but it is anticipated that once the 0.25 versions of the SEBoK and GRCSE are released and reviewed that the author team may begin to develop such articles as part of their outreach activities.

In addition, Nicole Hutchison presented an outline of the process for external review of BKCASE materials. (Please see diagram in *Appendix G*.) The authors generally agreed to this process and decided to work on fleshing out the details of the review plan at Workshop III.

4. Way Ahead

The BKCASE way ahead includes the division of the author team into subteams to address the 3 current deliverables: SEBoK 0.25, GRCSE 0.25, and the Case Studies.

- SEBoK version 0.25 (April-July). 180 pages – 14 people so far. Initial drafts available for EUSEC at the end of May.

- GRCSE version 0.2.5 (April-October). 75 pages – 8 people so far. Uses GSwE2009 as a model; possibly will focus more on curriculum architecture. A solid draft of all materials except the CBoK expected for Workshop III.
- Case Studies version 0.25 (October) – 3 people so far. During April and May will evaluate Case Studies for suitability for Version 0.25.

4.1 EuSEC Session

The European Systems Engineering Conference (EuSEC) will be held May 24-26 in Stockholm, Sweden. On May 23, there will be a special session for all BKCASE authors attending EuSEC (estimated to be at least eight members of the author team). This will be a one-day session to review revised SEBoK 0.25 materials and initial draft GRCSE 0.25 materials. This will also provide an opportunity for authors to perform a review of materials to ensure that they are still internationally applicable, and have not become skewed toward a U.S.-specific viewpoint.

During EuSEC, there will be a discussion of GRCSE during the academic forum and a panel on BKCASE on May 26. At this panel, Art Pyster, Jean-Claude Roussel, Bud Lawson, Rick Adcock, and Dave Olwell will present information on the BKCASE project and hold a discussion with audience members. Specifically, the panel will focus on how the SEBoK and GRCSE will apply to European audiences.

4.2 Future Workshops

- **Workshop III: July 7-8, 2010.** Hyatt O'Hare (tentative meeting site), Chicago, IL, USA. Final review of SEBoK 0.25 and discussion of draft GRCSE 0.25 materials
- **Workshop IV: October 13-14, 2010.** Toulouse, France. Expected feedback on SEBoK 0.25 and finalization of GRCSE 0.25.
- **Workshop V: January 26-27, 2011.** Phoenix, AZ, USA in conjunction with the INOSE International Workshop (IW). Expected feedback from GRCSE 0.25 and progress on SEBoK 0.5.
- **Workshop VI: April 2011.** Tentatively Los Angeles, CA, USA, in conjunction with the Conference on Systems Engineering Research (CSER).
- **Workshop VII: July 2011.** Tentatively Denver, CO, USA, in conjunction with the INCOSE International Symposium.
- **Workshop VIII: October 2011.** Tentatively to be held in the United Kingdom.

Appendix A: Meeting Participants

In Attendance

Rick Adcock, *Cranfield University/INCOSE* (UK)
Jim Anthony, *Office of the Director of Defense Research & Engineering* (USA)
Johann Amsenga, *Eclipse RDC* (South Africa)
Barry Boehm, *University of Southern California* (USA)
J.J. Ekstrom, *Brigham young University* (USA)
Stephanie Enck, *Naval Postgraduate School* (Support Staff) (USA)
Tim Ferris, *INCOSE/University of South Australia* (Australia)
Alain Faisandier, *Association Francaise d'Ingenlerie Systeme/French INCOSE Chapter* (France)
Kevin Forsberg, *INCOSE* (USA)
Sandy Friedenthal, *Lockheed Martin* (USA)
Don Gelosh, *Office of the Director of Defense Research & Engineering* (USA)
Tom Hilburn, *Embry Riddle Aeronautical University* (USA)
Nicole Hutchison, *Stevens Institute of Technology* (Support Staff) (USA)
Bud Lawson, *Lawson Konsult AB* (Sweden)
Mike Krueger, *ASE Consulting* (USA)
Ray Madachy, *Naval Postgraduate School* (USA)
Ken Nidiffer, *Software Engineering Institute (SEI)* (USA)
David Olwell, *Naval Postgraduate School* (USA)
Art Pyster, *Stevens Institute of Technology* (USA)
Jean-Claude Roussel, *European Aeronautical Defence and Space Company* (France)
Garry Roedler, *Lockheed Martin* (USA)
John Snoderly, *Defense Acquisition University (DAU)* (USA)
Alice Squires, *Stevens Institute of Technology* (USA)
Massood Towhidnejad, *Embry-Riddle Aeronautical University (ERAU)* (USA)
Guilherme Travassos, (Brazil)
Mary VanLeer, *Arkansas Education Lottery* (USA)
Brian Wells, *Raytheon* (USA)

