INFORMATION ASPECTS OF THE RESOURCE-BASED STUDIES OF TECHNICAL SYSTEMS

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Abstract— Standing on the border between two centuries and two millennia, it becomes increasingly clear that technical systems serve as a foundation that carries and reflects the unity and diversity in the development of society, the dynamics of its movement towards progress, and the processes of change of man and the modern civilization. Technical systems embody the degree of perfection of knowledge, reproduction and creation achieved by man as well as his relationships of unity with people and nature. All of the above motivates the following technological and humanistic reflections of the author of this article.

Index Terms— information aspects, resource-based studies, technological-humanistic reflections

1 INTRODUCTION

The operation of technical systems in today's digital environment is diversified by virtue of broadening and deepening the dimensions of their application. This in turn reflects on the expansion, intensification and advancement of the activities of man and society and their need for a more diverse in its kind and type information and knowledge [1].
In this regard, space and time as basic categories of being are not sufficient enough already to define and describe the revealed actual connections and relationships between the objects and the nature of the individual as a researcher and creator. The concept of a "system" is one of the fundamental ones [2]. Due to its versatility and multiple meanings, it has been used to describe different phenomena and objects that possess some common properties and qualities. It is limiting and yet boundlessly universal: open to the arrangement of the knowledge and truth about the world and the Universe, of everything that originates from or permeates every micro- and macroelement, micro- and macrostructure that in turn encompass and are the basis for existence, of its alterations and change, development or demise in a common unity and diversity.

The interconnection and interaction between the components of the systems are one of their basic properties. Therefore, it is necessary to delineate the definition of technical resource. It is as follows:

"A technical resource is called the performance of the system (systems) until a limit state occurs or it is suspended from technical operation, considered from the beginning of its use or its recovery after current or medium repairs or major overhaul. The term "performance" refers to the duration of work or workload of the systems" [5].

The establishment and maintenance of some order in the systems is a result of matter and non-matter, idea and non-idea, human and non-human (for example, not everything is a product of human effort nor can it be comprehended by human capabilities and capacities) etc. The above reasoning requires particular attention not only in terms of moral attitude, but above all in consideration of the safety of human life, the community or civilization, especially when there is expansion in the knowledge that can annihilate, destroy and alter without any certain notion of the losses , damages and new conditions of existence or with a most general model – template for the individual -creator. In this regard, arises the need for a new, more profound scientific knowledge and study of the investigative and creative nature of man and of his fabrications that resemble the transforming and researching- creative activity.

The opposition and the connection between extremities and infinities is a beginning to start reconsidering the unity and diversity of the connections or the chaos existing between things, their ranks or clusters, which to a certain extent is an art and science for embodiment and realization of the ideas in the world of technology. The use of models -templates implies a broader view of thoughts, ideas and experiences in their operation and recreation, in terms of a plan of a specific technical system. From the point of view of the information-communication processes and knowledge, it is necessary to consider at least two types of subsystems - managing and managed, by virtue of which are differentiated and analyzed the errors, weaknesses, deficiencies and disadvantages in the states and processes of observation, decision-making, assessment, change, operation (functioning), control, adaptation or destruction. In this sense, in the age of information and the information society, every object and individual is the subject of information and knowledge, used to provide for and manage the effectiveness of connections and relationships within society as well as between societies [7].

Therefore, the considerations of the concept of a ***risk system***, of its condition, its components and behavior are of fundamental importance for the safety and security of people and in the field of the so called scientific discipline "Crisis Management" [3]. The latter originates as a result of the wealth, access and ability of people to influence the functioning of vital relationships, connections, knowledge, states, and functions of components and systems in everyday life. Due to the fact that the scientific and technological breakthrough happens at a faster rate in accordance with the advancements in knowledge in society, a delay occurs as well as an inability to master and utilize safely the respective knowledge in the practices of ordinary citizens, in the markets of the communities and in the countries' economies. The opportunity arises for the knowledge (information) itself to be used as a commodity and weapon to resolve certain disputes. On the other hand, knowledge-based management requires a broader unity and

integration of the diverse scientific disciplines, so that no investigations are attempted with incomplete knowledge.

