

25th anniversary
annual INCOSE
international symposium
Seattle, WA
July 13 - 16, 2015



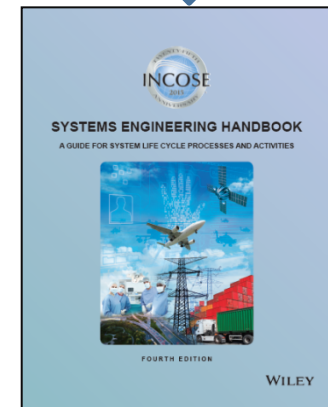
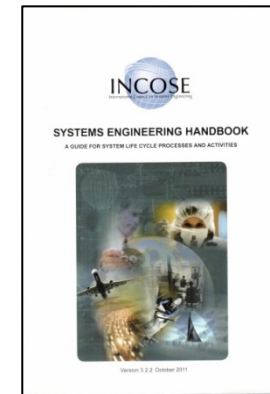
INCOSE SE Handbook Version 4: Updating the Reference for Practitioners

David Walden, ESEP, Sysnovation - Lead Editor
Garry Roedler, ESEP, Lockheed Martin - Editor
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The INCOSE SE Handbook



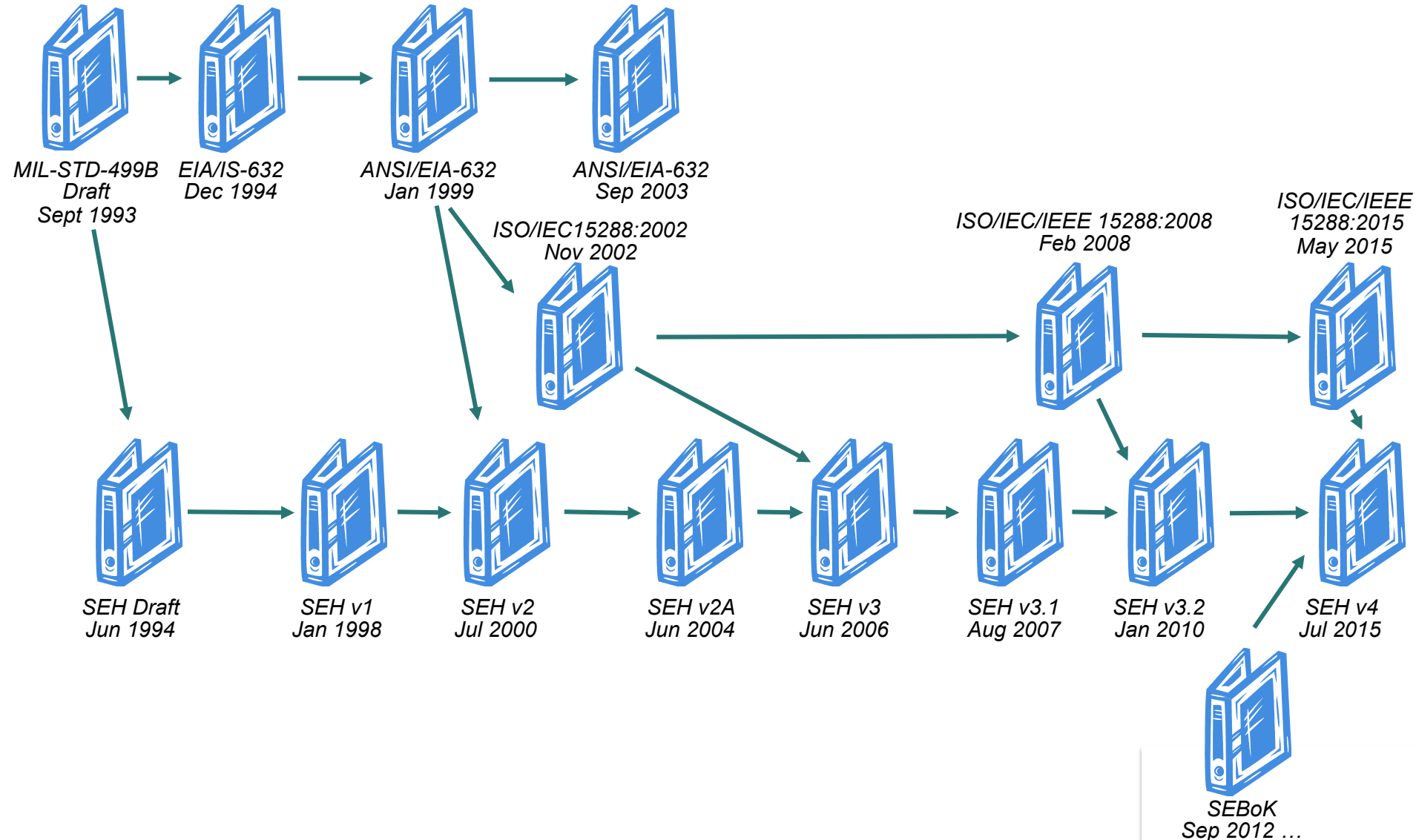
- The INCOSE SE Handbook (SEH)
 - Reflects the state-of-the-practice of Systems Engineering
 - Based on ISO/IEC/IEEE 15288
 - Further elaborates the processes and activities to execute the processes
 - Inputs from the entire INCOSE Technical Community
 - Serves as a reference to practices and methods that have proven beneficial to the SE community at large
- Purpose
 - Defines the discipline and practice of systems engineering (SE)
 - Provides an authoritative reference
- Version 4 published in July 2015



