

A Scalable Model of Fair Socioeconomic Relations Based on Blockchain and Machine Learning Algorithms-1: On Hyperinteraction and Intuition

Merrey M. Sarsengeldin and Alexandr S. Kolokhmatov

Abstract—This series of interdisciplinary studies is an attempt to investigate and develop a scalable model of fair socioeconomic relations on the base of blockchain using positive psychology techniques and Machine Learning algorithms for data analytics.

In this particular study, we use hyperinteraction approach and intuition to investigate their influence on “wisdom of crowds” via created mobile application which was created for the purpose of this research. Along with the Public blockchain and Private Decentralized Autonomous Organization (DAO) which were elaborated by us on the base of Ethereum blockchain, a model of fair financial relations of members of DAO was developed. We developed a smart contract, so called, Fair Price Protocol and use it for implementation of model. The data obtained from mobile application was analyzed by ML algorithms. A model was tested on football matches.

Keywords—blockchain, Naïve Bayes algorithm, hyperinteraction, intuition, wisdom of crowd, decentralized autonomous organization.

I. INTRODUCTION

Recent studies on computer mediated conscious non-invasive brain to brain (B2B) interface [1]-[7], extended list of papers and literature therein devoted to studies on predictive markets [8]-[20] and an increasing literature on “wisdom-of-crowds” [21], [22] confirm the possibility of transmitting information among individuals without intervention of motor or peripheral sensory systems or other devices as well as confirm sufficient quality and accuracy of collective judgments or “wisdom-of-crowds” under certain conditions.

An impact of the Internet on people's lives [23], as well as the emergence of collective intelligence, the consequence of which is the expansion of the central nervous system of mankind (by Marshall McLuhan) on the other hand collective unconscious and B2B interface seems like a good combination to answer complex questions.

Existing communication capabilities allow one to access the subconscious of large groups of people for each person who has access to electronic communications to get answers to his/her questions from the collective unconscious.

As the continuation of experiments in aforementioned literature we use an internet and developed mobile application as the mediator instead of computers. We use images to simplify access to specific information, which eliminates the side noise of the conscious mind.

Combinations of the impulses arising in the brain of the individual connect through the image with another individual.

The brain of the person receiving the image reproduces the same combination of impulses connected with this image.

Thus by means of hyperinteraction we observe and utilize wisdom of crowds under certain conditions for the purpose of research. The decision made by a certain group collectively causes more trust. However, the rule of a simple majority is applicable if it satisfies four conditions: anonymity, neutrality, certainty and a positive response [17], [18].

Meanwhile, it appears that society predominantly consider consumption to be the main importance and consequently the main moral value. Due to Baudrillard consumer society is outliving itself from within [24].

We envision that aforementioned phenomena B2B interface, wisdom of crowds, collective unconscious, intuition and noosphere [25] along with the blockchain and AI will eventually have a profound impact on the social structure of our civilization and allow us to build a community with fair socioeconomic relations which will replace excessive consumption.

We believe that creation of Decentralized Autonomous Organization, on the base of suggested Platform with so called “Asymmetric access to the subconscious”, using two independent communication channels - the Internet and Noosphere will allow us to build a scalable socioeconomic model with democratic principles where the value is an individual.

The platform's performance has been experimentally tested in betting on football matches. The results of the experiment were compared with the coefficients of bettors. For filtering noise and software bots out the obtained results were processed using the ML algorithms, mathematical models and validating questions. The mathematical model that determines the quality of respondent responses is based on the probabilistic approach of the Machine Learning algorithms (Bayes algorithm). For the analysis of data and modelling of various phenomena (psychological, social, behavioural), the algorithms of deep neural networks are used. The result of the treatment was a statistically reliable result, comparable in accuracy.

For the purposes of research a mobile application (IOS/Android) was developed to make the barrier between the conscious and the unconscious more transparent. Just looking beyond this barrier, it is possible to obtain genuine

information, free of the influence of frames set by society and consciousness. For this purpose we hide the question from the mind behind the screen of the picture. The picture is not simple, it is "drawn" by the mind of "Prior" (the person asking the question) by the help of the mobile application. We have developed and tested one of the methods of "drawing". The search for more effective methods is one of the objectives of the ongoing research.

