reviewed paper

# Dynamics of Conscious, Individual and Collective Unconscious

*Pietro Elisei, Vasily Popovich, Manfred Schrenk, Tatiana Popovich, Judith Ryser*

(Dr. Pietro Elisei, President – ExCom member, ISOCARP, Netherlands, elisei@isocarp.org)
(PhD Vasily Popovich, IST BUREAU LLC., vp617616@gmail.com)
(DI Manfred Schrenk, CORP – Consulting Research Projects, 1200 Vienna, Austria, schrenk@corp.at)
(PhD Tatiana Popovich, IST BUREAU LLC., bonixpavlova@gmail.com)
(Judith Ryser, ISOCARP, judith@urbanthinker.com)

DOI: 10.48494/REALCORP2025.0091

## 1 ABSTRACT

The paper presents the discussion regarding up-to-date development in such subject domains as “digital twins”, artificial assistant and etc. The two main topic will be presented in this paper: philosophical background and representation of a person as a digital automate. Philosophical background presents some conclusions from the our previous papers, published in REAL CORP proceedings.

Representation of a person as a digital automate aims to investigate how to present main philosophical existences form the modern computer science point of view. We have used our experience in computer science in such fields as systems of ontology, inference machine, scenario approach, object oriented approach. As an example, we should say that some abstractions in OOA are very similar to key abstractions in classical philosophy.

Keywords: Individual Track, Individual Profile, Digital Human, Digital World, Individual and Collective Unconscious

## 2 INTRODUCTION

In our previous works, published in the CORP proceedings, we have tried to consider the views of classical philosophers on such eternal problems as the relationship between consciousness and existence, the essence of human thinking, space and time, nature (the external world) and human, the ability to perceive the surrounding world and oneself.

And now we have set ourselves the task of transforming philosophical concepts and categories into the language of computer science. The goal of this transformation is to try to represent certain aspects of a person in the computer world. In this regard, existing ideas of “digital twins” concern only superficial, external factors, such as passport data, biography, medical characteristics, physical data. Such data do not characterize a person as a phenomenon. This is a social and physical portrait, which very approximately relates to the very essence of “human”.

Of course, it would be foolish to ignore these characteristics of a person, but focusing only on them is even more utopian in the direction of a digital twin. The theoretical developments that we present here serve as a theoretical and technological basis for building a real intelligent assistant for each person. An intelligent human assistant (Human Artificial Assistant (HA²)) should really help a person navigate our complex world, including with the advent of powerful computers and networks, some of which are even called artificial intelligence (AI), although before that there is a qualitative leap to overcome. So far, this is an imitation of AI, and not AI itself. BUT, in our opinion, the main task of HA² for a person is a tool for self-knowledge. We hope that HA² itself will be discussed in our next article.

## 3 PHILOSOPHICAL BACKGROUND

Based on the works of such philosophers as Spinoza, Descartes, Kant, Hegel, Fromm, Jung and others, which we have reviewed in our previous publications at CORP, we will consider the dynamics of the interaction of such entities as the conscious, individual and collective unconscious. Fig. 1 presents the hypothesis of individual’s development.

Point “O” is the beginning of the creation of human as a representative of a new civilization on planet Earth. Before this, “was” something else. The concept of “was” is not entirely appropriate, since perhaps there is something in parallel, but we have nothing else as an understanding, except for “was”. Point “X” is the point of “original sin” – let us call it that. At this point, presumably, the synthesis of spirit and matter is realized, and the spirit begins to know itself and matter.