Joining via WebEx

Scott Jackson, *University of Southern California* (USA)
John Baras, *University of Maryland* (USA)

Appendix B: Meeting Agenda

Tuesday, March 30, 2010

- 8:00-8:30a Agenda overview, opening remarks, new author introduction, author release form — *Art Pyster*
- 8:30-10:30a Overview of team materials (20 min/team) — *team leads*
- 10:45a-12:00p Discussion of strategy for SEBoK version 0.25 — *Art Pyster*
(includes discussion of version 0.25 objectives, SEBOK scope, use cases, architecture, table of contents, and content)
- 1:00-3:00p Discussion of & decision on strategy for SEBoK version 0.25 (cont.) – *Art Pyster*
- 3:15-5:00p Initiate GRCSE work – *Art Pyster*
(includes deciding how close in scope, style, form, and analogous content GRCSE will be to GSwE2009 and establishing teams to develop content)
- 5:00p *Adjourn*

Wednesday, March 31, 2010

- 8:00-8:15a Review previous day – *Dave Olwell*
- 8:15-9:00a Initiate GRCSE work (continued from previous day) – *Art Pyster*
- 9:00-10:00a Initiate Case Study work — *Alice Squires*
(includes selecting domains, defining scope and content, and forming teams to create case studies)
- 10:15-10:45a Discussion and demonstration about Wiki structure and governance – *David Lempia*
- 10:45-11:30a Discussion of infrastructure requirements to support BKCASE — *Steph Enck*
(includes website, Sakai, style guide, reference tool, etc.)
- 12:30-1:15p Review outreach activities — *Nicole Hutchison*
- 1:15-1:30p EuSEC authors meeting, expectations for Workshop III, Schedule Workshops V and VI – *David Olwell*
- 1:30-2:00p Meeting Review and Wrap-up — *Art Pyster*
- 2:00p *Adjourn*

Appendix C: Draft SEBoK Material Review Questions

The following questions were posed to the author team for consideration prior to Workshop II:

1. After looking at the range of materials prepared by the various author teams, do you still believe that using 15288 as the basic architectural framework for version 0.25 of the SEBoK is the right decision? What is your rationale? If you think it is not the right decision, what would you suggest as an alternative? (To help in your analysis, I have attached a third file, which is a chart from Eric Honour comparing 15288 to four other standards. The chart has a pointer to Eric's website if you wish to see more information.)
2. We need to select one or possibly two application domains for the case studies that will be appended to version 0.25. Which domains do you suggest? Will you volunteer to lead or participate in creating a case study?
3. What do you like and dislike about the template that was used to capture information about the various 15288 process areas?
4. What do you think of the use cases that are included in the spine document? Do they capture well the range of intended uses of the SEBoK? Are any major use cases omitted that should be included?
5. How do you believe we should organize to ensure we have a fairly solid and consistent draft of Version 0.25 completed by Sunday, May 23 when some of us will gather in Stockholm for an all-day meeting at EuSEC? Note that consistency will be tough to achieve if we do not plan carefully because we have so many writers involved.
6. How should the order and choice of chapters in the current draft change as we prepare Version 0.25?
7. What is the proper scope for the effort so that we can complete Version 0.25 by the end of July?

Appendix D: SEBoK version 0.25 Outline

The following is the full outline for SEBoK 0.25 agreed to at Workshop 2, including notional page numbers.

1. Executive Summary (2-4 pages)
2. Introduction (Overview) (10 pages)
 - 2.1 Purpose of BoK
 - 2.2 How to Use the Guide
 - 2.3 Scope
 - 2.4 Context
 - 2.5 Forward Thinking
3. System Concepts & Thinking (10-15 pages)
 - 3.1 System Definition – what is a system?
 - 3.2 Systems Thinking
 - 3.3 Emergence
 - 3.4 Complexity
4. SE Fundamentals (25 pages)—Each KA includes 4 page overview and list of topics/subtopics
 - 4.1 Value/Quality
 - 4.2 Principles of SE
 - 4.3 Integration of other disciplines such as software engineering and project management
 - 4.4 Socio-technical Issues (Context)
 - 4.5 SE Standards
 - 4.6 Application domains (describes each)
5. SE Approach and Practices (100 pages)—Each KA includes 4-page overview and list of topics/subtopics; a few topics and subtopics will be fully written
 - 5.1 Life Cycles
 - 5.2 Organization
 - 5.3 Management
 - 5.4 Technical
 - 5.5 Agreement
 - 5.6 Specialty Engineering/Design Considerations
6. SE Applications/Case Studies—Short discussion which will point to Case Study companion documents (1 page)
7. SE Competency (ethics, statistical modeling, etc.) (4 pages, plus topics, sub-topics, references)
8. Glossary
9. Other Closing Matter