As a result of the analysis of the questions asked and also the answers received to direct questions in the system, actual and credible profiles of users.

After that, all participants of Platform - owners of profiles are given an opportunity to earn via answering questions in the system and an opportunity to feel that he/she himself/herself, is value and valuable as an individual [26].

II. MODEL OF FAIR SOCIOECONOMIC RELATIONS. COMMUNITY OF DAO

DAO is a decentralized autonomous organization uniting the users of the Platform.

A platform runs on the Private blockchain which is a peer-to-peer-supported, peer-to-peer network and cannot be administered and moderated by third parties.

Member of community (hereinafter referred to as the "Participant") is an individual who has registered on the Platform and owns Tokens (in our study OrisLifeCoin or OLC). All Participants together constitute DAO Community.

OLC Tokens are digital accounting units that are generated and charged by the Platform in the Participants' balance for sustaining the functionality of the Blockchain network, on the basis of which the Platform operates.

To support community, after collecting 72500 ETH in the reserve contract, during the second stage of the Fair Price protocol (FPP), a 0.01% of amount of Public Tokens (in our study Orgon) emission is transferred to the community budget at the time of the exchange of the ETH/ORGN pair.

$$\left\{ \begin{array}{l} ORGN = 0.999 \times ORGN_0 \times \left(1 - \sqrt[1-F]{1 - \frac{ETH}{ETH_0}} \right) \\ ORGN_{DAO} = 0.0001 \times ORGN_0 \times \left(1 - \sqrt[1-F]{1 - \frac{ETH}{ETH_0}} \right) \end{array} \right.$$

ORGN - The number of ORGN tokens,

ORGNDAO - The number of ORGN tokens credited to the DAO account as a commission,

ETH is the number of ETH,

F is the reserve ratio,

ORG0 - the amount of Orgon in circulation,

ETH0 is the amount of ETH in the reserve.

The commission rate of ORGNDAO is 0.001% in 24 months can be changed by the collegial decision of

community. The commission is credited to the address community and the first 24 months are spent according to the financial plan. After 24 months, the decision on spending takes DAO.

In order to become a member of DAO, it is necessary to install and run the software. At the first start, an individual gets the address of a private blockchain and the opportunity to put questions to the vote and vote on the decisions of the DAO. Decisions are made by a majority vote in the presence of a quorum.

Voting on decisions is made with the help of OLC. OLC is credited to the address of the participant for maintaining the work of the private blockchain. The amount of enrolment is determined by:

- 1) the time of active work on DAO;
- 2) the percentage of supported information;
- 3) the lottery coefficient of decentralization, providing protection against monopolization of the blockchain;
- 4) the mechanism of addressing the collective unconscious through asymmetrical access to the subconscious.

The first 24 months are the rules of a self-regulating organization with key parameters installed at system start-up. Later, changes in the key parameters of the rules are made through the voting process.

III. A MODEL OF INTERNAL FINANCIAL RELATIONS AND FPP PROTOCOL

The term Orgon was first introduced by V. Raykh in the middle of the 20th century. Orgon means life energy. The basis of the Platform is the value or user profile information, which in fact has to be a central aspect of any activity carried out in the world. At present, all commodity-money relations are set so that a person feels himself a cog in a large, in itself moving, process of endless consumption. And our attempt is to change this situation by showing that an individual is valuable just because of his/her individuality which is characterised by means of user profile information in the Platform.

The Platform is supported on the base of internal circulation of values, individual's information circulates with Orgon. The value inside the Platform is Orgon.

Worthnoting that Platform is sustained 90% by individuals and applications in Platform provide such an opportunity. The remaining 10% are raised during the crowdsale.

Bancor protocol was modified and FPP (Fair Price Protocol) or JPP (Just Price Protocol) with the smart contract was developed for the purposes of financial transactions [27].

This section describes all stages of Fair Price Protocol Smart Contract may go through during its life span as well as all valid transitions between them. Below the stages shown diagrammatically and details of developed smart contract can be seen in [27]:



Fig. 1 Fair Price Protocol

There is an understanding that the statistical distribution of the percentage of correct answers to questions of different scales, in different geographical areas will be uneven. To increase the accuracy of the answers, segmentation of groups of “Linkers” (participants who answer the questions) should be carried out according to the initial parameters of the question.

