Systems Engineering Processes - C-NO Café #6

September 9, 2024

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Cleveland-Northern Ohio Chapter Meeting – September 9, 2024

- Welcome, Announcements, and Info

- Chapter Meetings:

  - October – No meeting

  - November TBD – Chapter Social and Recruiting

- Next newsletter should be out early October

- Watch for Elections for 2025 Officers should occur in October – anyone interested?

Transition Process

- The Transition Process is defined in section 2.3.5.10 of the INCOSE SE Handbook

- Per the SEBoK: As part of system deployment, on-site installation, check-out, integration, and testing must be carried out to ensure that the system is fit to be deployed into the field and/or put into an operational context. [Transition] is the process that bridges the gap between qualification and use; it deals explicitly with the handoff from development to logistics, operations, maintenance, and support.

  - Should include relevant enabling systems: operation manual, support systems, operator training system, user training system, etc.

  - Can include packaging, handling, storing, moving, transporting, and installing.

- While often thought of in this "delivery to customer" sense, it can and should also be used internally as part of transitioning a lower level assembly for integration in the next higher level of assembly.

Scott Jackson, Brian Gallagher, "System Transition" in SEBoK Editorial Board. 2024. The Guide to the Systems Engineering Body of Knowledge (SEBoK), v. 2.10, N. Hutchison (Editor in Chief). Hoboken, NJ: The Trustees of the Stevens Institute of Technology. Accessed 9/8/2024. www.sebokwiki.org. BKCASE is managed and maintained by the Stevens Institute of Technology Systems Engineering Research Center, the International Council on Systems Engineering, and the Institute of Electrical and Electronics Engineers Systems Council.

Information (Data) Management Process

- The Information Management Process is defined in section 2.3.4.6 of the INCOSE SE Handbook

- Per the SEBoK: The information management (IM) process is a set of activities associated with the collection and management of information from one or more sources and the distribution of that information to one or more audiences. Information, in its most restricted technical sense, is an ordered sequence of symbols that record or transmit a message.

- Stated simply: making sure authoritative data is available when need to those authorized to see it.
  - Version controlled and released/approved for a purpose (every released/approved version is kept)
  - Accessible (preferably on demand, with a complete listing)
  - Controlled/approved access

Andy Pickard, Garry Roedler, Ray Madachy, "Information Management" in SEBoK Editorial Board. 2024. The Guide to the Systems Engineering Body of Knowledge (SEBoK), v. 2.10, N. Hutchison (Editor in Chief). Hoboken, NJ: The Trustees of the Stevens Institute of Technology. Accessed 9/8/2024. www.sebokwiki.org. BKCASE is managed and maintained by the Stevens Institute of Technology Systems Engineering Research Center, the International Council on Systems Engineering, and the Institute of Electrical and Electronics Engineers Systems Council.

Configuration Management Process

- The Configuration Management (CM) Process is defined in section 2.3.4.5 of the INCOSE SE Handbook

- Per the SEBoK: CM is the discipline of identifying and formalizing the functional and physical characteristics of a configuration item at discrete points in the product evolution for the purpose of maintaining the integrity of the product system and controlling changes to the baseline. The baseline for a project contains all of the technical requirements and related cost and schedule requirements that are sufficiently mature to be accepted and placed under change control by the project manager. The project baseline consists of two parts: the technical baseline and the business baseline. The systems engineer is responsible for managing the technical baseline and ensuring that it is consistent with the costs and schedules in the business baseline. Typically, the project control office manages the business baseline.

Ray Madachy, John Snoderly, Garry Roedler, Rick Adcock, "Configuration Management" in SEBoK Editorial Board. 2024. The Guide to the Systems Engineering Body of Knowledge (SEBoK), v. 2.10, N. Hutchison (Editor in Chief). Hoboken, NJ: The Trustees of the Stevens Institute of Technology. Accessed 9/8/2024. www.sebokwiki.org. BKCASE is managed and maintained by the Stevens Institute of Technology Systems Engineering Research Center, the International Council on Systems Engineering, and the Institute of Electrical and Electronics Engineers Systems Council.

Configuration Management Process

- Simplistically it is controlling the configuration of the end item being delivered so that the exact configuration is known and agreed to.

