



CRYPTOMIND

Global decentralized solution for teaching artificial intelligence systems and their usage

- Solution of the problem of insufficient computing capacities problem
- Motivation of miners on the solution of useful tasks
- The global platform for exchange of models and datasets
- The AI specialists market

cryptomind.global

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1. What is Cryptomind

1.1. Project ideology

There is a boom of mining cryptocurrencies currently. Hundreds of thousands of CPUs, video cards and specialized devices are constantly sorting giant numbers and calculating hash functions from them. This works in accordance with the principle of the Proof-of-Work, laid down by the founder of Bitcoin Satoshi Nakamoto.

But these calculations matter only for the systems of cryptocurrencies. They don't bring real benefit to mankind, although the volume of the electric power spent for mining is already rather big in planetary scale.

However, nowadays artificial intelligence systems are developing rapidly. The related technologies exert huge impact on mankind life. This industry grows dynamically integrating into all fields of knowledge, while demanding larger and larger computing power.

One more problem is the lack of the global free platform that will allow to exchange complete decisions in the sphere of artificial intelligence, to sell and buy them and to look for experts. Also, there are no distinct rules of copyright protection for the AI developments.

We are creating a global system based on decentralized Blockchain technologies which will allow to satisfy needs of AI developers, to use computing powers of miners and to buy complete decisions, including data, models, labor and computing capacities, for any business.

1.2. Neural networks is the technology of the future

Neural networks is one of the most perspective directions in development of artificial intelligence systems. It attempts to imitate human nervous system:

- As well as the human the neural network is capable to act on the basis of the previous experience, and to study on its own mistakes.
- The neural networks imitate structure of a human's nervous system: they consist of a set of separate computing elements («neurons»).

The main areas of use of the neural networks are forecasting, decision-making, recognition of images, optimization and data analysis. In practice, this means implementing various tasks like:

- diagnosis of diseases based on results of research;
 - autopilots for cars;
 - recognition and classification of objects on images;
 - the self-training systems of the simultaneous translations from any languages;
 - creation of works of art
- and many others.

For further development of artificial intelligence technology, developers need extensive computing capacities. Cryptomind is a system where miners and specialists in neural networks development will be able to find each other.

1.3. Exchange of technologies in the field of neural networks

Business and AI experts need a platform on which it will be possible to find AI solutions.

1. There is no common market of trained models and datasets.
2. There is no independent platform for exchange of best practices.
3. There is no system of copyright protection.
4. There is no system of motivation for authors of the advanced developments.
5. There is no general labor exchange where specialists, the teams and the companies working in the field of AI could offer and advance the developments and services.

Many solutions are scattered all over the world in the form of GitHub repositories or images in Amazon, Google and Microsoft storages. These corporations invest huge amounts of money in artificial intelligence systems development. They even produce some open-source frameworks. But considering huge resources of these corporations, this situation gradually leads to monopolization of the market of artificial intelligence technologies. All data, models and data sets stored on servers of Amazon, Google and Microsoft, can be used in their own interests. Control over this sphere means control over many branches of future economy.

Cryptomind is a free and independent global platform for exchange of models and datasets accompanied by the system of encouragement and copyright protection which will accelerate development of artificial neural networks technologies. Thanks to the decentralized technologies and the principles of web development in the sphere of artificial intelligence it will be available to the widest range of users and will not become the property of corporations-monopolists.

1.4. Differences from the competitors

We have some common principles with SONM, Golem and iEztec projects, and we are open to any cooperation with their remarkable teams. However, our project has a number of advantages:

- As authors of SONM tell themselves, launching of their distributed global computer is a long-term goal. We intend to start Cryptomind as soon as possible (see RoadMap). To achieve this goal we plan to launch not an abstract computing platform but start with

existing frameworks including Tensorflow, CNTK, Caffe, Torch and others. Our clients will be able to use Cryptomind right after it starts.