The value – individual’s profile, as experiments have shown, also has a significant effect on performance, therefore, the test results are used in segmenting filters.

The cost of the answer statistics for “Prior” depends on the number of unanswered questions. The more questions are not answered, the greater the amount necessary to pay to get the result. Also, the cost is determined by the quality of the question and, correspondingly, by the necessary number of answers to it. Priors provide an information of the event which came true and gets a reward for that.

Linker's revenue is determined by various factors, such as Linker's "Karma", the more often correct answers are given by Linker, the higher the karma, the more expensive are answers, and vice versa.

Periodically, for each Linker a personal rating is calculated, on which the rate of compensation for the response will depend. The rating will depend on the correctness of provided answers.

After the actual answer became known, the system calculates how accurately the Linkers gave their answers. The ratio of correct and incorrect answers gives a rating coefficient [28]. In the following table coefficients are demonstrated:

Correct/Incorrect	Coefficient
50/50	0,00
51/49*	1,00
55/45	1,78
60/40	3,16
65/35	5,62
70/30	17,78
80/20	31,62
85/15	56,23
90/10	100,00

For example, if Linker regularly falls into a 50/50 ratio, then this is either a software bot or a person who does not use his intuition. Accordingly, the correction factor and its earnings tends to zero. For ex. if Linker fell into the category 75/25, the raising factor is 17.78. An important observation is that, if a Linker regularly gives wrong answers then intuition is on, but answers need to be inverted. Personal cycles of activity and polarity of the subconscious is calculated for each Linker, and according to the results of calculations, reliability coefficients are set.

All financial relations between Linkers and Priors are periodically updated during the testing of the mobile application.

It is clear that it is necessary to constantly develop and implement various techniques that improve the quality of the Linkers' answers and increase their interest in participating in various surveys and studies.

IV. METHODOLOGY, PLATFORM, PUBLIC AND PRIVATE BLOCKCHAINS

A. Intuition on Mobile application, experimental data and its analytics.

The mobile application is on the one hand - is a scientific experiment in the field of social engineering, and on the other hand - as a result of its use unique user profiles are formed, and could serve as a new tool for business purposes, market predictions and investigations in diverse scientific fields.

It is the correct use of unique user profiles sustains the life of the Platform and one of the objectives to explain users of the mobile application that the basis of their future earnings is thoughtful, sincere and correct behaviour in the application. Using various methods of adjusting intuition in the application, answering questions and asking questions, each user gets the opportunity for better self understanding, specify true needs and be useful to society by taking part in numerous studies and be remunerated for his/her unique personal profile.

We developed a mobile application for the purpose of experiment, called it Oris (Oris – temple from Latin) and it is supposed to allow one:

- 1) adjust intuition by going through several types of settings chosen at will;
- 2) answer the question of any other person in coded form, and get paid for it;
- 3) ask a question of interest by paying for it;
- 4) to pass the test, answering the direct questions of the system, and to form a profile which ultimately gains value.

Mobile application allows one to earn using information

from his profile.

In the mobile application:

- 1) "Prior" pays to get an answer for the asked question.
- 2) "Linkers" receive payment for answering the question (a lot of Linkers should answer one question of Prior).

The answer to "Prior" is provided in the form of statistical distribution of the responses of Linkers (for example: 37% - "YES", 63% - "No").

When an event comes Prior indicates the answer, which became a reality.

Linker is rewarded by Orgon for answering questions in an encoded and direct form, as well as for the ability to analyse the information of his unique profile generated during his work in the application.

Prior - anyone who wants to ask questions to Linkers may need to analyse the information of unique Linkers' profiles for example for the purpose of conducting market research, sociological surveys and understanding the market conditions.

In order to ask a question, a Prior needs to go through a sequence of screens (Fig. 2) that helps him correctly implement this action. In the application there is a set of standard questions that are available under the "Templates" button. To obtain forecasts for the outcomes of sports matches, the program contains lists of matches. In the example below, the Prior selects a match of interest, indicates the type of question "Yes/No" and indicates the date of the match. The date is needed to ensure that this issue is not shown to the "Linkers" after the event.

