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**ДЕЦЕНТРАЛИЗОВАННАЯ АВТОНОМНАЯ ОРГАНИЗАЦИЯ КАК ОСНОВА  
СОЗДАНИЯ СОВРЕМЕННОГО БЛАГОСОСТОЯНИЯ  
DECENTRALIZED AUTONOMOUS ORGANIZATION AS A BASIS FOR THE  
CREATION OF MODERN WELFARE**

**Abstract:** The main scientific objective of submitted paper is to create an analytical basis of newly formed decentralized autonomous organization systems, which represent an innovative alternative design of organizational management based on collaborating decentralized network without the need for hierarchical structure. Decentralized form of management ecosystem brings the change of a paradigm with the work with functions and data in the network, which ensures higher added value and its fairer allocation for token holders of particular ecosystem. Subjected activities are supporting pillars for qualitative realization of our further research progress in the topic of application of innovative management concepts based on decentralized applications by means of innovative technologies.

**Keywords:** DAO, Blockchain, Autonomous Organization, antifragile, management.

«We live in an era of rapid acceleration, and we can be redeemed only by humanism»

**Martin Milan Šimečka**

**INTRODUCTION.** If intelligent technologies work with a minimal participation of a human, it is necessary to ensure that all branches will adapt to inevitable transformation of social behavior and expectations change. Already for a few years, we are witnessing the effect of technologies on all aspects of our lives. To be able to ensure sustainable technological development, we consider as very important to define specific humanistic rules, which will ensure sustainable management beneficial for our civilization, **mainly in regard to the main objective, which became the grounding point of Saint-Simon's school:**

«To ensure the people as liberate development of their endowment as possible»

**Claude Henri Rouvroy de Saint-Simon**

**1. SUSTAINABLE SYSTEM INFRASTRUCTURE OF MODERN WELFARE  
BASED ON DECENTRALIZED AUTONOMOUS ORGANIZATION**

Non-functionality a fragility of current centralized system solutions can be seen in many aspects of our lives, such as in property inequality, climatic changes, political instability. Current condition forces us to create alternative solutions, which could provide us more stable environment. The transformation of the environment currently goes through a tough period, which is the sign that something new is coming.

The study **webstrategy** describes the development of so-called digital eras, where the authors predict the onset of so-called **Era of social welfare (5<sup>th</sup> digital era – focused on**

«**internal space**»); this era will consist of various pro-social focused segments, which will be focused on increasing the life quality of an individual (OWAYING, 2019a).

By the creation of such era, there must be present more effective and fairer allocation of added value, which by current fragile centralized solutions is not possible from the point of view of the existence of the third parties, which will be substituted by antifragile decentralized controlling ecosystems.

Try to picture decentralized autonomous organization structures, which will be owned by all participants of given ecosystem, and in which they will make the decisions.

To create a functional autonomous infrastructure, a complex set of technologies controlled on the basis of consensual protocols enabling the creation of distributed internet bases must be implemented (VOSHMGIRA, 2019).

This development level will bring «**cambric explosion**» of new concepts of sustainable management of modern organizations of 21<sup>st</sup> century, which will redefine the prehistoric paradigm of centralized management of enterprises.

However, to make this new technological stage work for us, we will have to adapt our way of thinking to it, and to accept new concepts of functioning based on other values than today. It is necessary to complexly reorganize the human society with the aim of mutual linking toward social welfare and creation of healthy community society, which will be synchronized with the nature system. New technological possibilities and currently occurring change of social paradigm gives us the space for the creation of new concept of functioning of human society. Increasing number of crises in various areas of human activities forces us to revalue the foundations of our culture. It is a way, how the nature moves us forward to next development phase of our civilization, which leads to the change of our thinking and values. (LAITMAN, 2019)

## **1.1 DECENTRALIZED AUTONOMOUS ORGANIZATIONS AS A NEW CONCEPT OF THE SOCIETY**

«Centralized system administrators will not be able to innovate faster than decentralized open-source community, which will have more cumulated intellectual capital. The only threat in the fight against the centralized powerful societies can be the artificial intelligence and quantum computer»

The founder of Messari company

Decentralized autonomous organizations bring the solution of old problem of management, which the political scientists and economists define as a dilemma of a main agent. This happens, when the representative of an organization has the right to make decisions on behalf or with the impact on the principal – other person or subject within the organization. The example we can see in managers, who act on behalf the shareholders, or the politicians acting in the name of the people. In such organizations, there is a moral danger, when the agent acts rather in his own interest than in the interest of the principal, because the principal cannot fully control acting of the agent (VOSHMGIRA, 2019).

Decentralized autonomous organizations fall into the third category of decentralized applications. Their goal is to create a society without any director or any other leading authority. By the creation of such society, it is necessary to set some rules followed by each participant of the ecosystem. In the case of financial questions of the society, of which decides mainly the director or other executive body, in DAO the decisions are made through decentralized voting (Velu, 2019).

