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ADOPTING DIKW MODEL: USING REQUIREMENTS FOR ENGINEERING SYSTEM

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Abstract

The present study is dedicated to an approach oriented towards system engineering. Its essence is manifested in working with a genuinely existing object. In this regard, an organizationally distinct complex of tools is utilized, based on which the extraction of the system from the environment occurs, steadily functioning throughout its entire lifecycle. The sustainable operation of an enterprise necessitates possessing a comprehensive knowledge base, enabling timely detection and prevention of potential hazards that could lead to a cessation of activities. Consequently, it is essential for the management system to promptly react to such cessation and prevent the system from transitioning into a malfunctioning state. This real-time response requires an understanding of the mechanisms determining the loss of stability.

Key words: *purposefulness, wisdom, sustainability, diagnostics, efficiency, evaluation, functioning.*

Existing approaches to evaluating the state of organizations rely on standard procedures configured to a specific set of coefficients. Their application does not allow for a comprehensive assessment of the organization's stability as a whole. The absence of algorithms for managing the system in crisis conditions is the primary reason for the superficial identification of the problem. As a result, current state assessment tools are geared towards dealing with a non-existent object. Moreover, when the same tools are used for the same object at the same time, different problems are formulated. This discrepancy arises from the varying perceptions of the object among the specialists tasked with identifying the emerging issue. This contradiction is fueled by different levels of knowledge utilized in forming objective conclusions. "It is impossible to form a representation of the genuine object in the absence of objective means of fundamental

diagnostics, without which organizational management cannot accurately diagnose and provide measures for restoring operations in a timely manner." The research subject is the implementation of the Engineering System approach, aimed at eliminating all uncertainties regarding the utilized toolkit.

The aim of this current research is dedicated to developing mechanisms for assessing the operational state of an organization. This procedure ensures the sustainable functioning of the system while maintaining its characteristics before and after the influence of large-scale circumstances, including crises.

The established goal has enabled the formulation of the following tasks:

− To elaborate on the content of the system's life cycle, including its description in terms of the Engineering System technology.

− To develop options for assessing the system's states considering the phases of the DIKW model.

− To devise a scenario for a comprehensive evaluation of activities based on the ROI model.

− To create a program for describing an object operating in the long-term perspective.

Figure 1 depicts the structural diagram of an approach oriented towards system engineering.

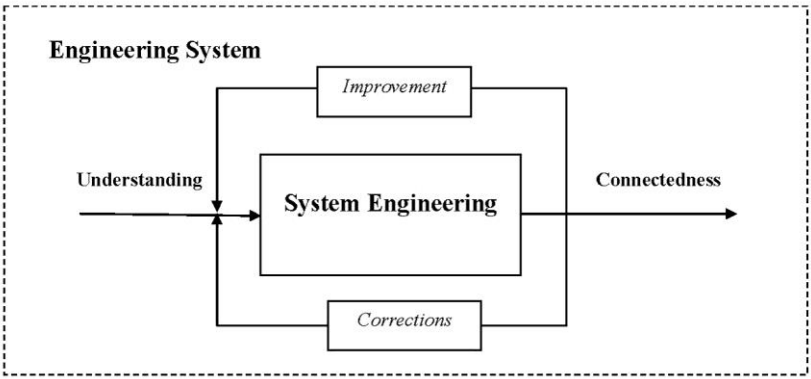

Figure 1. Scheme for forming a genuine object

Given the specified inputs and outputs, this study employs a modified Russell Ackoff model as the initial framework. This model facilitates the identification of system-forming elements and enables transitioning

to a technology capable of indicating a path toward sustainable goal orientation. This establishes the fundamental basis for developing a tool that can be applied in the event of disruptive processes occurring within the organization.

In the proposed approach, the vector of goal orientation is directed towards examining a new quality of the system, induced by justified changes. The primary significance of this concept lies in the system's management ability to influence external environmental influences.

In the example provided, a comprehensive analysis of the enterprise's activity using the ROI model is conducted, identifying key features that allow for the replication of the object's properties. The detailed approach permits the development of current state assessment tools amidst a series of contour transformations, outlining measures for necessary changes and creating a program for restoring full functionality.

Thus, through the systematization of concepts, it is possible not only to eliminate uncertainty but also to describe rules that provide effective guidance for action. This facilitates the accumulation of knowledge and the honing of skills to counteract negative external influences on the management system.

This approach enables ensuring the coherence of all system elements, allowing for the description of the object's sustainable functioning throughout the entire lifecycle of the system.