- We create not just the decision for calculations, but we are going to solve more global problem: creation of the independent decentralized ecosystem for the artificial intelligence, the market for Blockchain based solutions.
- We propose the solution which will allow miners to mine any cryptocurrency they want and to make calculations for Cryptomind only when there will be an inquiry from Cryptomind network. When calculations are finished, the miner will automatically return to mining of his usual cryptocurrency.

Thus, we expect to enter the market from the very beginning and to satisfy the needs of members of both the AI and miners communities as fully as possible.

1.5. Advantages of the Cryptomind network

Advantages for miners: higher profit from mining and real benefit of calculations for promptly developing technologies.

Advantages for developers in the sphere of artificial intelligence: reliable, fast and easily scalable environment for creation of artificial neural networks, exchange of models and data sets; an opportunity to earn money on successful decisions.

Advantages for business: a cheaper and more reliable way to launch applications, using artificial neural networks.

Advantages for investors: the price of the token will be supported by increasing market needs; the demand for tokens will be ensured by accessibility of services related to computing neural networks for end users and developers.

2. How Cryptomind Works

2.1. The process of the solution of a computing task

Client node can create and broadcast request for carrying out calculations in the network, obtain the data and produce a result via API.

Mining node is a computing unit, in other words it is a computer, which is the node of the Cryptomind network. It can have one or more video cards suitable for computation installed. In case there are no suitable video cards on a mining node, all computation will run on CPU.

Work with neural networks comes down to two tasks:

Training of neural networks

1. The client node broadcasts the message about a training task.
2. Mining nodes, which are ready to perform the task, send a ready signal.
3. The software selects nodes able to compute the task quicker. Developer can select from the data sets available on a network or upload his own using the IPFS technology (InterPlanetary File System, allows integration of file systems on different devices in one with use of the uniform addressing).
4. The training process starts.
5. The client node receives the trained model.
6. Miner earns reward in Cryptomind tokens.

Using Neural Networks.

1. The client node broadcasts the message about a task.
2. Mining nodes, which are ready to perform the task, send a ready signal.
3. The software selects nodes able to compute the task quicker.
4. If there is no necessary model on the chosen node, it is downloaded from the network.
5. The computation process starts.
6. The client node receives result of computation.
7. Miner earns reward in Cryptomind tokens.

2.2. The principle of selecting the mining nodes for calculations

1. There will be a permanent statistics analysis of previous uses of a network (task type, framework, operating time, used equipment, characteristics of data sets etc.). Computing task preference will be given to nodes with maximum speed of information exchange not only with the client, but also among themselves (for example, the mining rigs located in one local network).

2. Constantly updated **rating of the mining nodes** that will form from two indicators:

- **automatic** will be based on the processing of statistics and small control tasks intended to check node's honesty;
- **manual** will be calculated from user rating of performance on specific tasks.

Node's honesty at execution of a task (whether miner really performs a task) will be controlled by closed part of the mining software in which special protection will be provided. Periodic execution of small test tasks will be used as an additional control measure.

We plan to use all power of technologies for BigData analysis to constantly analyze and optimize network.

2.3. Options for storing trained models and datasets in the network

Free public access. Model/dataset will be published in the catalog on project's website and will be stored in the public distributed network based on IPFS technology. It will be available to all users of Cryptomind.

Paid open access. For each use of his model/dataset, the owner will receive a fee determined by him in Cryptomind tokens.

Closed access. The owner will access a model/dataset stored in the network using a private key, which can be shared by owner's discretion. Files of a model/dataset will be encrypted so it would be impossible to use them without the key.

Removal from the system. The owner will be able to back up a model/dataset on the local or cloud storage and remove it from the system.

2.4. Rating of the trained models and datasets

A rating based on the blockchain technology will be implemented for all trained models and datasets. It will be calculated according to two parameters:

- Usage statistics,
- Rating set by users.

