

Engineered System (glossary)

engineered system

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(1) An open, concrete system of technical or socio-technical elements which is the focus of a SE life cycle . Its characteristics include being created by and for people, having a purpose and satisfying key stakeholders' value propositions when considered as part of a broader system context . (Created for SEBoK)

(2) An engineered system is a system designed or adapted to interact with an anticipated operational environment to achieve one or more intended purposes while complying with applicable constraints.

Sources

(1) This definition was created for SEBoK v. 1.0.

(2) INCOSE Fellows Briefing to INCOSE Board of Directors, January 2019.

Discussion

Definition (1) was adapted from the INCOSE Systems Engineering Handbook and systems science literature on open, concrete systems. See the Types of Systems topic.

It is related to the definition proposed by Bartolomei et al (2006):

An engineering system is a complex socio-

technical system that is designed, developed, and actively managed by humans in order to deliver value to stakeholders.

Definition (2) was created by the INCOSE Fellows Initiative on System and Systems Engineering Definitions. This was established in 2016, to review current INCOSE definitions of SYSTEM and SYSTEMS ENGINEERING and to recommend any changes necessary to align the definitions to a) current practice, and b) the aspirations of INCOSE's 2025 Vision. At the January 2019 INCOSE Board of Directors meeting, a new INCOSE definition for "system" was approved and is given above. Expanding on this definition, the INCOSE Fellows state:

Thus, an "engineered system" is a system - not necessarily a technological one - which has been or will be "systems engineered" for a purpose.

Work Cited

Bartolomei, J.E., Hastings, D.E., de Neufville, R., and Rhodes, D.H. 2006. "Screening for Real Options "In" an Engineering System: A Step Towards Flexible Weapon System Development. " 4th Conference on Systems Engineering Research.v Los Angeles, CA, USA. April 2006. Available at <http://esd.mit.edu/wps/esd-wp-2006-08.pdf>.

INCOSE. 2012. *Systems Engineering Handbook: A Guide for System Life Cycle Processes and Activities*, version 3.2.2. San Diego, CA, USA: International Council on Systems Engineering (INCOSE), INCOSE-TP-2003-002-03.2.2.

SEBoK v. 2.9, released 20 November 2023

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