The SEH serves as the basis for the
CSEP & ASEP exams.

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INCOSE Systems Engineering Handbook (SEH) History



SEHv4 Drivers for Change



- Alignment with the **ISO/IEC/IEEE 15288:2015** updates
- Refresh the Technical content based on SE state-of-the-practice with the latest inputs from the **INCOSE technical Working Groups (WGs)**
- Add **new content** consistent with the SE state-of-the-practice
- Be consistent with the **Guide to the Systems Engineering Body of Knowledge (SEBoK)** version 1.3 to the maximum extent practicable (www.sebokwiki.org)

SEHv4 Formatting Considerations



- Maintain the “spirit” of previous versions
 - Readers should see this as a logical progression in the INCOSE SEH series
- Make SEHv4 stand out as a new major revision
 - Update size of hardcopy from 6” x 9” to 8” x 10”
 - Move from single column to two columns
 - New cover art and content
- Provide new eBook formats
- Move to external publishing via Wiley distribution channels (vs. self-published by INCOSE)
 - Increase exposure
 - Higher quality product

Development Team



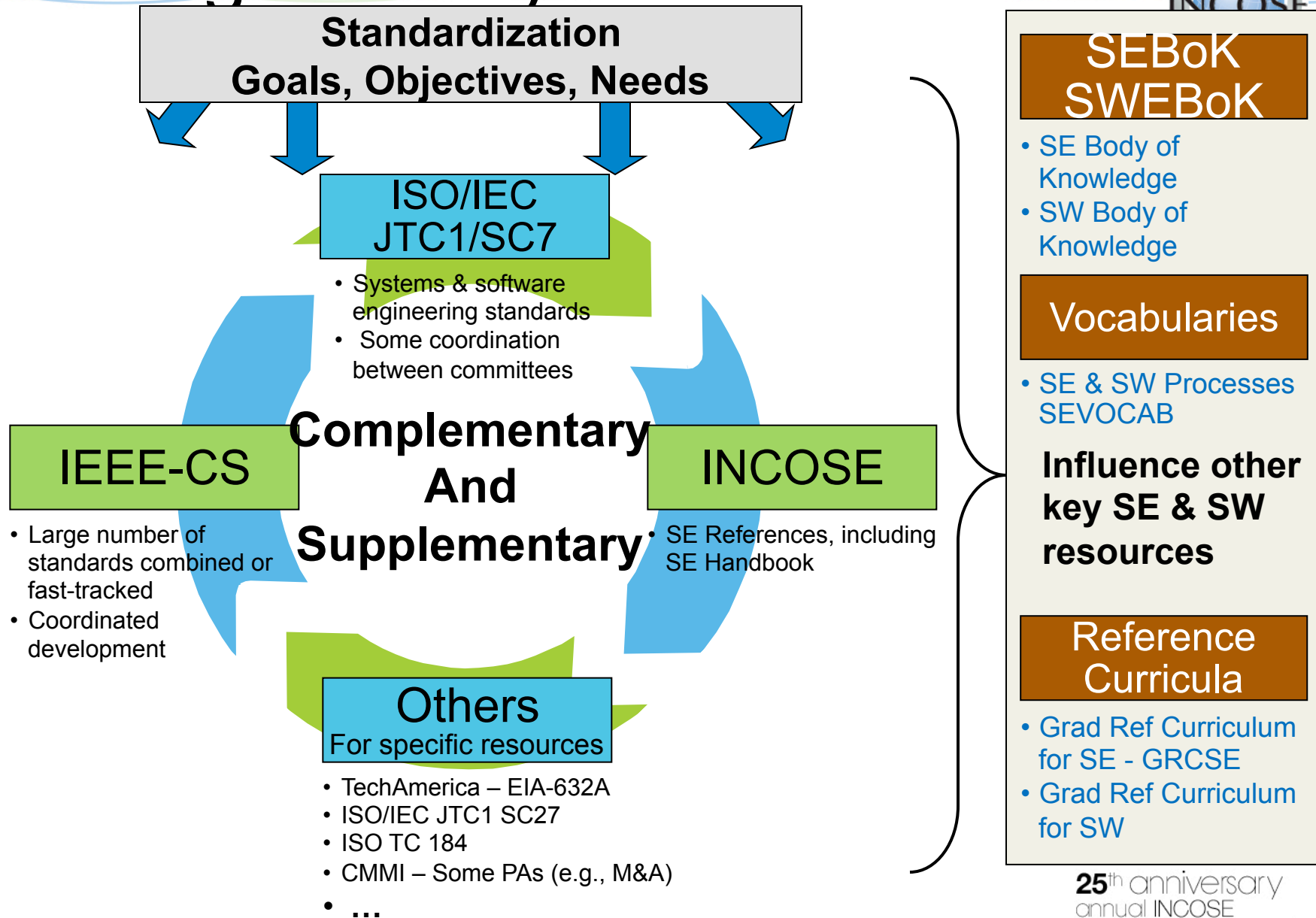
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 - Garry Roedler, ESEP
 - Kevin Forsberg, ESEP
 - Douglas Hamlin
 - Thomas Shortell, CSEP
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 - Participation by all INCOSE Working Groups
- Reviewers:
 - Quoc Do, Review Team Lead
 - 25+ Reviewers from INCOSE Worldwide

