

System Deployment and Use

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System deployment and use are critical systems engineering (SE) activities that ensure that the developed system is operationally acceptable and that the responsibility for the effective, efficient, and safe operations of the system is transferred to the owner. Considerations for deployment and use must be included throughout the system life cycle.

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Topics

Each part of the SEBoK is divided into knowledge areas (KAs), which are groupings of information with a related theme. The KAs, in turn, are divided into topics. This KA contains the following topics:

- System Deployment
- Operation of the System
- System Maintenance
- Logistics

See the article Matrix of Implementation Examples for a mapping of case studies and vignettes included in Part 7 to topics covered in Part 3.

Overview

System deployment involves the transition of the capability to the ultimate end-user, as well as transition of support and maintenance responsibilities to the post-deployment support organization or organizations. It may include a period of reliability demonstration tests and the phasing out of legacy systems that the developed system replaces.

System use includes a continual assessment of the operational effectiveness of the deployed system or service, identification of mission threat and operational risk, and performance of the actions required to maintain operational effectiveness or evolve the capability to meet changing needs. Evolution of the operational system may occur with smaller maintenance actions or, if the changes cross an agreed-to threshold (complexity, risk, cost, etc.), may require a formal development project with deliberate planning and SE activities resulting in an enhanced system. As the operational phase is generally the longest in the system life cycle, activities that may occur during operation are allocated between two knowledge areas (KAs): System Deployment and Use and Product and Service Life Management.

The Product and Service Life Management knowledge area (KA) specifically deals with SE activities required for system evolution and end of system life including service life extension (SLE), capability updates, upgrades, and modernization during system operation, and system disposal and retirement. In contrast, the System Deployment and Use KA specifically deals with activities required to ensure that system operation can continue as expected. Planning for system deployment and use should begin early in the SE process to ensure successful transition into operational use.

System Deployment and Use Fundamentals

System deployment and use includes the processes used to plan for and manage the transition of new or evolved systems and capabilities into operational use and the transition of support responsibilities to the eventual

maintenance or support organization. The *use* stage normally represents the longest period of a system life cycle and, hence, generally accounts for the largest portion of the life cycle cost. These activities need to be properly managed in order to evaluate the actual system performance, effectiveness, and cost in its intended environment and within its specified utilization over its life cycle. Included in use fundamentals are the aspects of continuation of personnel training and certification.

As part of deployment/transition activities, special conditions that may apply during the eventual decommissioning or disposal of the system are identified and accommodated in life cycle plans and system architectures and designs (See the System Definition KA for additional information). SE leadership ensures the developed system meets specified requirements, that it is used in the intended environment, and that when the system is transitioned into operation, it achieves the users' defined mission capabilities and can be maintained throughout the intended life cycle.

SE ensures that plans and clear criteria for transition into operation are developed and agreed to by relevant stakeholders and that planning is completed for system maintenance and support after the system is deployed. These plans should generally include reasonable accommodation for planned and potential evolution of the system and its eventual removal from operational use (for additional information on evolution and retirement, please see the Product and Service Life Management KA).

References

None.

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