**Decentralized applications have following modus operandi (Velu, 2019):**

- **Open Source** – in ideal case, the control should be autonomous. All changes must be decided on the basis of majority of users or by a consensus. The source code should be available and under control;

- **Decentralization** – All records about the application activity must be stored on a public and decentralized block to avoid the pitfalls of the centralization;
- **Stimulation;**
- **Protocol.**

## 1.2 ANTIFRAGILITY OF DECENTRALIZED ORGANIZATIONAL STRUCTURE

**Antifragile systems** have a positive relationship toward errors. Errors are natural side-effect of experimenting: one experiment in a specific time is never as big as it could potentially endanger the entire system. In the end, the short-term result is not so important, because in the principal functioning of antifragile system, each error seeks its solutions. The basic approach by the creation of antifragile systems is the paradigm of failures: «fail fast, fail often» is much more natural from the point of view of natural laws than an approach based on: «a fear from making a mistake». (TALEB, 2014).

«A way toward wisdom? It can be named shortly and clearly:  
Fail, fail and fail again, but less frequently!»

*Piet Hein, Danish inventor and poet*

Antifragile systems are adaptive and able to quickly react on the changes in their environment (TALEB, 2014). The antifragility of decentralized autonomous organizational structure lies in the principle of decentralization of controlling architecture, decentralization of transaction mechanism and decentralized data storage. This means that no governmental system based on centralized power and hierarchical structures will influence decentralized platform. In the management mechanism, the decisions are made on the basis of a consensus and, according to the founder of Messari company, centralized administrators of the systems will not be able to innovate faster than decentralized open-source community, which will have more cumulated intellectual capital.

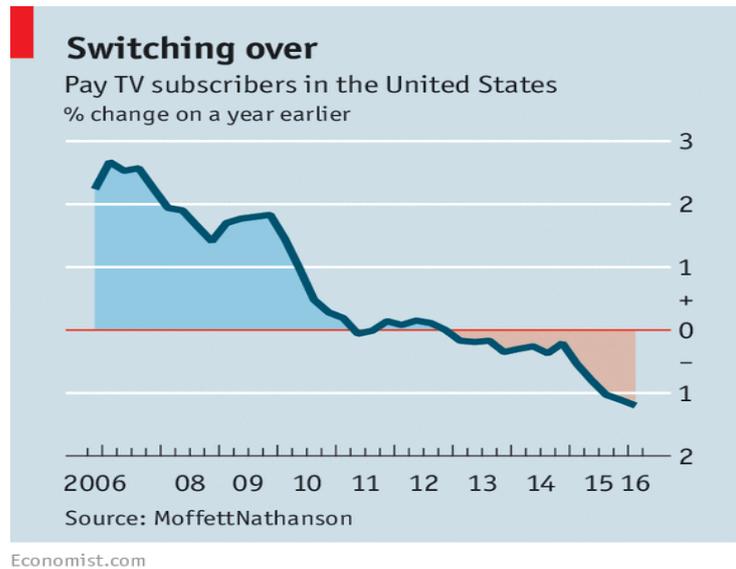
Why it was technically possible that the state limited the activity of UBER company? Because the company is based on the principles of fragile centralized solutions using centralized infrastructure, central bank account and making the business through centralized company, which has the approval from central state authority. These are facts, on the basis of which the state can limit or stop the activity of UBER.

Now, let's picture that there is something similar as UBER, but it will not use centralized bank accounts, but decentralized autonomous cryptocurrencies, solution architecture will be fully decentralized and based on the blockchain in the form of smart-contracts, and the organization itself will be decentralized autonomous organization, and all data will be stored on decentralized cloud solution.

If we put together all these variables, such service will not be possible to be banned, because the central authority will not have any reach to it. If there will be big number of DAO companies in the future, and they will start making business among each other, possibly no one will be able to stop this process.

## 2. SUBSIDENCE OF USING CLASSIC CENTRALIZED SOLUTIONS AND THE FUTURE OF DECENTRALIZED AUTONOMOUS ORGANIZATIONS

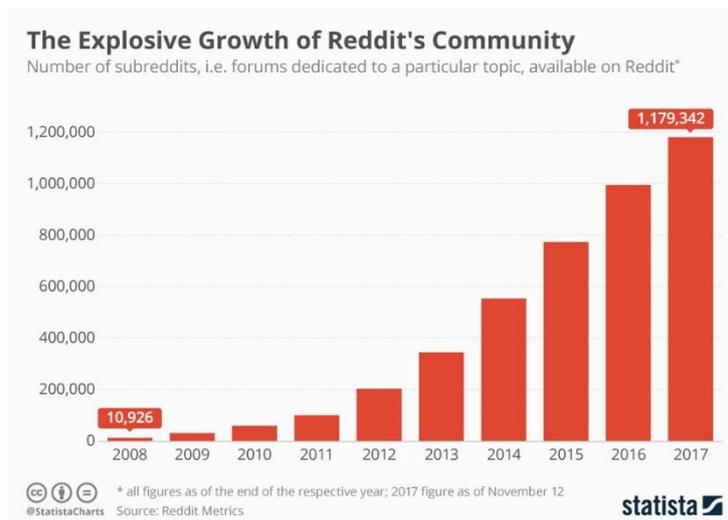
The trend of the subsidence of using centralized solutions can be seen in the segment of traditional TV stations, which recorded a rapid decline of the number of subscribers. The segment of traditional TV industry recorded historically biggest outflow of subscribers, while the analysts predict that this trend will continue (MCALONE, 2017).