Owners of the models and datasets rated top in monthly chart will receive tokens from special fund of the Cryptomind system. This will effectively distribute the most successful models and datasets, motivate users to share good models and developments with the community. The system encourages attitude towards models and datasets as an intellectual property and guarantees reward to the author.

2.5. Frameworks and programming languages

Frameworks list (to be extended):

- Tensorflow,

- CNTK,
- Caffe,
- Torch,
- Theano

We understand that not all tasks connected with artificial neuronal networks can be solved by the means of a limited number of the frameworks. For the solution of wider range of computing tasks we plan to start the global cloud supercomputer using capacities of miners according to the technical and financial principles of the Cryptomind project. In the beginning we plan to use OpenStack technology which allows combine all computing capacities of miners (in theory it is possible to even use computing capacities of the mobile devices).

Supported programming languages depend on a framework. In general Cryptomind will have libraries for common programming languages:

- Python
- Java
- C/C++
- C#

Also we will implement an API to interact with the Cryptomind system in any other way.

2.6. Software for miners

The software on mining node's side will be deployed in Docker containers. They will contain the current versions of Tensorflow, CNTK, Caffe, Torch frameworks with necessary environment. This approach will allow us to support various types of hardware: we will be able to provide containers with CUDA support for Nvidia cards owners, and containers with OpenCL support for AMD cards owners.

We want to be sure that miner's hardware has constant load so we develop a special software that will switch between mining of traditional cryptocurrencies and Cryptomind's tasks in case there will be lack of latter at the initial stage of the project.

When the mining node receives a task from Cryptomind network, it signals about readiness. If it is selected to process the task, the current mining of cryptocurrency will stop and one of the computational containers will be deployed.

If for some reason the node hasn't finished a task (the miner has stopped the program, the node has rebooted or has lost connection with the network), there will be another attempt. If the node will not perform a task repeatedly, the task will be redirected to another miner, and the current node will be lowered in rating.

We plan to release the software for all major operating systems: Windows 7, 8, 10 32/64, Ubuntu, Redhat, Debian and others will be supported. We also plan to cooperate with teams creating Linux distributions for mining purposes.

2.7. The scheme of Cryptomind's workflow for the end user

1. **To register the user** must provide valid e-mail address and choose a nickname and a password to access his personal account. The user will not have to provide any personal data.
2. After the registration the user receives two keys: **an open (public) key** – the user's address in system; **the closed (private) key** to access API, which can be used without logging into your personal account on the site.

3. Miner downloads and installs special software.

It starts the test task to check that installation was correct and estimates the approximate speed of the mining node.

4. If test routine was completed successfully the node will be registered as available for tasks assignment.

5. Mining software can be linked to another cryptocurrency mining software. This will allow to switch between Cryptomind network tasks and common mining if there are no tasks from Cryptomind.

3. The developer looks through the current price for computation unit of a miner in his account and gets CTM at some exchange or directly on the website.