Author Team

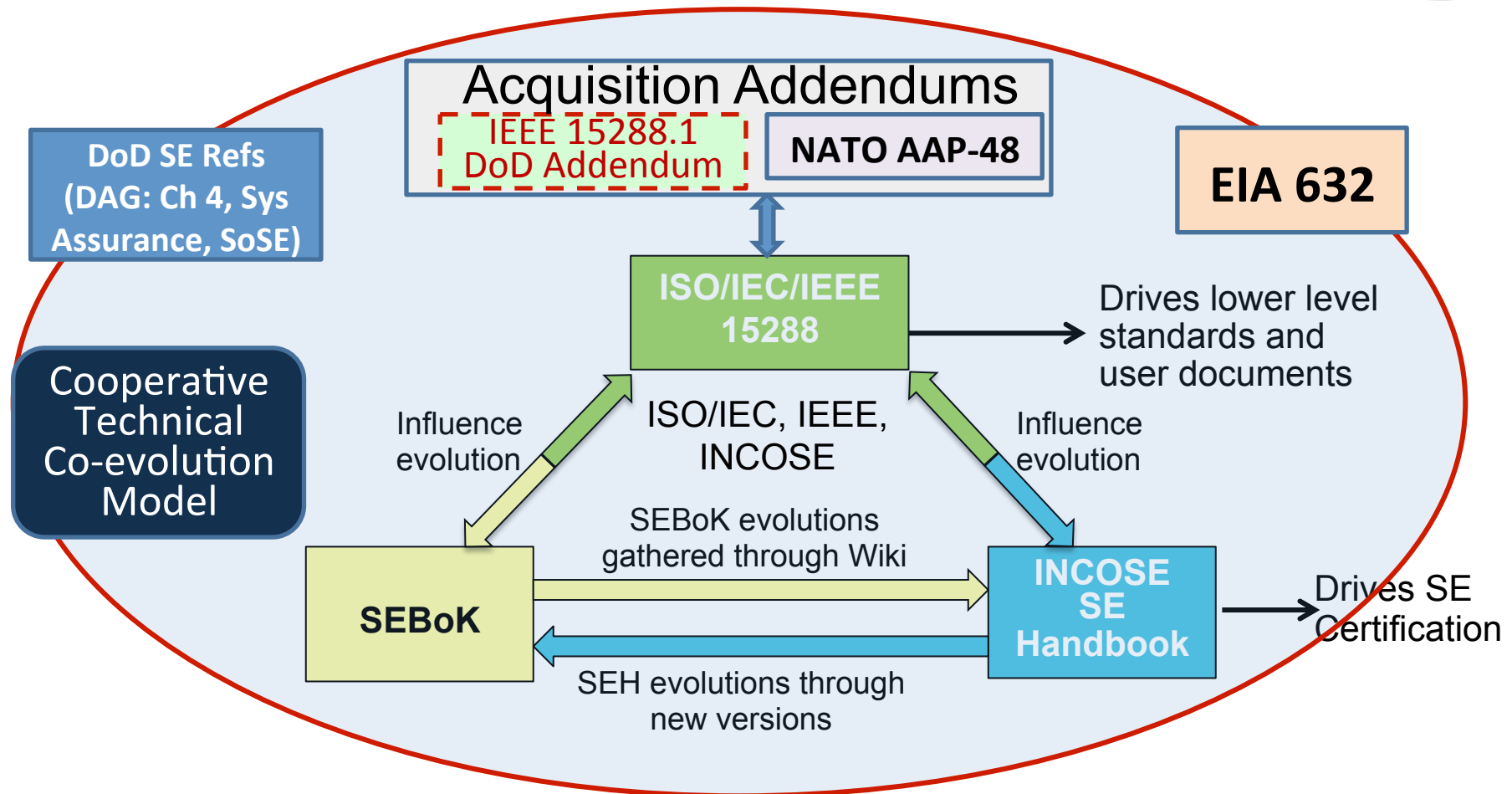


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Growing Industry Collaboration