Appendix E: Project Staffing

Section/Knowledge Area	Responsible
SEBoK Version 0.25	Art Pyster/Dave Olwell
1. Executive Summary	Dave Olwell
2. Introduction (Overview)	Barry Boehm/Art Pyster
3. System Concepts	Bud Lawson (lead); <i>Johann Amsenga, Erik Aslaksen, Sandy Friedenthal, Alice Squires, Scott Jackson</i>
4. Fundamentals	Rick Adcock (lead); <i>Johann Amsenga, Alain Faisandier, Scott Jackson</i>
5. SE Approach and Practices	
5.1 Life Cycles	Kevin Forsberg (lead)
5.2 Organization	No Lead
5.3 Management	Ray Madachy (lead); <i>Garry Roedler, Mike Krueger</i>
5.4 Technical	John Snoderly (lead); <i>Jean-Claude Roussel, Alain Faisandier, Garry Roedler, Mike Krueger</i>
5.5 Agreement	No Lead
5.6 Specialty Engineering/Design Considerations	No Lead
6. SE Applications/Case Studies (introduction only)	Sandy Friedenthal (lead), <i>Rich Freeman, Alice Squires, Tom Hillburn</i>
7. SE Competency (ethics, statistical modeling, etc.)	Brian Wells (lead); <i>Ken Nidifer, Rick Adcock, Don Gelosh, Alice Squires</i>
8. Glossary	
9. Other Closing Matter	

GRCSE	Responsible
Introduction/Front Matter	Tim Ferris (Lead) <i>Support Team:</i> <i>Alice Squires, J.J. Ekstrom, Mary van Leer, Dave Olwell, Tom Hilburn, Massood Towhidnejad, Guilherme Travassos, Rick Adcock, Scott Jackson, Eric Bonjour (new member), Lockheed Martin representative (new member)</i>
Objectives	
Outcomes	
Entrance Expectations	
Curriculum Architecture	
CBOK	
Assessment	
Maintenance/Refresh	
Closing Metter	
Appendices	

Appendix F: Possible Case Studies

1. AFIT GPS – large 150 pages and any other AFIT case studies (Dave Olwell to Coordinate)
2. Water purification system from Singapore (Alex Lee)
3. DAU case study - small case study – software focus – just before CDR (John Snoderly)
4. “Miracle on the Hudson” case study (Scott Jackson)
5. MagLev train in China (from the INCOSE handbook)
6. NY subway – focus on software (Mike Krueger)
7. Denver International Airport baggage handling
8. Virginia class submarine (Dave Olwell)
9. Windows NT to control navigation and fire control on a ship (Kevin Forsberg)