4. The required model or dataset can be chosen from the corresponding catalogs.

5. The developer chooses a task, and the system calculates its approximate cost.

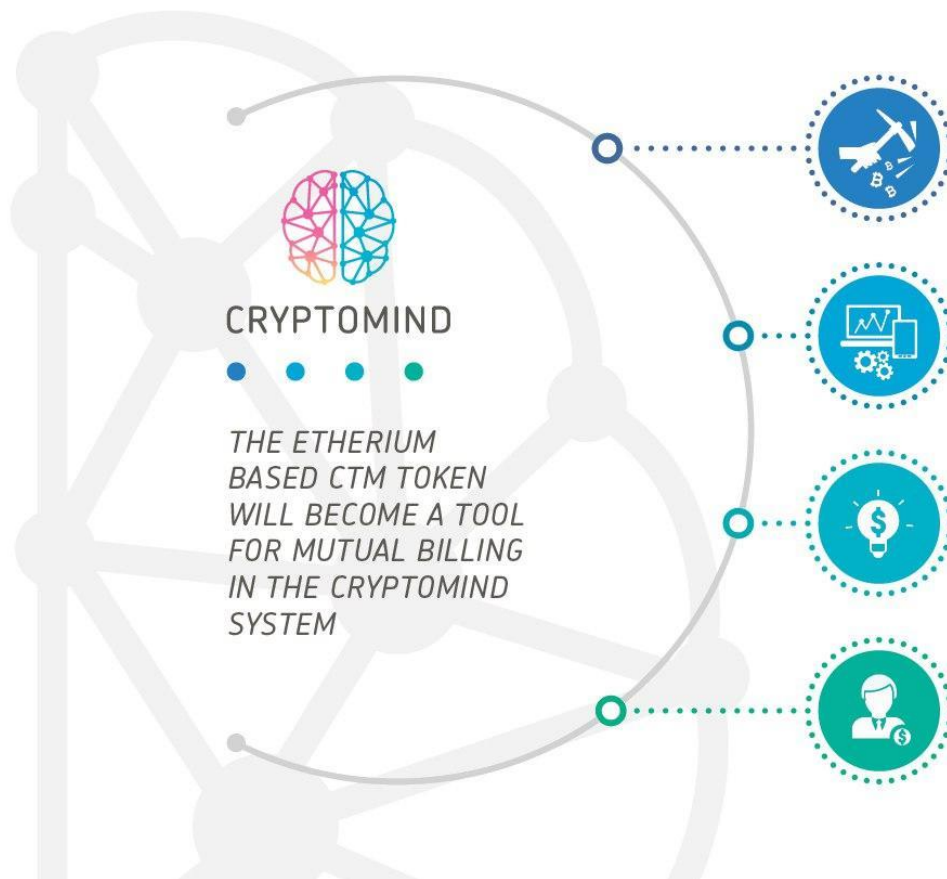
6. Tokens are withdrawn from the account of the developer and transferred to the special account where they will be stored till the computation ends.

7. A miner gets tokens when the task is finished.

If the user wants to post a Cryptomind model or dataset on-line, he determines its price himself or shares it for free.

3. Cryptomind Tokens

3.1. What are they needed for?



Fundraising and Cryptomind tokens (CTM) release is intended to finance marketing and advertising of Cryptomind system as well as development of blockchain that will serve as a base for Cryptomind system. CTM will be used as a payment for calculations, to access models and datasets at the Cryptomind network, to pay experts and teams. Any tokens owner will be able to use them as a payment for tasks computation, and to buy trained modules and datasets.

There will be 100 million CTM emitted. 15 million CTM will be reserved for team and partners.

3.2. Ways of receiving CTM in Cryptomind network

CTM can be received:

- by trading it for BTC, ETH, WAVES and other cryptocurrencies or USD, EUR and RUR at the internal exchange integrated in the wallet;
- as payment for the computing tasks connected with artificial neural networks at the Cryptomind system,
- by charging use of the models and datasets placed in paid access.

The top three models and datasets in rating on each subject placed in the Cryptomind network for free will be awarded with a token for the contribution to development of technologies in the sphere of AI development.

As the token price will change on the influence of external factors after it hits the market, one conventional computational unit will have a floating rate in relation to CTM. It will be calculated from a ratio of demand for a mining services.

3.3. Market size and the formation of profit

The price of a token will be supported by the increasing requirements of the AI systems market. CTM's relevance and price growth will be backed up by the fact that Cryptomind provides more cheap and more convenient services in neural network computation for both the developers and the end users, than the existing large players in the market can offer.

The profit of the company will be formed from the fee from each transaction carried out in the system.