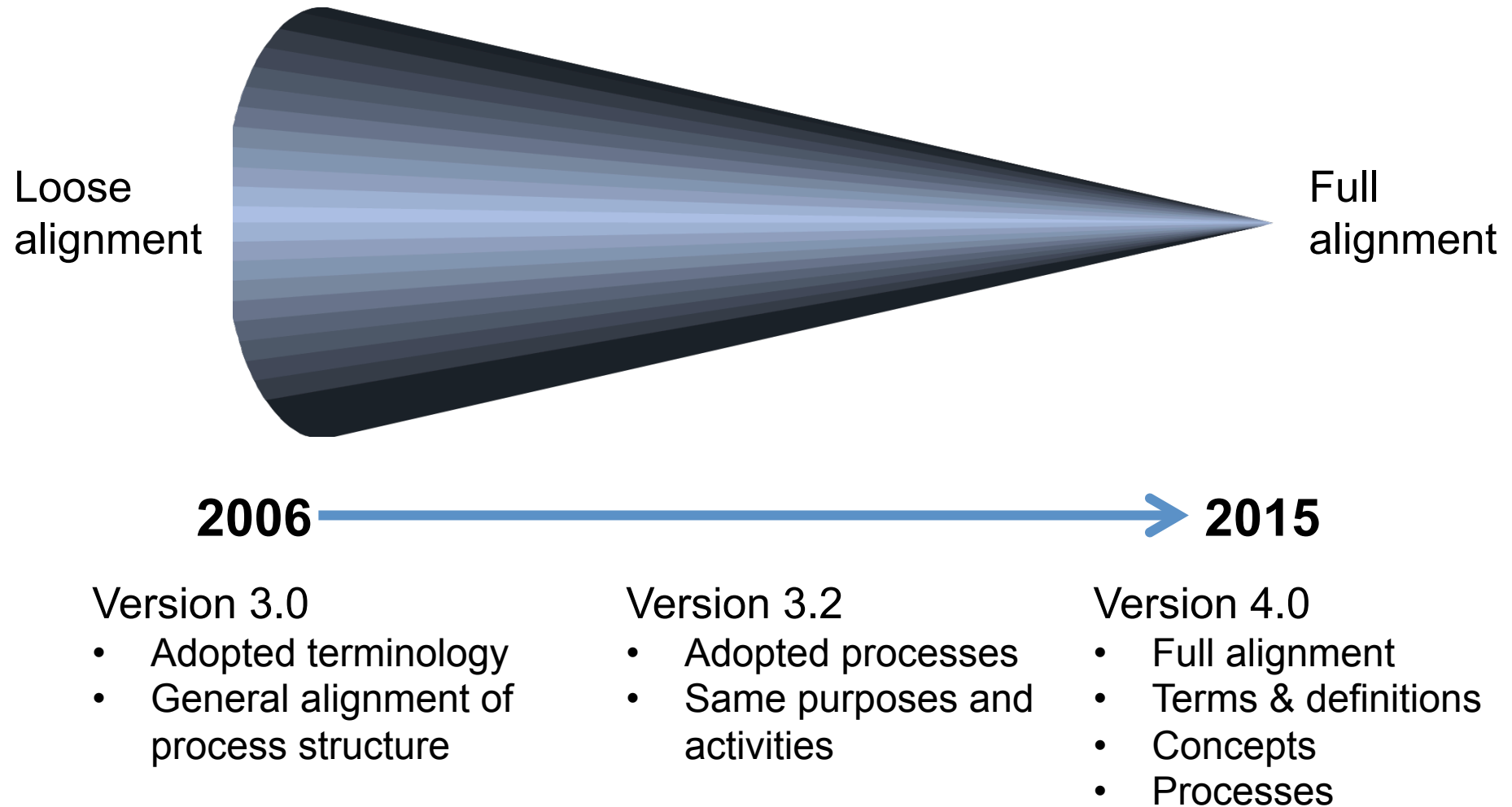


Evolution of Key SE&A Resources



Integrated evolution of the key SE resources through collaboration. Much of this evolution has occurred; growth & sustainment is necessary