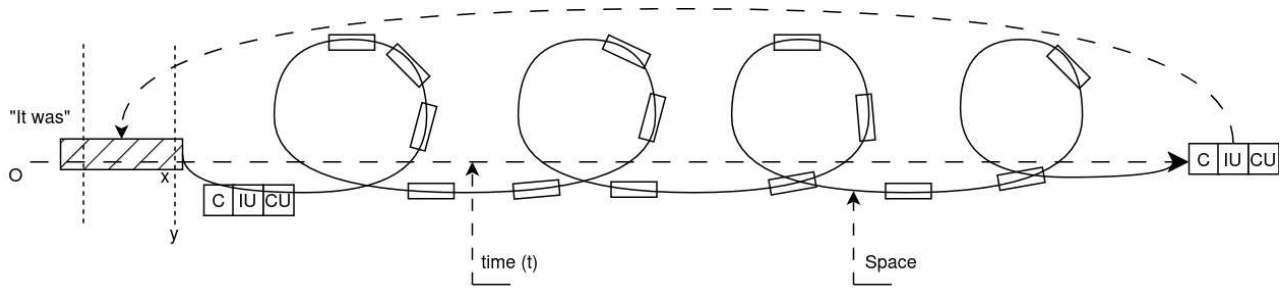


Fig. 1: Hypothesis of Individual Evolution – conscious (C), /// – individual unconscious (IU), xxx – collective unconscious (CU).

In this case, consciousness begins to divide into at least three parts: conscious, individual unconscious and collective unconscious, this is what was “installed” in the interval 0 – t. At point X, time t and space S appear. Apparently, the evolution of the individual, presented in Fig. 1, is common to all living beings. The interval X-Y is “childhood”.

It has two meanings – it is the beginning of modern civilization, and the period of childhood at birth. The birth of a person is also an imitation of the "original sin", a rupture of primary bonds. During this time, a person begins to adapt to the world he has entered. During this period, all three elements: conscious, IU and CU are closely connected. Therefore, a child after birth is of a significantly higher order than an adult, who is already very limited and has strong gaps between C, IU and CU. Apparently, the task of an individual is to make three entities united: C, IU and CU.

It is quite possible that it is impossible to do this in one period of life. The idea of reincarnation, for example, in the culture of Buddhism, has a similar meaning. The existing and diverging gap of the second kind (mathematical analysis) sharply limits the cognitive activity of the individual. But it is objectively conditioned. The fact is that the appearance of these “gaps”, the concepts of “space”, “time” is conditioned by our physical capabilities. Man is greatly limited, apparently due to energy capabilities. Even in the current state, the human brain spends more than 25% of all human energy. Any increase in brain function leads to an increase in energy costs. Man will need a completely different physical body and energy supply system, which, in the current conditions of planet Earth, is quite possibly already impossible. Here, according to the expression of Marxists, being clearly defines the limits of consciousness, our capabilities. To increase intellectual (cognitive) capabilities and progress in general, duality is encountered almost everywhere in our world. Man is also “divided” into two halves: man (M) and woman (W). In this sense, if we look again at Fig. 1, it shows a spiral of one half. Two spirals will have the form shown in Fig. 2.