Appendix G: Outreach and Review

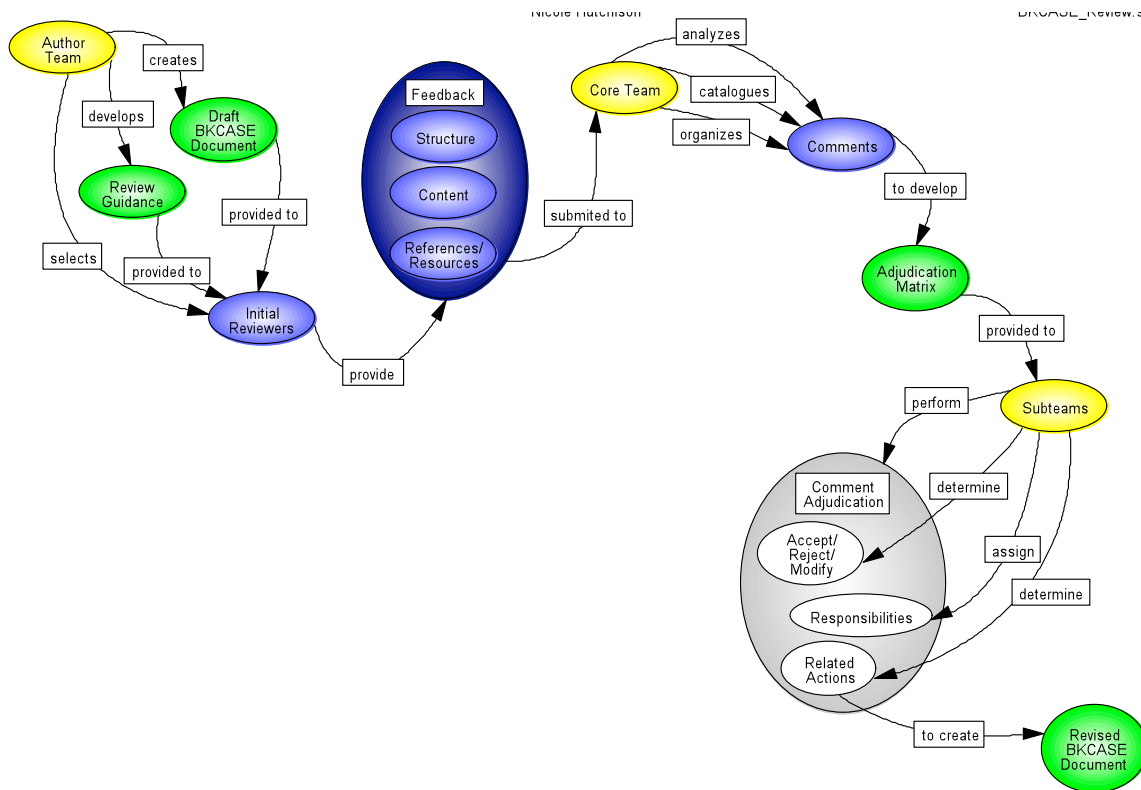
Outreach

The following is a list of the 2010 outreach activities planned for BKCASE, including the type of outreach which will be conducted at each:

- IEEE International Systems Conference—Information session, flyer
- Systems and Software Technology Conference (SSTC)—Combined BKCASE and GSwE2009 panel, flyer
- EuSEC—Paper and panel; BKCASE author special session, flyer
- ASEE Annual Conference and Workshop—Panel (GSwE and GRCSE), flyer
- INCOSE International Symposium—Workshop 3, Paper/Presentation, flyer
- Department of Defense SE Forum—brief senior SE personnel in Department of Defense
- NDIA Systems Engineering Conference—Briefing, flyer

Review

The following is the overarching review process presented at the workshop.



Appendix H: Action Items

The following are the action items and deadlines for the BKCASE authors and core team members:

Item	Individual (s) Responsible
PMI Outreach –Continuous with Tom Keria	Art and Garry
Return Signed Copyright Release by Authors –Mail to Doris Schutze at SIT	All
Kevin asked Sandy to take a look at the Regal project’s hyperlink for existing Wiki that appears incomplete	Kevin and Sandy
Draft Knowledge Area (KA), including defining the topics and subtopics, and writing through at least one topic an all of its subtopics. This write-up will follow the style guide produced by the core team.	Garry Roedler
Style Guide revision for draft KA	Steph
Volunteer to review the KA draft; they will revise the document and distribute it to the author team.	Ray Madachy, Kevin Forsberg, Dave Olwell, Alice Squires, Art Pyster, Sandy Friedenthal, and Tim Ferris
Post all instructions for drafting, the template, the style guide on Sakai for all	Steph
Case Study Criteria	Alice send to Sandy
Send all a copy of Dave Lempia’s conference presentation	Sandy
Reorganize folders on Sakai to reflect the new SEBoK .25, GRCSE .25, and Case Study structures	Steph
Schedule a short WebEx that follows the author mini-workshop on Sunday, May 23 which is scheduled at a reasonable time zone for all. The purpose is to summarize the meetings activities and progress for authors who are not in attendance.	Rick & Art
Send all the email feedback generated from the EUSEC culture	Rick
Explore Workshop VI availability around the CSER in LA, California	Barry
Explore Workshop VII availability in the UK	Rick
SEBoK v 0.25 Assignments & Responsibilities	See Appendix E
GRCSE v 0.25 Assignments & Responsibilities	See Appendix E
Case Study for v 0.25 Assignments & Responsibilities	See Appendix F
Optional: Authors send organization logos approved for use for BKCASE website and slide decks	All