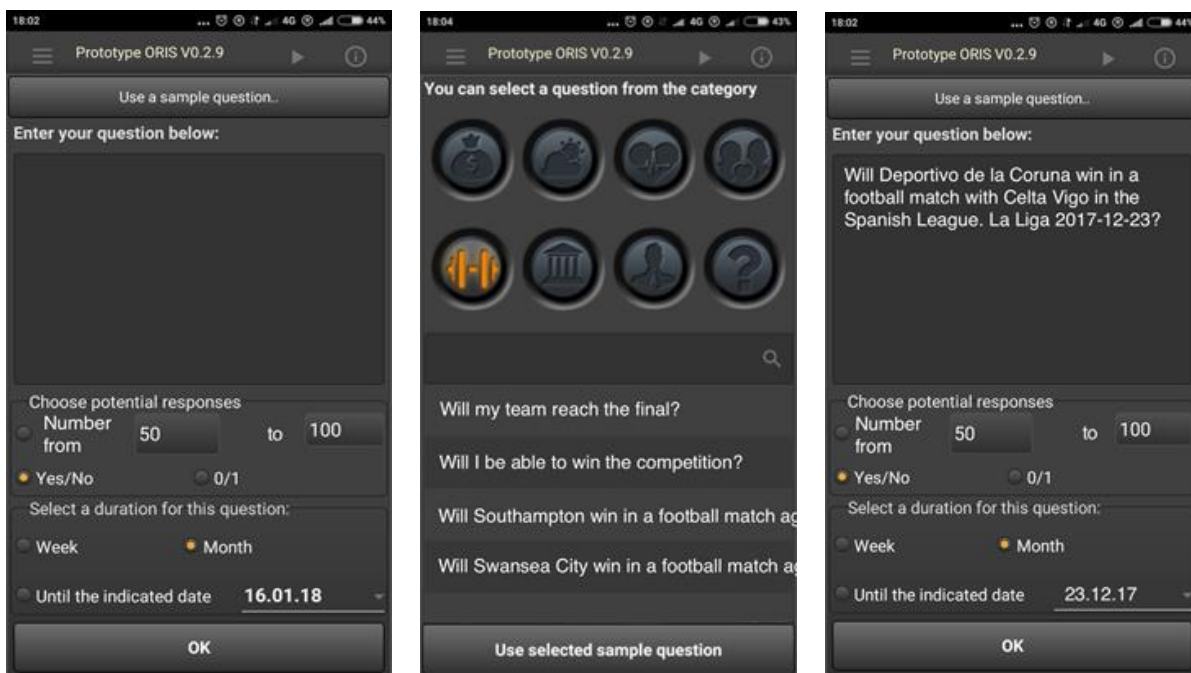


Fig. 2 Asking a question

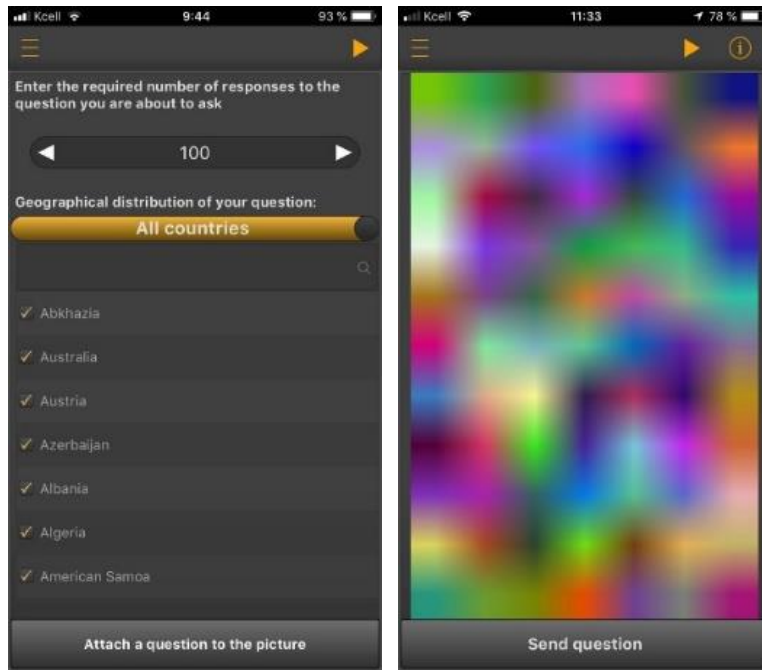


Fig.3 Settings and tying the question to picture

Several settings like number of answers and country (Fig. 3) are specified, then the question is “tied” to the picture and sent to the Linkers.