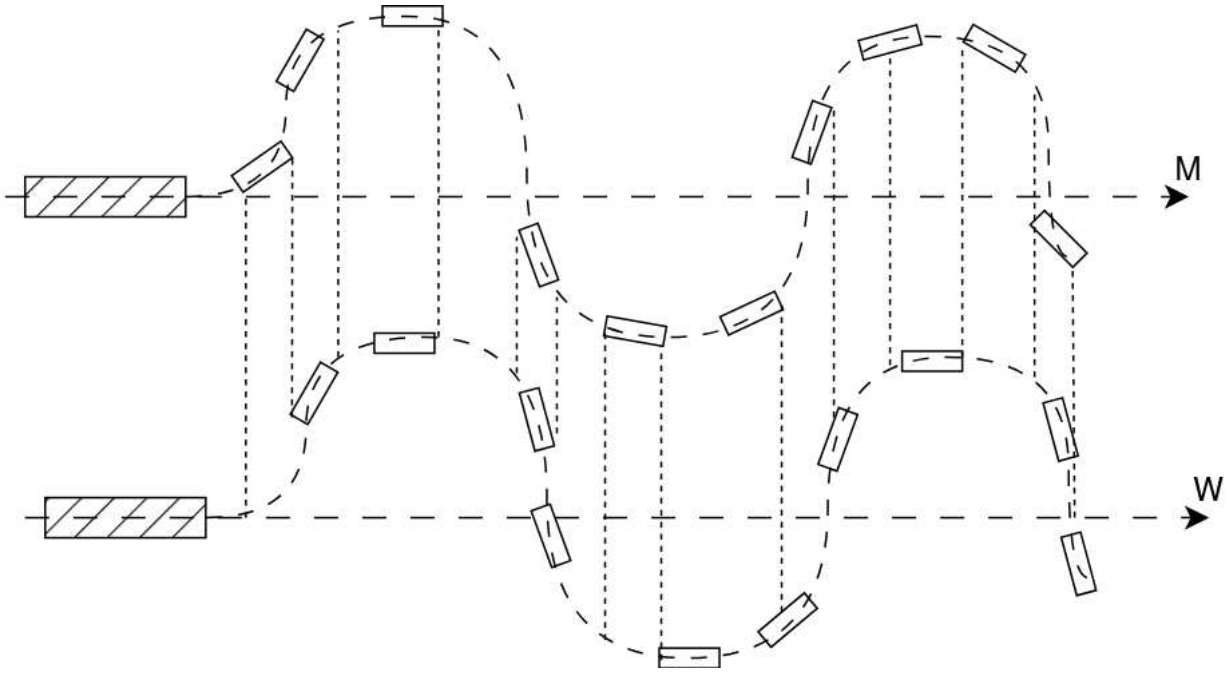


Fig. 2: Two spirals of evolution, probably for man (M) and woman (W).

The axes M and F shown in Fig. 2 look like curved lines, although this may not be the case at all, but the essence of the explanations does not change. In addition to the reproductive instinct and libido described by Z. Freud, the attraction between M and F may also be based on an unconscious desire to eliminate the second-order breaks between C, IU and CU. If we imagine that the spirals M and F coincide in phase, but the second-order breaks do not coincide, then we obtain an integral projection that is practically continuous, or with minimal breaks, when the second-order break turns into a first-order break, and ideally they tend to solid spiral rings, see Fig. 3. Note. Fig. 2 shows the idea itself, but not the appearance and essence of this hypothesis.

