

OPERATIONAL OBJECTIVES OF NATURAL AND ARTIFICIAL SYSTEMS

Voznytsia A.S.¹

¹*National Aviation University, Kyiv*

Supervisor - Kholyavkina T. V., PhD., Associate Professor

Abstract - the work is devoted to the review and analysis of goals of natural and artificial systems functioning.

Key words - system, information, capacity.

Introduction. The state of the system is usually referred to as several properties of the basic ones, which the system manages at a certain period of time.

The fundamental property of systems is their stability, i.e. the ability of the system to withstand external influences. Life expectancy of the system depends on it.

The concept of system is the basic concept of system analysis. There is a great number of definitions of the system, with this or that degree of detail depict its various aspects. That is why it makes sense to trace the development of the notion of system from its natural language form to mathematical one.

The diversity of systems is so great that there are no formal methods of classification of systems. Any classification is based on this or that principle or feature.

Our goal is to consider artificial and natural systems from the point of view of their interconnection.

Problem posting. The aim is to view systems from the perspective of artificiality and naturalness, but from the perspective of interconnection and dependence on each other. All systems have their own classification. Classification is a network of decomposition of a set of systems on a certain sign [1].

There are three problems of any classification:

- selection of features - the method of decomposition;
- lack of formal classification methods;
- assessment of the degree of completeness and specificity.

Classification of systems on the basis of their substance (on the main, in essence, things and phenomena)

Three system classes are distinguished by this feature:

- a) Material - systems existing in objective reality (living and inanimate nature, society).
- b) conceptual (ideal) systems - systems reflecting notions about real reality, the objective world.
- c) artificial systems - material systems, created by man for a certain purpose.

Classification of artificial systems (IS) by the level of automation (by the degree of influence on productivity)

The main problem with this becomes finding the correct definition of the system as a whole, and further linking artificial to natural.

Main part. Let's consider a class of information systems which is connected with labour activity of the person, and break it down into subsystems on level of

autonomy (independence) functioning of systems. Some authors name this index - on level of automation. [2]

The concept of the system is applied also to real natural objects having natural structurization of separate parts and elements. These are the signs of the system. But according to the first definition the system is a means to achieve the goal. What goal can we speak about as applied to natural objects?

One of the options is the existence of a higher intellect, which determines the expediency of nature. But such a mind is also a system, and there is a question about its "creator" and the purpose of creation, etc. Science does not need a hypothesis about the existence of God. The world consists of their structured objects. Any system is an object, but not every object is a system. [3]

In the process of activities aimed at achieving the goal, there is a selection of objects from the environment, the properties of which can be used to achieve the goal and the association of these objects, respectively. [4] This association of objects will be called a system. Thus, the system is the means to achieve the goal. Thus for achievement of one purpose various systems can be created and the same system can be used for achievement of the various purposes, that is conformity between the purposes and systems. But it follows from the definition: "no system without problems" and "system is the shadow of the target on the environment".

Conclusions. Let's start with the consideration of artificial systems, i.e. those created by human. It is known that from time to time a human faces problems that must be solved. That is why, as a rule, a human alone is not able to solve his problems, then his problem starts to affect others and, as they say, a problem situation arises. The problem of the situation is gradually realized: at first there is a vague feeling that "something is wrong", then there is a need to change the situation, then it turns out what the problem actually is, and finally, the goal is formulated, that is, it is established what needs to be done to solve the problem.

All this shows that it is not so easy to formulate a goal correctly. One of the reasons why it is difficult to formulate goals is that there is and cannot be an unambiguous correspondence between the goal (as an abstract and final model) and the real system. On the one hand, different systems can be used to achieve the same goal; on the other hand, any real system can be used to achieve other goals not directly provided for in its construction.

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