

The design situation

In every design situation there is a using system and an object system (the system to be designed). The relationship between them is that the object system supports the using system; conversely, the using system uses the object system.

The design process of the object system consists of two major parts: the analysis part or functional design, and the synthesis part or constructional design.

Usually, a design process consists of a series of alternating analysis and synthesis steps.

The functional design of an object system is a black-box model of the system, expressed in terms of the construction of the using system.

The ideal starting point in functional designing is the ontological model of the using system. It shows the essence of the using system, independent of its implementation.

The most creative part of the design process is the constructional design. It consists of bridging the deep conceptual gap between the (subjective) function and the (objective) construction.

The ideal first step in constructional designing is to devise the ontological model of the object system, defined as the white-box model that is fully implementation independent. Consequently, it is the highest level (i.e., the most abstract) constructional model, the implementation model being the lowest one.