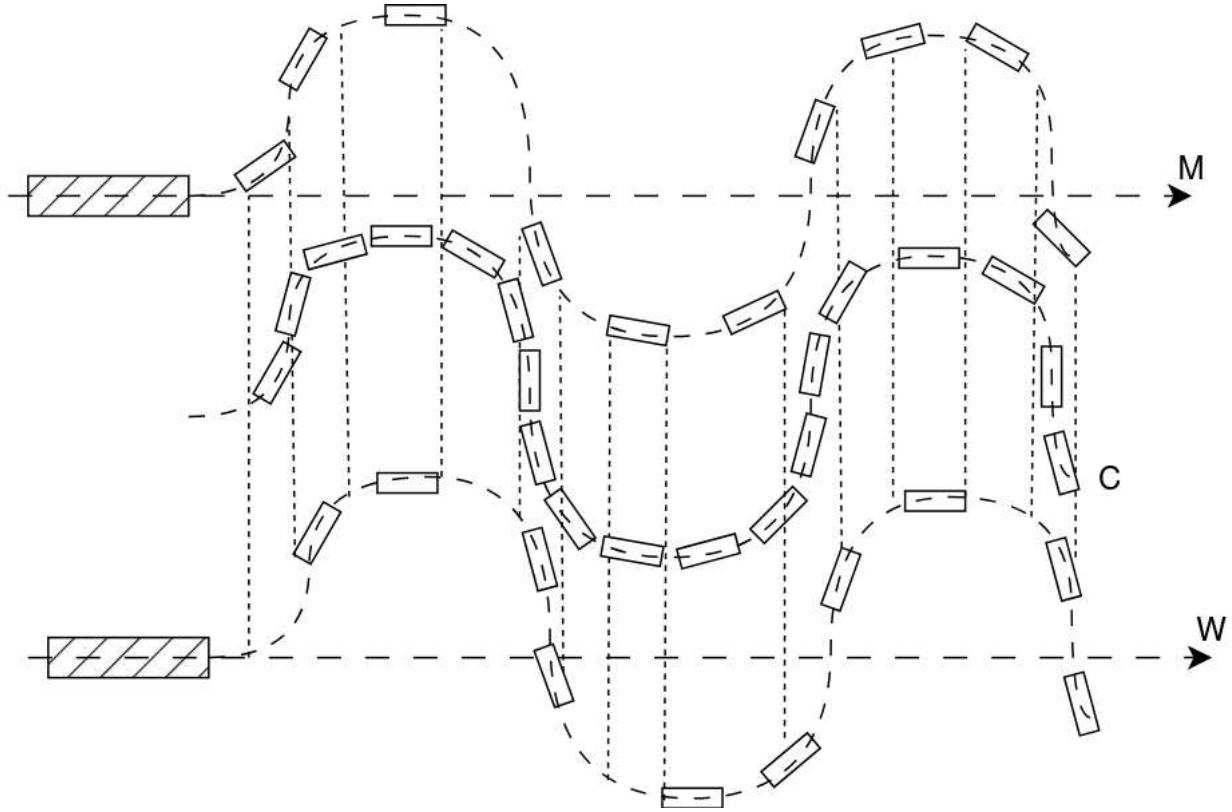


Fig. 3: Projection of two spirals for man (M) and woman (W).

The integral projection shown in Fig. 3 has unreal power and energy. When synchronizing spirals, such a concept as Anima in Hume's terminology arises. Let's make a few comments on the idea shown in Fig. 3.

(1) For synchronization, it is necessary to apply efforts, preferably from both sides.

(2) The feeling of synchronization is frightening with its power and energy and its beginning can be repulsive, especially for a modern person.

(3) The period of existence of synchronization depends on many factors. It can last for months, or even a lifetime.

(4) The fact of synchronization remains for life, regardless of the duration and result.

(5) The state of synchronization gives birth to brilliant scientific ideas, works of art, and motivates a person to a feat.

Another option is possible, an option for human development compared to the one shown in Fig. 1.

Fig. 4 shows a variant of a “diverging” spiral. In this case, not only does the second-order rupture increase, but there is also no tendency toward convergence. In this case, we can say that a person has lived his life in vain for himself. It is quite possible that he has become a negative example for others and has also fulfilled his assigned mission. It is quite possible that such a spiral can also be synchronized with another, which will entail sad consequences for the other spiral.

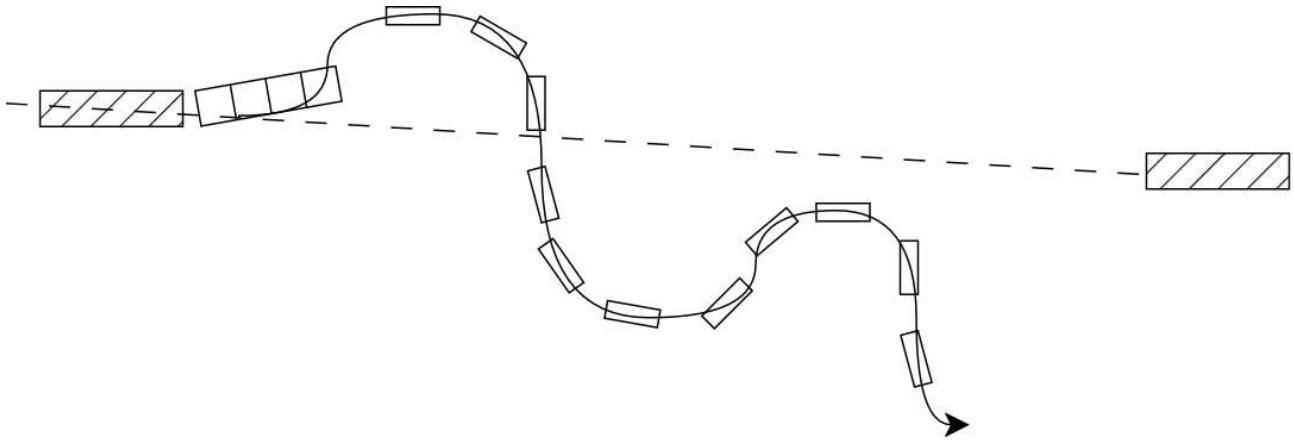

Fig. 4: Divergent spiral.

Notes. 1). It is necessary to separately study the question of when an ideology or religion takes hold of the consciousness of large masses of people? What happens in this case, what mechanisms are involved? What does it affect, what part of the soul? 2). Why does the fetus go through many forms of life on Earth during fetal development? Probably, this is due to the adjustment of a new life to the conditions of planet Earth, "training" and the formation of data, information, knowledge and understanding for existence in specific conditions occurs. This is evidence of the fact that planet Earth is not the only possible place for the existence of intelligent beings (the fusion of the spiritual and the material in one entity). A rational being must have multiple cycles of rebirth.