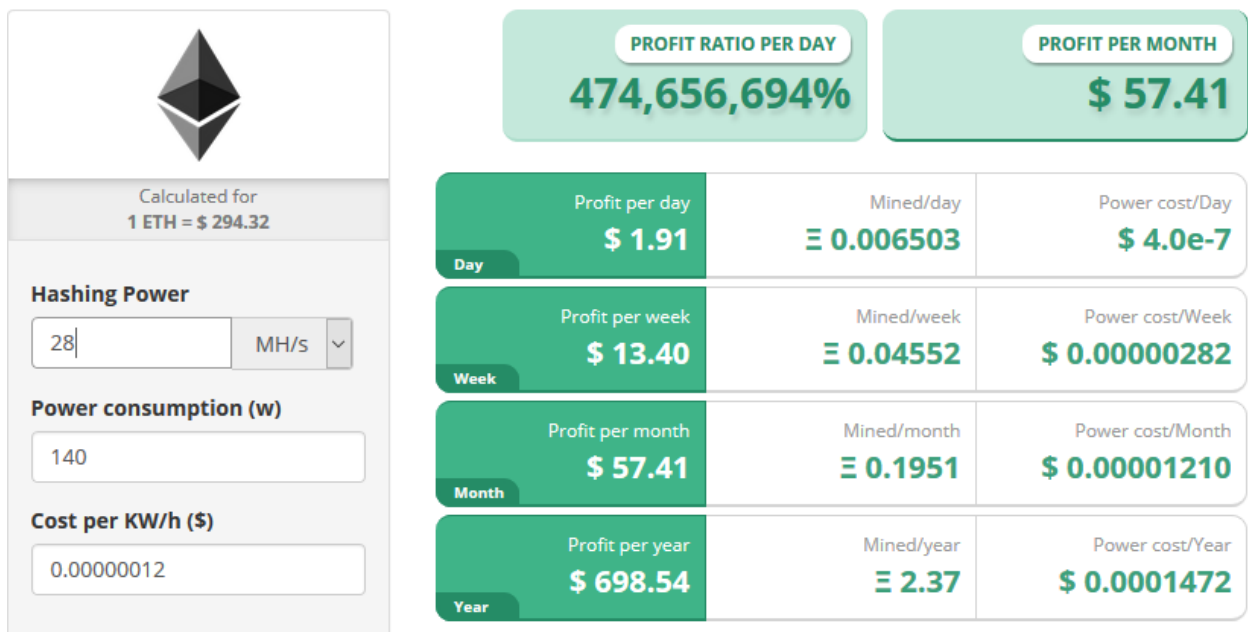
According to International Data Corporation, the size of the market of AI systems will reach 12,5 billion dollars in 2017 and it will exceed 47 billion dollars by 2020 thanks to the increasing application of such systems.

However, there are no affordable computing capacities of decent productivity in the market. For example, these are the prices for Amazon instances with GPU:

Name	GPU	Virtual CPU	RAM (GB)	Throughput ability	The price for an hour *
p2.xlarge	1	4	61	Hight	0,900 USD
p2.8xlarge	8	32	488	10 Gbit/s	7,200 USD
p2.16xlarge	16	64	732	20 Gbit/s	14,400 USD

The simplest instance costs nearly a dollar per hour. It is expensive even to profitable projects, not to mention small startups. We ourselves have stumbled upon this issue developing service for image processing based on convolucional neural network. It was impossible to find acceptable solution for a reasonable price for our case.

As of September 11, 2017 the owner of one video card can earn less than \$2 a day if he will mine Ethereum.