Convergence of 15288 and SEH - History



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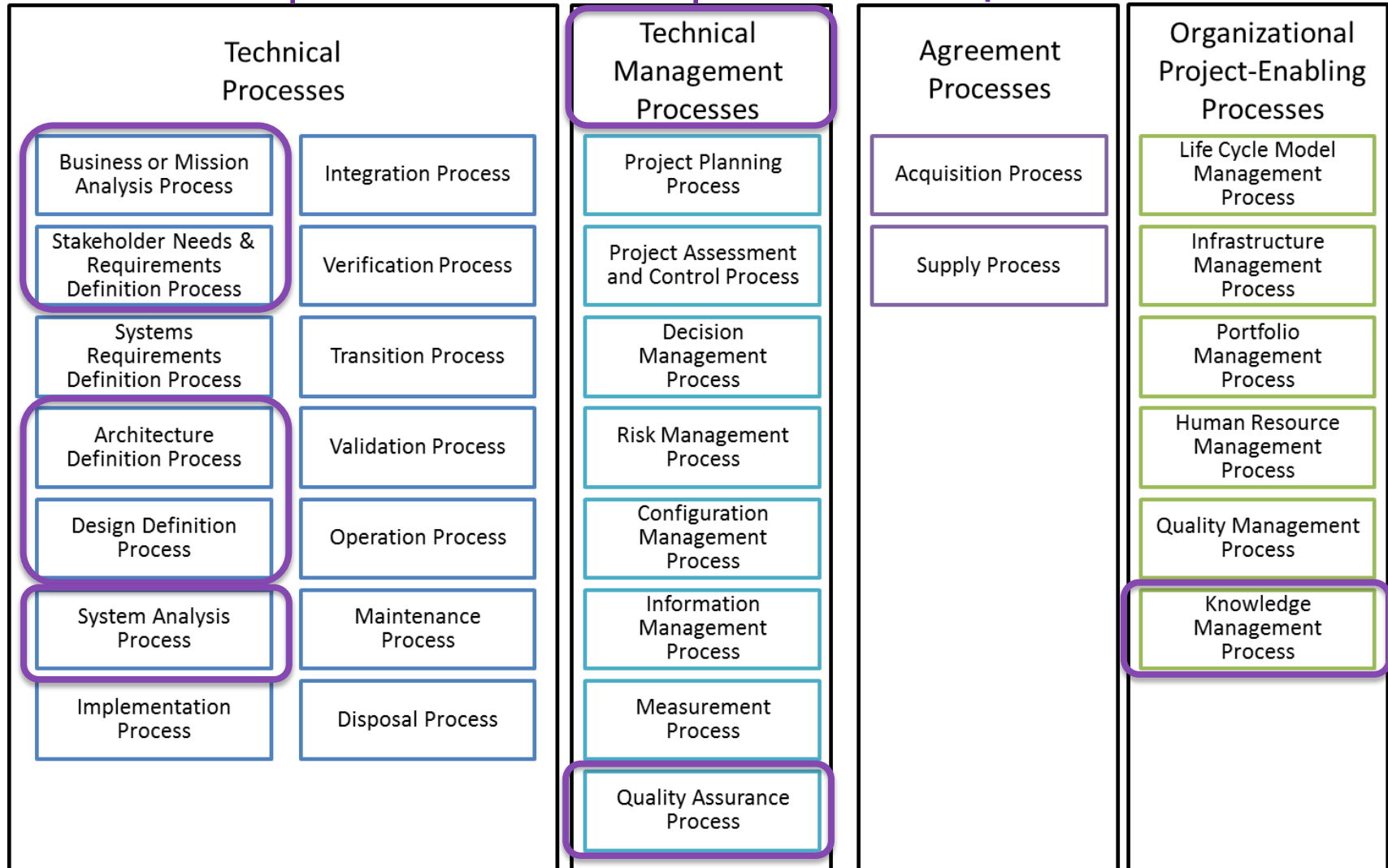
Major 15288-2014 Changes Reflected in SEHv4