## 4 HUMAN REPRESENTATION AS A DIGITAL AUTOMATE

Human representation as a digital automate is the first step to connect computers directly to the essence of this topic, i.e. Human research. For such a representation, we will use the object-oriented approach – a direction in the field of development of large and complex computer systems that arose in the mid-60s of the last century. This is more than a programming paradigm, it is a programming philosophy based on real software development tools. Mechanical use of OOA languages leads to failures and disappointment, OOA itself is criticized. In our opinion, this is due to shortcomings in computer education and a lack of understanding of the basic foundations of this methodology (OOA).

Vulgar use of OOA leads to anarchy in classes, overloading computers, code redundancy and the impossibility of maintaining anarchic and tangled code. This was a lyrical digression, and now, in accordance with OOA, we will define the domain architecture of a human. In accordance with philosophical views, three level architecture of human: body (physical existence), soul and spirit can be selected. Let's try to make several analogies of a “philosopher's man” and a “computer man” at a primary, very simplified level. Let's assume that a person's physical body is the computer's “hardware”. We can connect power to the hardware, it will indicate that it is working, but will not be able to perform any functions (provided that the software is not pre-installed in memory, or is not implemented in hardware). In order for the hardware to come to life, an operating system is required, which organizes the work of all elements of the hardware and can load application software, i.e. what can be loaded. Thus, in our primitive analogy, the operating system is a kind of analogue of the human soul, which animates the physical body, makes it capable of existence and ready for learning, for a certain mission or actions. Application software is actually the implementation of the mission, or purpose of the computer. In our greatly simplified interpretation, it is the spirit of man. Thus, we have defined the main components for representing a person as a digital machine in a computer. A computer representation is the implementation of a virtual model of a person with various goals. We are primarily interested in the possibility of self-knowledge and the search for like-minded people. Possibility of self investigation.

Possibility of self investigation.

1. Individual conscious. That which we are relatively clearly aware of and can imagine in various forms.

2. Individual unconscious. That which we are not clearly aware of and can only imagine indirectly, through various mechanisms, possibly with the help of psychologists and psychotherapists.

3. Collective unconscious. That which we are not aware of and cannot individually imagine. A collective approach, a system of research and scientific knowledge are required.

Let us consider a set of modern computer technologies, the use of which can help in the implementation of a digital twin and a tool for helping a person.

## 5 SOFTWARE TOOLS

To present a set of tools from the software field, let us consider a person as a certain entity interacting with the outside world at the level of physical sensors and abstract thinking (consciousness).

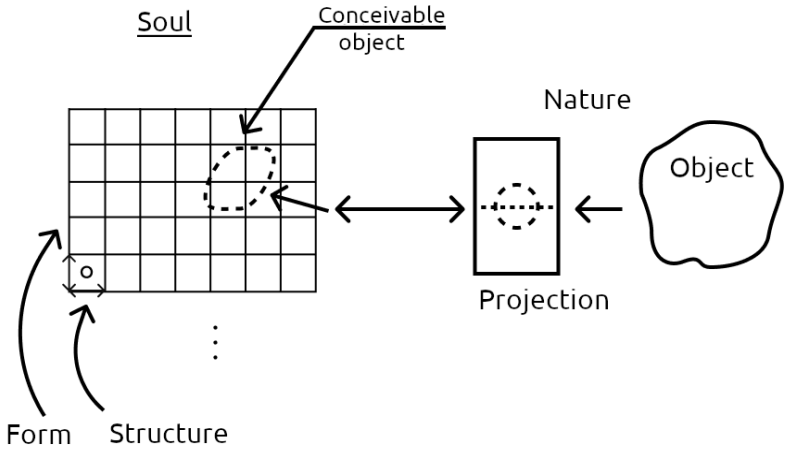


Fig. 5: "Mechanics" of nature and human interaction by K.G. Jung.