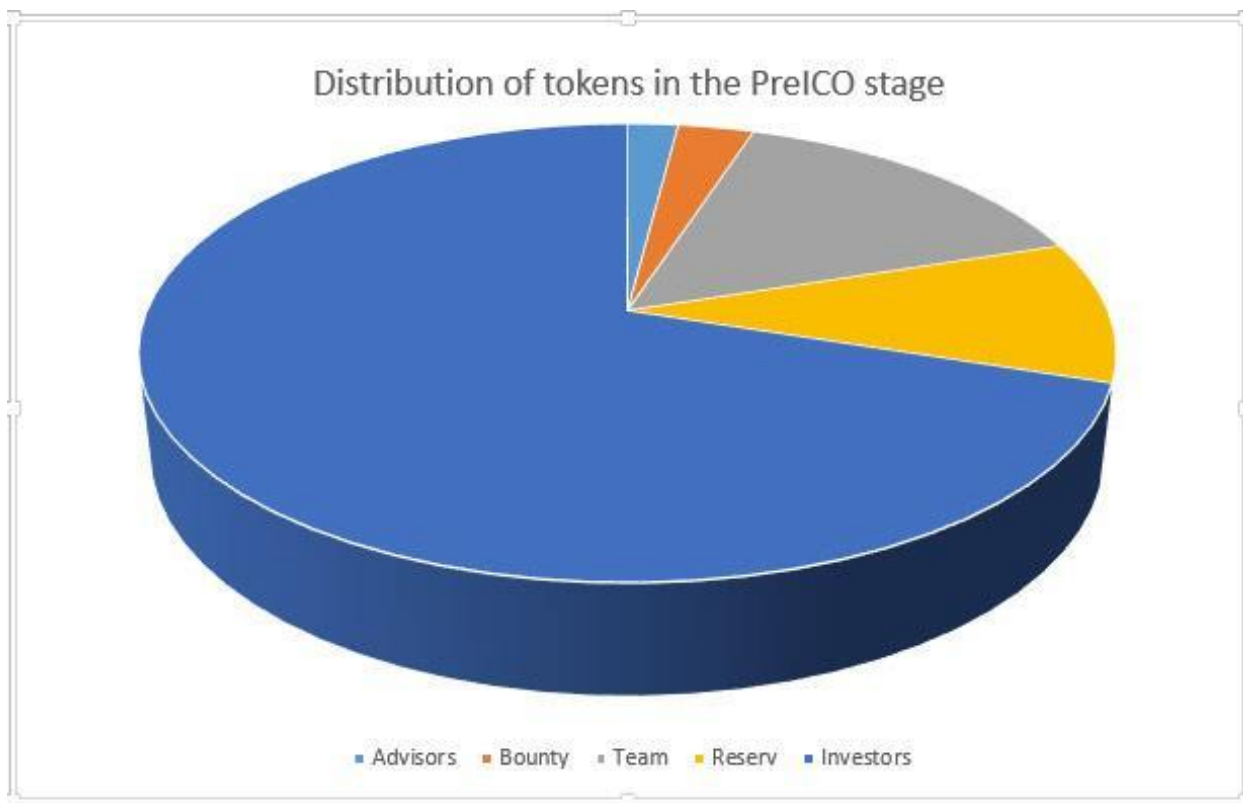


At the same time a virtual computer in Amazon cloud costs \$0.9 per hour, or \$21.6 per day.

Thus, today we can offer computing capacities ten times cheaper, than cloud decisions provided by the large companies. When Cryptomind network will run as we expect to see the profit not less than \$20 000 000 in 2019 and \$30 000 000 in 2020.

3.4. Stages of carrying out ICO

Stage	Date	Number of CTM	Cost of 1 CTM	Cost	Tasks
Seed round	October 12-20	100 000	0.001 ETH	100 ETH	1. Preparation of public launch of the project, 2. Marketing, 3. Preparation ICO seed-round
Pre ICO	November 11-31	2 000 000	0.0002 ETH	400 ETH	1. Development of a blockchain on the basis of the Ethereum code, 2. Development of the wallet, 3. Start of a mining, 4. Marketing of a product
ICO	February 2018	10 000 000	0.005 ETH	5000 ETH	1. Global marketing, 2. Creation of sales department



Advisors	2
Bounty	3
Team	15
Reserv	10
Investors	70

4. Project development stages

September 2017	Early development
October 2017	Pre-sale tokens CTM
November 2017 – January 2018	<ul style="list-style-type: none"> ● Preparation to ICO ● Marketing campaign ● Finishing beta-version of the software ● Completion of the smart-contract
February 2018	<ul style="list-style-type: none"> ● Publishing the beta version ● ICO campaign start

5. Team

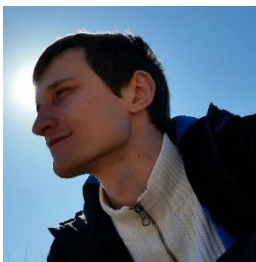
We are a team of like-minded people united by the goal of making the world a better place.