Before answering Prior’s question Linker is asked to go

through a special tuning of the voice of own intuition and pass a mini test - 10 attempts to indicate where the zero is hidden (Fig. 4). The number of passes is not limited. The answers take into account the average for all attempts.

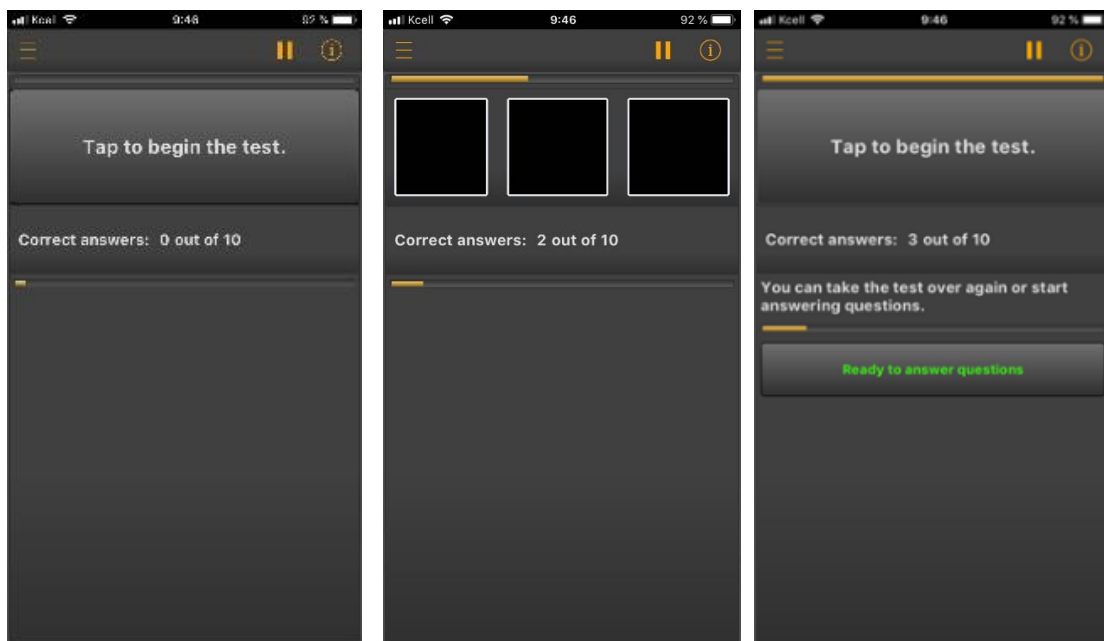


Fig.4 Intuition tuning

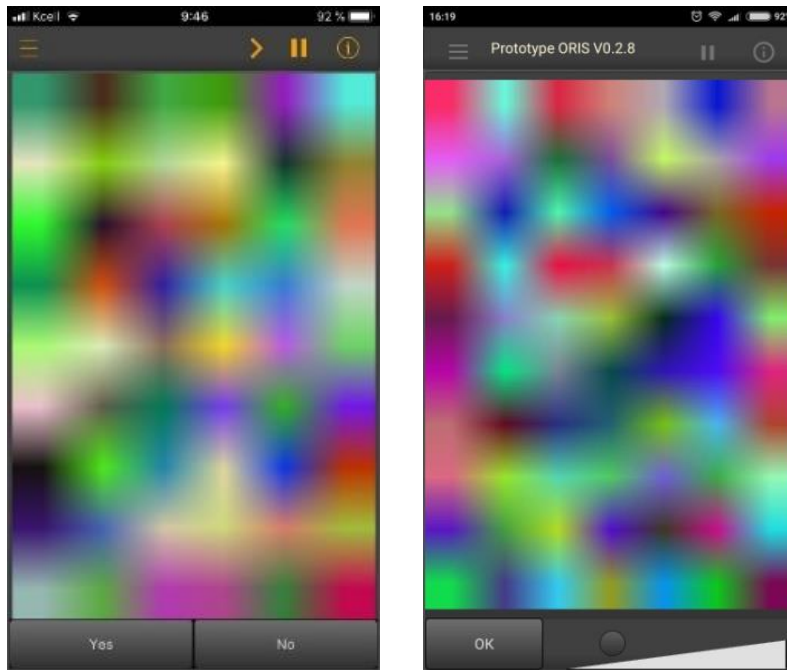


Fig.5 Answering a question

The images show two different types of questions:

- 1) Binary - "Yes / No"
- 2) How many

Accordingly, the Linker either selects the "Yes" or "No" button, or moves the cursor to the right/left and leaves it based on his inner subjective sensation (Fig. 5).

My Account displays list of questions as shown in Fig. 6:



Fig.6 List of questions

In this case, a prediction was made in the form of a binary question, "Will Manchester United win in a match with Chelsea. EPL 25/02/2018?"

Table II shows an example of one of our studies on the outcomes of sports (football) matches to identify more accurate forecasts using an application in comparison with the results of bets.

TABLE II
COMPARISON WITH BETS

Questions about matches	Results of application		betting coefficient	Outcome
	with filter	without filter		
Will Rostov win Rostov-SKA Khabarovsk football match in the Russian Premier League 2018-04-15?	78/22 +	61/39 +	77.5% x 6.8%	Rostov-SKA Khabarovsk 2:0
Will Manchester United win the Manchester United-Chelsea match in Premier League 2018-02-25?	45/55 -	63/37 +	40.3% x 29.2%	Manchester United-Chelsea 2:1
Will Real Madrid win a football match between Real Madrid and Girona in La League 2018-03-18?	60/40 +	65/35 +	83.3% x 6.2%	Real Madrid - Girona 6:3

The results show that the application provides reliable/close to the reality answers without analysis of matches and with the help of the collective unconscious. Also worth noting the many years of experience of bookmakers, analysts in this field and the possession of additional information from around the world, where these coefficients are built for bookmakers and as an argument that using our method of contacting Wisdom of Crowd, we can get reliable answers in any sphere, except for sports, where, for example, bookmakers or professionals can not make an accurate forecast and/or the probability of an erroneous answer is very high. Proceeding from the above, we see that the experimental data obtained via application satisfies the theory of the collective unconscious and is actually effective and confirms large number of studies carried out on intuition, archetypes, the collective unconscious and Wisdom of Crowd, B2B interaction.

We use validated questions and ML algorithms (especially the Naive Bayes algorithm) for modelling above processes.

$n_1, n_2, n_3, \dots, n_k$ - parameter, w_j - word/combination of words, P - probability

$$P(n_k) = \frac{1}{k}, \sum_{i=1}^k P_i = 1, P(n_k) = \frac{1}{k} < 1 \quad (1)$$

Let Probabilities of texts by n_k be given as $P(w_j)$, where

$$\begin{aligned} 1 \leq j \leq i \\ P(n_1, w_j) &= P(n_1) \times P(w_j), \\ P(n_2, w_j) &= P(n_2) \times P(w_j), \\ P(n_3, w_j) &= P(n_3) \times P(w_j), \\ + \quad &\vdots \\ P(n_k, w_j) &= P(n_k) \times P(w_j) \\ \sum_{i=1}^k P(n_i, w_j) &= P_{normal} \end{aligned} \quad (2)$$

$$\begin{aligned} P(n_1/w_j) &= \frac{P(n_1, w_j)}{P_{normal}} \\ P(n_2/w_j) &= \frac{P(n_2, w_j)}{P_{normal}} \\ &\vdots \\ P(n_k/w_j) &= \frac{P(n_k, w_j)}{P_{normal}} \end{aligned} \quad (3)$$

B. Private blockchain, Platform, Public Ethereum Blockchain.

A private blockchain is necessary for DAO, for storage of questions, responds, impersonal user profiles and service information. To increase the level of safety in records in private chains, the checksums of its blocks will be recorded in transactions of public blockchain (ETH, EOS, Waves ...). This will allow carrying out public audit of data without revealing the data itself. Also, a bunch of private blockchain with the public will enjoy high speed. A private blockchain with published APIs will be the kernel of the Platform. To protect against the monopolization of a private blockchain, lottery mechanisms will be used.

