

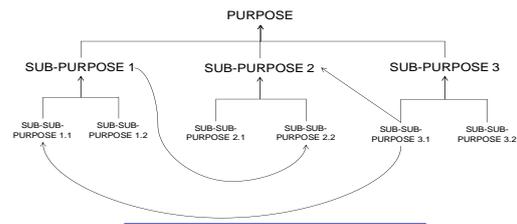


Purpose

All systems seek to achieve a purpose. Whether human made or natural, all systems strive to do something. When creating a new system or modifying an existing one, it is done in order that the resultant system does something “useful”. The reason useful is in quotation marks is that “usefulness” of a system depends upon the viewpoint of the observer.

The purpose of a system is a property of the whole and not in any of the components. Some systems have more than one purpose.

The purpose often requires the achievement of lower level purposes, which in turn require even lower level purposes which in turn etc., but the relationships between the various purposes are rarely a simple hierarchy.



Interestingly, people who use, or are part of a system **are often totally** unaware of its purpose. Moreover, when pressed different users have different, and even sometimes conflicting, views as to the exact nature of the purpose. For example, what is the purpose of a pen? This is such an everyday artefact that what it does is rarely questioned. A pen is used to write and draw diagrams to communicate an individual's thoughts to other humans. Pens are also used to record thoughts. Fundamentally the purpose of a pen is:

to turn thoughts into marks on paper

Describing a pen in this way may appear a little perverse and indeed unnecessary. Nevertheless, it does result in a more profound understanding of a pen. Humans are OBJECT ORIENTED. All of us are brought up from an early age to talk and think about things and not what they do! Systems Thinking, however, demands determination and consideration of the purpose.

Determining the purpose of a system is not easy because individuals are used to referring to the object, but thinking about the purpose of a system allows a profound understanding of a situation permitting objectivity while increasing the potential for innovation. For example, if a team of engineers were challenged to design a new pen, they would indeed design a new pen. But if asked to design a new system for turning thoughts into marks on paper! This is a subtly different problem, that allows for many different solutions apart from the pen and hence the potential for innovation. This aspect of Systems Thinking is particularly useful in Systems Engineering.

It is also important to be careful about and differentiate system purpose and stated goals. The purpose of a system is determined from the way it behaves, not from its stated goals. For example, the fact that an organization has a written goal to lessen its environmental impact or develop its staff, yet allocates no money or effort towards these goals, is not, in fact, the organization's purpose (Meadows, 2008)!