Let us also keep in mind that some elements of consciousness are pre-installed in us (I. Kant, K.G. Jung), so we perceive the reality around us through a system of filters. The first filter is the physical ability to react to external fields (limitations on wave ranges for vision and hearing, for example). Therefore, we will imagine the ability to have data about the outside world as capabilities (limitations) when working with a certain framework. At the same time, the choice of frameworks is very limited and determined by the power of our computer, perhaps this is the brain, unless it is an interface, and everything else is part of the virtual space. Thus, the main channels of communication with the outside world that are familiar to us are vision (the main flow of information), hearing, tactile capabilities, vibrations, etc. Information that comes through our senses is data that requires preliminary processing, which our brain does unnoticed by a person. Then the data acquires the meaning of information that is already obtained as a result of training and individual experience of the individual.

Tools such as data analysis packages, including big data, work with data. At this level, a computer today works better than a person. Information is indirect data or meta-data. For example, some information on a GIS map (streets, buildings, institutions, etc.). Modern computer technologies cope well with this level, but data models must first be developed, or clustering packages or pattern detection packages must be applied in data arrays. The use of neural networks and the SVD method allows us to detect information that is not obvious and not directly accessible to humans. The concept of "knowledge" arises only in the process of huge experience and/or training. This concept is no longer trivial for modern computer technologies. It can be implemented through some patterns or scenarios that have received approval, or have positive multiple experience of scenario behavior. It can be derived from logical inference. At the current time, first-order predicate algebra is a good approach in this regard. Logical inference can also be. automated using machines, such as the Rete logical inference machine (LIM). This LIM is widely used in various logical languages and programming environments. We use this technology to develop a scripting system, and have developed a visual script editor that greatly simplifies the use of logical languages. The situation with such a phenomenon as "understanding" is quite complicated.

As E. Fromm noted, modern humanity strives to know, but does not want to understand. This is the fundamental difference between these two concepts (knowledge and understanding). If the concept of "knowledge" can be implemented through a certain repository of scenarios implementing a certain business analytics, i.e. directly using existing tools, then with "understanding" everything is more complicated. After all, understanding is the establishment of cause-and-effect relationships of events. The answer to the question

of why exactly this happens and not something else. This property allows a person to make a decision in situations for which there are no patterns. In fact, only through understanding can new knowledge be generated. Experience is a weak assistant here. Thus, you can endlessly watch the sun rise and set. But without the appropriate theoretical knowledge, an ordinary person on Earth cannot imagine that the Earth revolves around the Sun, and not vice versa. In order to somehow get closer to the implementation of "understanding", we proposed an approach based on the theory of situational management – the analysis of tactical situations. Although the concept of "analysis of tactical situations" is widely used in military affairs, it was apparently first introduced by Gabriel Jacobson, a student of A. Pospelov.

Let's list the existing technologies that can be used to form a digital twin of oneself.

1. Implementation of interfaces: – Interfaces: human←-→environment, human←-→devices. Can be done using web devices (camera, microphone, etc.) and saved on a computer. We implement it using the appropriate protocols that are connected to the ontology system so that the input data stream is meaningful and ordered, and also open for analysis by humans and other applications. Tool – Java code or script.

2. Ontology system – ontology (individual, individual unconscious, collective unconscious, environment, scenarios). Individual conscious can be presented in the form of ontologies using visual ontology editors according to previously formed recommendations. Ontology can be formed by surveying and/or analyzing human actions on a computer. Tool – Java code and Drools logical programming language.

3. Business analytics. It is implemented on the basis of an ontology in the form of a scenario system. Tool – Protege ontology editor, or our own editor.

4. Body properties. It is implemented on the basis of an ontology in the form of a system of properties obtained as a result of instrumental measurements.

5. Soul properties. It is difficult to obtain such an ontology explicitly. It is necessary to develop special methods and analyzers with the ability to manually or automatically edit the editorial version.

6. Spirit properties. This is the most complex substance and determines a person's purpose in this life, his global goals. We do not have any ideas for implementing this phenomenon at the current time.