We propose a Platform which would consist of several mobile APPs and DAPPs for the purpose of research and if successful foster activity of DAO.

A service platform standardizes and implements API functions for accessing information in chains.

One of the risks of the system is the invasion of bots that answer questions. No subconsciousness, solid random numbers. The system fights too.

Public Ethereum Blockchain is used for mutual settlements. The Orgon utility token is compatible with the ERC-20 standard. Means of internal financial relations is Orgon based on ERC-20 token Ehtereum.

C. Comparative Analysis with Existing Platforms.

Currently, the market for predictions in the blockchain is represented by such projects as Augur, Gnosis, Stox, Aeternity, Endor.

The principle of Augur's operation resembles the trading of virtual shares: there is a prediction maker (market maker) that determines possible outcomes - "shares", their shares and the amount of commission for betting on these outcomes. The second type of user is engaged in the fact that he/she buys shares or sells them in the domestic market, while the third type of users - "oracles" - express their opinion about the available options for the outcome and get money from commissions for their work.

Gnosis, like Augur, provides the same capabilities for users, but one of the differences between these platforms is that the solution is rendered by an "oracle". In addition, Gnosis allows to specify an auxiliary token when setting up a "prediction market", the parameters of which can be changed in the future, thereby allowing to make more markets from "possible outcomes" and so on.

That is, both Gnosis and Augur, as well as the Stox project published in August under the predictions imply something close to the rates and disputes already familiar to the society, adding new roles and making all relationships as honest as possible.

"Decentralized Oracles" (or "smart machines") Aeternity can predict the execution of a smart contract, taking into account external phenomena from the real world. In fact, Aeternity is not a platform for predictions, because it uses oracles to process smart contracts.

But in the future, it is possible to create a predictable

outcome of the application's events on the platform. The difference lies in the fact that due to our data there is no application which uses wisdom of crowd phenomenon and B2B hyperinteraction.

TABLE III
COMPARATIVE ANALYSIS OF EXISTING PLATFORMS

Platform	Oris	Gnosis	Augur	Æternity	Hivemind/ Truthcoin
Feature	Platform and social network mobile apps	Platform for creating prediction markets	Platform for prediction markets	Prediction platform	Platform for creating prediction markets for Bitcoin users
Decentralization	Yes	Yes	Yes	Yes	Yes
Scalability	Yes	Yes	No	Yes	
Ecosystem	Yes	Yes	No		
Use of profiles	Yes	No	No	Yes	No
Improvement of service quality over time	Yes	No	No	Yes	Yes
Voting for answers	Yes	No	Yes	No	Yes
Multidimensional prediction markets	Yes	No	No	Yes	No
Creation of apps on the platform	Yes	Yes	No	Yes	Yes

We use validated questions as well as ML algorithms for identifying the most correct and honest answers, devoid of bias and stereotyping, among a bunch of other answers.

CONCLUSION AND DISCUSSION

We believe that this study and its further development will have a profound positive impact on modern society.

These are the possible researches and developments in this field:

- 5) to develop a blockchain with higher transaction capabilities, to serve a Platform,
- 6) to implement existing or develop a new postquantum algorithm which could replace ECC and RSA due to the danger of quantum attacks,
- 7) use existing or develop new quantum deep learning algorithms for data analytics which could outperform existing classical ML algorithms,

Authors do realize that other techniques of B2B interaction can be developed and current state of the research is far from completion as well as mobile application is far from perfect.

These are the possible outcomes of the Platform which is a collection of decentralized networks, including the services, programs, providing the functions necessary for fostering activity of the fair community:

- 8) the research in a new light opens the possibility to make analytical forecasts and enhance prediction markets

techniques on the base of standard, already common mechanisms of addressing to:

Collective unconscious (collective unconscious);

Wisdom of crowd;

B2B hyperinteraction;

Noosphere (according to the theory of V.I.Vernadsky).

- 9) The platform allows both business users, scientists and non-professionals to receive quality answers to the questions they are interested in, to conduct a marketing or research within a few hours. Such opportunity was available only to companies from the Fortune 500 list.
- 10) the data is depersonalized and encrypted, and stored using blockchain technology. The participant, in case of consent to access their private profile information, receives remuneration from the interested party directly, bypassing the intermediary.

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