

Hierarchy (glossary)

hierarchy

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(1) A hierarchy is an arrangement of items (objects, names, values, categories, etc.) in which the items are represented as being "above," "below," or "at the same level as" one another. Levels in a hierarchy may also represent authority, control or ownership of lower levels (command structure). (Oxford English Dictionary 2012)

(2) Organisation of system elements into groups of (sub-)system wholes, based on relative strength of element cohesion. (Simon 1962)

(3) The hierarchy principle of systems, is the consequential concept of simultaneous multiple containment of one system by many containing systems. (Checkland 1999)

(4) An abstract view of a defined system that is developed to meet some need. The system results from an analysis that decomposes a system into constituent elements at two or more levels. Often based around a defined taxonomy of levels covering System, element, Subsystem, assembly, components and parts. (INCOSE 2011)

Source

(1) Oxford English Dictionary, s.v. "Hierarchy."

(2) Simon, H.A. 1962. "The Architecture of Complexity." *Proceedings of the American Philosophical Society*. 106(6) (December 12, 1962): 467-482.

(3) Checkland, P. 1999. *Systems Thinking, Systems Practice*. New York: John Wiley & Sons.

(4) 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.

Discussion

(1) is a general dictionary definition.

(2) is a system science definition, which relates to the tendency of natural systems to form hierarchies and to the stability of hierarchical structures for man-made systems.

(3) Soft systems definition, allowing for a system to be associated with several hierarchical structure, one of the factors leading to multiple stakeholder viewpoints. This is the definition which should be used for problem systems.

(4) defines the man-made hierarchy created within a system. The use of a standard taxonomy defined against the types of technology and use of system elements can be useful as a common language for defining production of support processes. Care must be taken to avoid this leading to a reductionist (glossary) approach. This is the definition which should be used for hard solution systems.

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