- Five parts: planning, configuration identification, change management, status accounting, and verification and audit.

- A baseline can be thought of as a bucket that captures data once added to the baseline. Once added, a formal process (configuration control) is used to make changes. All items in the bucket, affected by a change need to be "modified" so the container stays internally consistent.

  - Defense Acquisition University: A baseline is an agreed-upon description of the attributes of a product at a point in time, which serves as a basis for change.

- Technical baselines includes requirements, drawings/design, system of interest/deliverable. Items are typically added at certain points to an evolving baseline – see NASA example
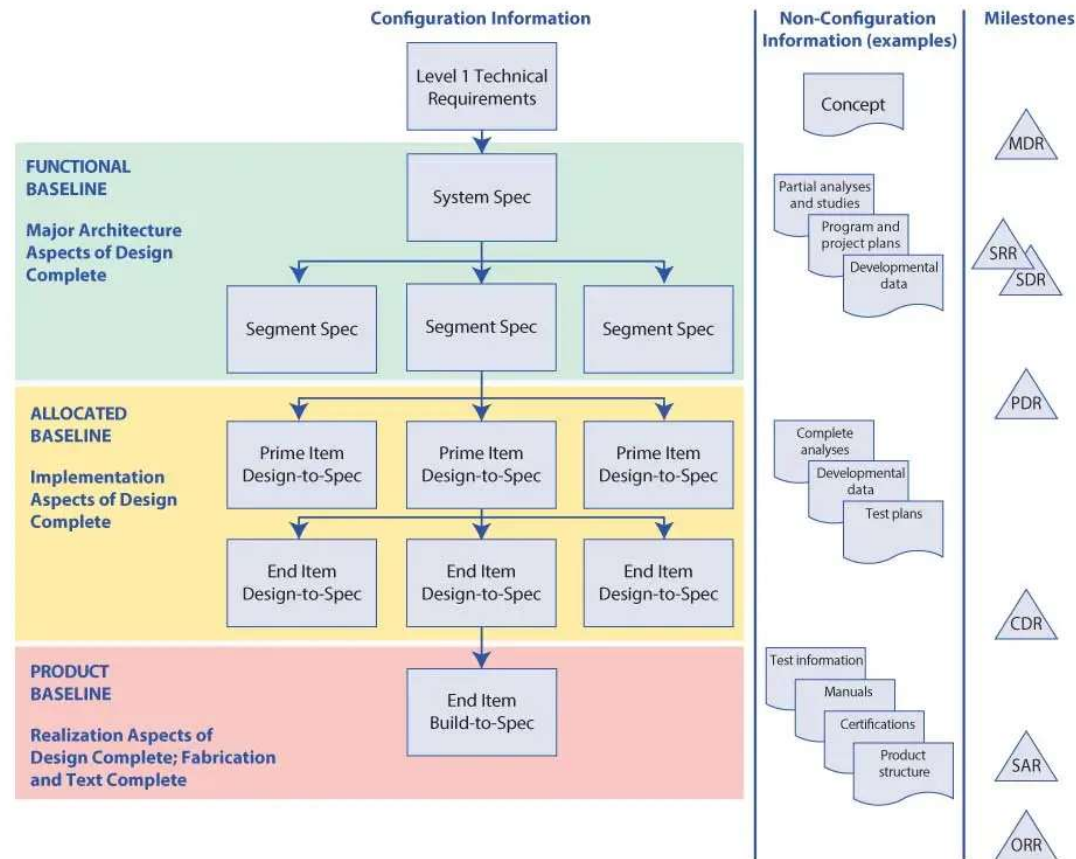
Configuration Management Process

NASA example

FIGURE 6.5-3 Evolution of Technical Baseline

As-Deployed Baseline, not shown – ORR timeframe

Configuration Management Process

- CM can be implemented in tiers, consistent with the product hierarchy.
  - Each level can select Configuration Item (CIs) they wish to have control over
- Configuration Control, essentially adds one higher layer of approval, once an item is accepted in to the baseline.
  - E.g. Once a customer accepts a set of requirements as appropriate, changes cannot be made without their approval.
- Misconceptions:
  - Baselining is the same as releasing
  - All data needs to be baselined
  - Cost and schedule do not need to be included
  - CIs include the data in a baseline

www.incose.org/cleveland