## 6 CONCLUSION

In this article we tried to form a certain system of correspondences between classical philosophy and computer science. This is the first step to form the idea of creating an artificial human assistant and a tool for studying oneself. The article showed that many categories of philosophy coincide with concepts in computer science, especially in the OOA methodology. However, the issue of creating an artificial human assistant – HA² has a number of difficulties, namely:

- to help a person, HA² must know who it is helping, i.e. know a lot about the person. Thus, the computer must store a real digital twin of a specific individual, and not formal characteristics;
- HA² must have access to all incoming and outgoing information from a person. This is very difficult and quite dangerous, given attempts to hack personal information, or erase it, or distort it;
- the entire ontology about a person will occupy quite a large physical space, so it must be stored in the cloud, well protected and reliable;
- for the full implementation of HA², interaction with other similar entities is necessary, sometimes in real time. Hence, a mechanism of mutual trust must be implemented, excluding unwanted or even malicious individuals, and sometimes banal scammers, from getting into a certain social group. This task can be implemented using technologies similar to Blockchain.

Despite the obvious difficulties, the creation of applications like HA2 is already on the way. In the near future, we expect the first such applications to appear, possibly based on social networks, or standalone applications.

In our next article, we plan to describe the technology of creating HA2 and its application to real people.

## 7 REFERENCES

KANT I.: Critique of Pure Reason.
KANT I.: Justification of the incomprehensible.

KANT I.: Religion is within the limits of reason alone.
HEGEL G.: Philosophy of nature. Essays. In 2 volumes.
WEIZENBAUM J.: Computer Power and Human Reason: From Judgment to Calculation.
POPOVICH V. at all: Digital World of the Future as an Evolution of the Past. In: CORP 2021, Vienna, Austria, 12-14, May, 2021.
FROMM E.: Escape from Freedom – Philosophical archive. Nyköping (Sweden), 2016.
POPOVICH V. at all: The theory of detection and search for moving objects. Nauka, Saint-Petersburg, 2016.
YUNG K.G.: The archetypes and the collective unconscious.
ELISEI P., Popovich V., Popovich T., Schrenk M., Griaznykh I.: Digital Human. Introduction. In: CORP 2024, Proceedings/Tagungsband, 15-17 April 2024 – https://www.corp.at
ELISEI P., Popovich V., Popovich T., Schrenk M., Griaznykh I.: Digital Space of a Human. From Philosophy to Computer Science. In: CORP 2024, Proceedings/Tagungsband, 15-17 April 2024 – https://www.corp.at
ELISEI P., Golubovic-Matic D., Popovich V., Popovich T., Schrenk M., Shutkov V., Zagvozdkin A.: Intelligent Social Network. In: CORP 2023, Ljubljana, Slovenia, 18-20, September, 2023.
CHIROV D., Golubovic-Matic D., Gonichenko N., Popovich V., Popovich T., Shpicerman V.: Underwater Acoustic Modeling for Smart Harbor Monitoring. In: CORP 2023, 18-20, September, 2023, Ljubljana, Slovenia.
ELISEI P., Popovich V., Popovich T., Schrenk M., Zagvozdkin A., Burdakov S.: A core of Robotics Intelligence. A “Green Button” Idea. In: CORP 2023, 18-20, September, 2023, Ljubljana, Slovenia.
ELISEI P., Popovich V., Popovich T., Schrenk M.: Smart City and Digital Humanities, In: Real CORP 2022. Vienna, 2022.
POPOVICH V. at all: Intelligent Decision Making Support System for Smart City Governance and Management. In: SAECT, Roma, Italy. 27-29 Nov. 2019.
POPOVICH V. at all: Situational Control. In: Maritime Radio Eloctronix. №2(76), St. Petersburg, June, 2021.
POPOVICH V. at all: Knowledge centric approach in information systems. In: Marine Radio Electronics. #4 (74), pp. 10-16. December, 2020. St. Petersurg (in Russian).
POPOVICH V. at all: Intelligent Decision Making Support System for Smart City Governance and Management. In: Proceedings of the ISAECT Conference, Roma, Italy. 27-29 Nov. 2019. Inspect Association Number: 19536136.
SIMON E.B.: The core academic and scientific disciplines underlying data-driven smart sustainable urbanism: an interdisciplinary and transdisciplinary framework. https://dolorg/10.1007/s43762-02100001-2. In: Springer. 2021.
LI D. at all: Smart city based on digital twins. https://dolorg/10.1007/s43762-02100005-y. In: Springer. 2021.
AARTI S., Poonam A.: State of Art in Ontology Development Tools. In: International Journal of Advances in Computer Science and Technology. Vol 2, No. 7, July 2013.