Chapter 4

Chapter 5

Chapter 6

Chapter 7



Major Changes Reflected in SEHv4 (1 of 3)



- All Chapters
 - Updated format and content of IPO Diagrams (formerly Context Diagrams)
 - IPO diagrams based upon an updated underlying CORE model of (one instance of) the process areas
- Chapter 2: SE Overview – Added new sections:
 - 2.5 Enabling Systems
 - 2.9 - Systems Science and Systems Thinking
 - 2.10 Systems Engineering Leadership
 - 2.11 Systems Engineering Professional Development
- Chapter 3: Generic Life Cycle Stages
 - Added new section:
 - 3.4.1 - Iteration and Recursion
 - Added two new case studies:
 - 3.6.4 - Cyber Security Considerations in System Engineering
 - 3.6.5 - Design for Maintainability

Major Changes Reflected in SEHv4 (2 of 3)



- Chapter 8: Tailoring Process – Added new sections:
 - 8.2 – Tailoring for Specific Product or Domain Application
 - 8.3 – Application of SE for Product Line Management
 - 8.4 – Application of SE for Services
 - 8.5 – Application of SE for Enterprises
 - 8.6 – Application of SE for Very Small and Micro Enterprises (VSME)
- Chapter 9: Cross-Cutting SE Methods – Consolidated many existing & new topics into this new chapter (not just technical):
 - 9.1 – Modeling & Simulation
 - 9.2 – Model-Based System Engineering (MBSE)
 - 9.3 – Functions-Based SE (FBSE)
 - 9.4 – Object-Oriented SE (OOSE)
 - 9.5 – Prototyping
 - 9.6 – Interface Management
 - 9.7 – Integrated Product and Process Development
 - 9.8 – Lean SE
 - 9.9 – Agile SE

Major Changes Reflected in SEHv4 (3 of 3)



- Chapter 10: Specialty Engineering Activities – Updated, combined, and added new sections:
 - 10.2 – Affordability/Cost Effectiveness/Life-Cycle Cost Analysis
 - 10.8 – Reliability, Availability, and Maintainability
 - 10.9 – Resilience Engineering
 - 10.11 – System Security Engineering
- Appendices – New or elaborated:
 - A – References (SEHv3.2.2 had references distributed by chapter; Version 4 has references in a single appendix)
 - E – Input-Output descriptions, removed from the text body and put into Appendix E

Publication Details



- INCOSE has reached agreement with John Wiley & Sons to publish SEHv4
 - Softcopy PDF format will continue to be available free to INCOSE members and CAB organizations
 - Hardcopy can be purchased after 13 July 2015 through Wiley channels (instead of INCOSE Central as in the past)
 - Electronic book versions to be available (through Wiley channels) for iPad, Kindle, Nook, etc.
 - Translation into other languages can be facilitated by INCOSE Central and Wiley working with local chapters
- Publication delayed to follow 15288 release
 - Release of ISO/IEC/IEEE 15288:2015 was May 2015
 - Release of SEHv4 will be 13 July 2015
 - Also corresponds to INCOSE's 25th Anniversary Symposium

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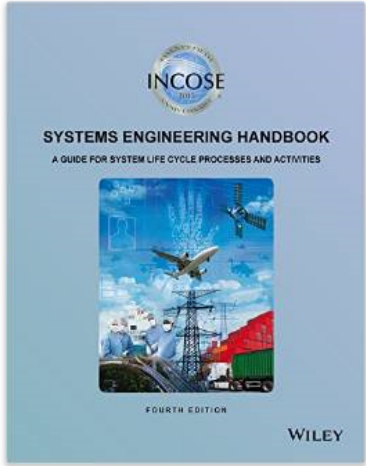
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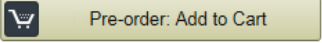


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