Function (glossary)

function

(1) *A system outcomes which contribute to goals or objectives. To have a function, a system must be able to provide the outcome through two or more different combinations of elemental behavior.* (Ackoff 1971)

(2) *An action, a task, or an activity performed to achieve a desired outcome.* (Hitchins 2007)

(3) *A function is defined by the transformation of input flows to output flows, with defined performance.* (Created for SEBoK)

(4) *A broad work area encompassing multiple related disciplines (e.g., Engineering, Finance, Human Resources, etc.).* (Created for SEBoK)

Source

(1) Ackoff, R.L. 1971. "Towards a System of Systems Concepts". *Management Science.* 17(11).

(2) Hitchins, D. 2007. *Systems Engineering: A 21st Century Systems Methodology.* Hoboken, NJ, USA: John Wiley & Sons.

(3) and (4) These definitions were developed for the SEBoK.

Discussion

(1) is the system science definition. All systems have behavior, but to be able to function in a certain way they must have a certain richness of behavior. For example, fight, flight or hide are behaviors; while response to external threats is a function.

(2) is the more traditional Systems Engineering definition, in which functions are identified top down based on needs and then decomposed and allocated to lower level system.

(3) is a HW/SW or human system component definition, describing a function which can be performed by a single part of the system with identified performance.

(4) is a management definiton, describing how similar functions are collected in organizational units.

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