Man searches for or asks himself about the truth, which he tries to reproduce by using cutting edge technology, technical systems and models. The ever-deepening and accelerated activity of research and applications expands the field of prediction, programming and automated management of multiple processes in which a man's capacities and capabilities are limited in measure based on foundations or cognitive categories, for example by substance or quantity and quality of knowledge. In the same direction of meaning, a new breakthrough in the contemporary information-cognitive environment is impossible without unity or interdisciplinary knowledge that facilitates the processes of perception, interpretation, communication and concentration of the accumulated experience, which in turn serves to ensure more effective management and to generate new connections and relationships between professionals from different fields, scientists, communities and societies.

It is indeed the society, and not any society but the information society that poses the problem: **the building of the next modern society of its kind shall be governed on the basis of knowledge and technology.**

This is the case because the development of civilization to date has shown that always the consequences of inaccurately defined and applied knowledge are usually suffered by some technical system and the people who utilize it, because it initially and ultimately carries and reflects in its structure, form and content the objectives and values of the individuals. In fact, through the technical systems, the individual strives to imitate, balance and harmonize the environment of existence in the same way and to the extent that he identifies the researcher and creator of the knowledge and self-knowledge of the human and technical essence as identical, e.g. same in the manner of reflections, but also different in their origin or type and kind of substance. There is a huge difficulty in explaining how a system, created by man, resembles or qualitatively differs from its creator, for example, in regard to the quality of the reproduced ideas and substances. It appears that we lack precise or approximately exact criteria or measures to evaluate this. In the process of conceptual creation and in the tangible outcome remain always components, facets and opportunities for more perfect alterations. Amongst the concepts by virtue of which are defined different ranges and values of the exploitation of technical systems, our attention is particularly drawn by the reliability and safety of their operation, because they are directly related to the risks and threats to the existence and operation of the technical objects themselves without harming or adversely affecting the existence of the individual and the people. For their part, the latter depend on the high-quality work of the system and the management methods that are the result of objective and subjective processes of human activity, the people involved and their experience and investigative and creative relations. In this regard, the development of science and the art of management predetermine the subsequent boundaries of existence or the existing in terms of dimensions and level of state and dynamics of changes in the nature of technical systems and man himself. The exploration of the last two aspects and the application of the accumulated knowledge leads to a new level of scientific and technological advancement and management. In the process of searching for different ideas and approaches, models and methods, theories and practices of management, human creations fit more accurately and find a much deeper development, by discovering a new foundation, properties and structures of matter, forms and content of new processes and phenomena related to the evolution and to the main change in the origin of people's lives.

The need arises for new concepts that encompass more broadly the exploitation of technical systems at the information level, for example in regard to their working condition, the control of their information and communication functions, the efficiency of management and the levels of their cognitive reassessment by the individual, the economic determinants and especially those from the point of view of management experience that develop the efficiency and competitiveness of technical systems, their design, marketing and use. The prediction of the possible critical states of a technical system (as an object of management) and of the various prerequisites for crisis situations as an element of the diverse activities related to its management by the individual (user or creator), plays a key role in preventing the occurrence of failures and risk moments during its operation. This provides the opportunity for expansion of its technical resources and improvement in the economic effect of its operation [4, 5, 6].

One such concept for the analysis and synthesis of new solutions is, for example, the concept of ***"information safety".*** It differs from the concept of "information security" in that it is broader in its meaning and scope and requires the inclusion not only of information as a subject of consideration but also of any object and individual that influences the properties of information and the quality of its cognitive application.

The incompleteness of information and knowledge regarding the origin, processes and depletion of power capacities, the transformational capabilities of the different kind and type of energy with which a particular technical system operates and its artificial intelligence for management is a complex and far-reaching prerequisite for the occurrence of failures not only during the operation of the technical system itself, but also during periodic inspections, storage and especially during modernization and updates. This is the case because the discovery of new connections and relationships is required in order to achieve compatibility of the functioning, the general accountability and the architecture of different kinds and types of cognitive and technical units, structures, parts and systems.

This complicates the production of a number of elements, whose purpose is to ensure the operation of multiple systems in unison on a micro- to macroscale and increases the panel diversity of structures.

The current thoughts of the author against the backdrop of the digitalization of society and its economic situation are grounds for making the following :

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2 CONCLUSION

1. The real world exists and evolves, in parallel to the underlying failures (faults) with the systems.

2. This is the case because there is lack of knowledge from the researchers in the world regarding its absolute comprehension, or at least there is not sufficient sharing of the available knowledge.

3. The necessity for knowledge concerning the technical systems (robots and carriers of artificial intelligence) as well as about their users (operators) is the key towards the success and survival of future generations.

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