**Pic. 1. Subsiding trend of subscribers of traditional TVs in USA**  
Source: (online, <http://economist.com>)

The problem is the fragility of control apparatus of centralized solutions, which lies in the principle of centralization. This means that centralized platform is owned by centralized company, which is subordinated to centralized government system based on centralized power, and this type of the system cannot adaptively react to still more dynamic environment.

The increase of the popularity can be seen in various community solutions, as for example the platform Reddit. On the picture, we can see a rapid increase in the number of users of this solution (RICHTER, 2017).



**Pic. 2. Increasing trend of Reddit's community users**  
Source: (online, <http://statista.com>)

The interest in decentralized autonomous organizations grows. There are many long-term concerns and potential problems related to the regularity, security and the structure, but some analysts predict that this type of organization will be pushed forward, and it will possibly substitute traditionally structured enterprises (REIFF, 2019).

**CONCLUSION.** Currently, we are standing at the breakpoint between the old centralized systems and new decentralized autonomous systems, on the background of approaching singularity. Coping with this transformation can provide unbelievable exponential progress in the functioning of the society, also by means of innovative decentralized system solutions. Decentralized autonomous organization brings us new possibilities for the creation of virtual organizations without a hierarchy and ensures the democratization of the entire ecosystem for each user with the aim to maximize the effectivity and added value. This modern phenomenon opens us an unknown space on the basis of which we have the opportunity to look for the answers on many new questions, which will surely appear in near future.

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#### **List of literature used:**

1. ECONOMIST, 2016: The future of television Cutting the cord. <https://www.economist.com>, 2016, [cit. 1.10.2019]. Available at (world wide web): <https://www.economist.com/business/2016/07/16/cutting-the-cord>.

2. HEIN, Piet – Phil Dourado: The 60 Second Leader ISBN 978-80-8909-045-5  
LAIMAN, M., 2019: Education Coupled with Blockchain Will Be the Basis for Future Nations. <https://www.blockanics.com>, 2019, [cit. 1.10.2019]. Available at (world wide web): <https://www.blockanics.com/2019/01/15/education-coupled-with-blockchain-will-be-the-basis-for-future-nations/>.

3. MCALONE, N., 2017: Get ready for traditional TV to have historically brutal subscriber losses this quarter. [www.businessinsider.com](http://www.businessinsider.com), 2017, [cit. 1.10.2019]. Available at (world wide web): <https://www.businessinsider.com/cable-tv-subscriber-losses-q2-chart-2017-6>

4. OWYANG, Jeremiah. 2019a. Roadmap: Five Phases of Digital Eras. In: Strategist [online]. roč., 2019a, č., s. [cit. 10. 01. 2019]. Available at: <http://www.web-strategist.com/blog/2019/01/04/roadmap-five-phases-of-digital-eras/>.

5. REIFF, N., 2019: What Is the DAO? [www.investopedia.com](http://www.investopedia.com), 2019, [cit. 1.10.2019]. Available at (world wide web): <https://www.investopedia.com/tech/what-dao/>.

6. RICHTER, F., 2017: The Explosive Growth of Reddit's Community. <https://www.statista.com>, 2017, [cit. 1.10.2019]. Available at (world wide web): <https://www.statista.com/chart/11882/number-of-subreddits-on-reddit/>.

7. ŠIMEČKA, Martin. 2017. Žijeme vo veku prudkého zrýchlenia a spasí nás len humanizmus. In: Denník N [online]. roč., 2017, č., s. [cit. 01. 03. 2019]. Available at: <https://dennikn.sk/687293/zijeme-vo-veku-prudkeho-zrychlenia-a-spasi-nas-len-humanizmus/>.
8. TALEB, N., 2014. Antifragilita: jak těžít z nahodilosti, neurčitosti a chaosu. Praha: Paseka. 550 s. ISBN 978-80-7432-498-7.
9. VELU, S., 2019: What Are Dapps? The New Decentralized Future. In: Blockgeeks [online]. roč. 2019, č., s. [cit. 15. 06. 2019]. Available at: <https://blockgeeks.com/guides/dapps/>.
10. VOSHMIGIRA, S., 2019: Token Economy: How Blockchains and Smart Contracts Revolutionize the Economy. Berlin: BlockchainHub, 2019. – 314 s., ISBN: 978-3982103822.