

# Development of SEBoK v. 1.4

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This version of the SEBoK was released 29 June 2015. This is a minor release of the SEBoK which includes changes related to ISO/IEC/IEEE 15288:2015 standard, updated articles in the areas of System Architecture, Life-Cycle processes, System of Systems, Competencies, Ethics and MBSE, as well as three new case studies.



## Contents

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Content and Feature Updates for v. 1.4

SEBoK v. 1.4 Authors

SEBoK v. 1.4 Editors

Editorial Board

## Content and Feature Updates for v. 1.4

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Summary of changes for SEBoK v1.4, see letter from the editor for a wider discussion of the changes and future plans.

A small but significant change has been made in SEBoK Part 2. This has been renamed from Systems to Foundations of Systems Engineering. This change reflects the focus of part 2 on the wider knowledge sources which underpin and enable good SE practice. The Part 2 Introduction and What is a System? articles has also been updated to reflect this focus.

The most significant change to the SEBoK for v1.4 is in Part 3: SE and Management. A number of the technical and project process articles in SEBoK have been updated to reflect the revisions of ISO/IEC/IEEE 15288:2015. This

includes update of all those articles which reference the standard to update the citation.

Changes to ISO/IEC/IEEE 15288 are more strongly focused on the relationships between system architectures and requirements; and on the transformation of business strategy into levels of stakeholder and system needs and requirements. To better describe how these process activities relate to each other and to the selected life cycle model for a SoI, we have brought together overview material on life cycle, life cycle process relationships and enterprise application into a new Knowledge Area in Part 3.

The Introduction to Life Cycle Processes KA contains 3 new articles:

- Generic Life Cycle Model, brings material from the life cycle models KA forward to describe a generic life cycle model needed to enable to discussions of life cycle processes. The details of available life cycle models remain in the Life Cycle Models KA.
- Applying Life Cycle Processes discusses overlapping views of the concurrent, iterative and recursive inter-relationships between SE life cycle processes, as a foundation for the more details discussions in concept definition, system definition and system realization.
- Life Cycle Processes and Enterprise Need provides and overview of how SE requirements, architectures and life cycles concepts (describing development, operation, support, etc.) can be related to enterprise organization, strategy and plans in a generic way. This again provides a foundation for more detailed discussions in Part 3.
- The introduction articles for concept definition and system definition have been updated to reflect the changes below. Some more explicit reference to model based SE (MBSE) have been added to these articles, and to the Structure of the SEBoK and *Relevant Standards articles*

The other specific changes to articles within part 3 are summaries below:

- The Business or Mission Analysis and Stakeholder Needs and Requirements articles have been updated to better align with changes to the ISO/IEC/IEEE 15288 (ISO 2015) standard.

- Two new SEBoK articles System Architecture and System Design have been added to reflect similar revisions to the standard and replace the previous article on architectural design. The System Requirements article has also been updated to better align with these related changes.
- The Logical Architecture Model Development and Physical Architecture Model Development SEBoK articles remain (with a slight name change). They now describe the development of commonly used architecture models in more detail.
- In addition the measurement article has been updated as part of the normal review of references and source material by identified subject matter experts.

Some other small changes have been made to the following articles:

- Part 4 Applications of SE: the Systems of Systems and Socio-Technical Features of SoS articles have been updated with newer material of SoS definitions and characteristics.
- Part 5 Enabling SE: the Roles and Competencies and Assessing Individuals articles have been updated with additional sources on competencies and individual knowledge and skills. The Ethical Behavior article has a new section on responsibility to society.
- Part 7 Implementation Examples: Three new case studies have been included: Global Positioning System Case Study, Design for Maintainability, Complex Adaptive Operating System and the Matrix of Implementation Examples has been updated

## SEBoK v. 1.4 Authors

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Editors (in bold) and Authors who contributed materials specifically to the v. 1.4 products are listed in Table 1, below.

**Table 1. SEBoK v. 1.4 Authors.** (SEBoK Original)

SEBoK Part	Editors and Authors
Part 1	<b>Ariela Sofer</b> , <i>George Mason University (USA)</i> , Sanford Friedenthal (USA)
Part 2	<b>Janet Singer</b> (USA), Richard Adcock, <i>Cranfield University (United Kingdom)</i> , Sanford Friedenthal (USA)

Part 3	<b>Garry Roedler</b> , <i>Lockheed Martin</i> (US), Mike Ryan, <i>UNSW</i> (Australia), Jack Stein, (USA), Alain Faisandier, <i>Association Francaise d 'Ingenlerie Systeme</i> (France), Ron Carson (USA).
Part 4	<b>Judith Dahmann</b> , <i>MITRE Corporation</i> (US), <b>Michael Henshaw</b> , <i>Loughborough University</i> (UK). <b>Heidi Davidz</b> , <i>Aerojet Rocketdyne</i> (US), <b>Emma Sparks</b> , <i>Cranfield University</i> (United Kingdom), <b>Rick Hefner</b> , <i>California Institute of Technology</i> (USA), Timothy Ferris, <i>University of South Australia</i>
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Part 7	<b>Brian Sauser</b> , <i>University of North Texas</i> (USA), <b>Brian White</b> , <i>CAU&gt;SE</i> (USA), John Findlay, <i>Maverick and Boutique</i> (Australia), Kevin Forsberg, <i>OGR Systems</i> , (USA).

## SEBoK v. 1.4 Editors

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The Editorial Board for v. 1.4 is listed in Tables 2, 3, and 4 below.

## Editorial Board

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The SEBoK Editorial Board is chaired by an Editor in Chief, supported by a group of Associate Editors.

**Table 2. SEBoK v. 1.4 Leadership.** (SEBoK Original)  
**BKCASE Editor in Chief**



**Richard D. Adcock**  
*Cranfield University* (UK)  
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Responsible for the appointment of SEBoK Editors and for the overall content and coherence of the SEBoK.

Each Editor has his/her area(s) of responsibility, or shared responsibility, highlighted in the table below.

**Table 3. SEBoK v. 1.4 Associate Editors.** (SEBoK Original)  
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Senior Editor for GRCSE.

The Assistant Editors provide general editorial support across all topics. They assist both with content improvement and production issues.

**Table 4. SEBoK v. 1.4 Assistant Editors.** (SEBoK Original)

**BKCASE Assistant Editors**

**Claus Ballegaard Nielsen,**  
*Cranfield University (UK)*

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