Dmitriy Vavilchenko, Founder

Software developer since 1997. General Director of OOO "Assistant -Analytika" since 2012. Field of work - development of business intelligence systems. Blockchain enthusiast.

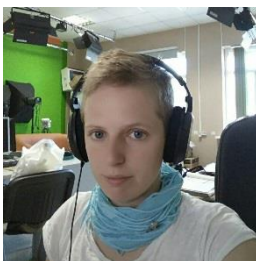
<https://www.facebook.com/profile.php?id=100001864160593>



Maxim Budilov, Mining specialist

Seven years of experience in the leading telecommunication companies in Russia. Linked to the crypto currency mining for more than four years.

<https://www.facebook.com/maxim.budilov>



Svetlana Makarenko, PR and Mass Media

Scientific journalist. Coordinator of educational projects. Editor of the magazine from 2013.

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Eugeny Matsokin, CTO

Developer of smart contracts. Ten years of experience in software development in the field of economic processes.

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Gurgen Meliksetyanc, Developer

Experience in the development of applied and system software since 2010.

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Ilya Makarenko, Community Manager

An experienced SEO and SMM expert

<https://www.facebook.com/profile.php?id=100008432042397>

6. Terms and Conditions

This document is for informational purposes only and should not be considered an offer to sell shares or securities of the Cryptomind platform or any other affiliated company.

Cryptomind tokens do not grant the right of control. Owning Cryptomind tokens does not give their holder the right of ownership or the right to property of Cryptomind. While the community's opinion and feedback can be taken into account, Cryptomind tokens do not give their holders any right to participate in decision making concerning the development of the Cryptomind system. Cryptomind tokens can be used to purchase computing power or some AI issues in Cryptomind system.

No guarantee of income or profit

All the examples of income and profits calculation used in this document are given for demonstrative purposes only or for showing industry averages and do not constitute a guarantee that these results will be obtained according to the marketing plan.

Regulatory uncertainty

Blockchain-related technologies are subject to supervision and control by different regulatory bodies around the world. Cryptomind tokens may fall under one or more inquiries or actions on their part, including but not limited to imposing restrictions on the use or possession of digital tokens including Cryptomind tokens, which may slow or limit the functionality of the system or the process of purchasing Cryptomind tokens in the future.

Cryptomind tokens are not an investment

Cryptomind tokens are not an official or legally binding investment of any kind. Due to unforeseen circumstances, the objectives set forth in this document may be amended. Despite the fact that we intend to reach all the goals described in this document, all persons and parties involved in the purchase of Cryptomind tokens do so at their own risk.

Insufficient use

Despite the fact that Cryptomind tokens should not be considered an investment, they can gain in value in the course of time. They may also fall in value if they are not actively used in the Cryptomind system.

Risk of loss of funds

Funds collected during the ICO procedure are not insured. In the event of loss or loss of value, there is no private or public insurance representative whom the buyer could address.

Risk of Failure

It is possible that for various reasons, including but not limited to the failure of business arrangements or marketing strategies, that the Cryptomind system and all subsequent marketing activities related to the funds collected during the ICO procedure may be unsuccessful.

The risk of using new technologies

Crypto tokens, including Cryptomind, are a fairly new and relatively untested technology. In addition to the risks mentioned in this document, there are additional risks that the Cryptomind team cannot predict. These risks may emerge in other forms rather than those indicated here.

Integration

This Agreement constitutes the entire agreement of the parties with respect to the subject matter hereof. All previous agreements, discussions, presentations, warranties, and conditions are combined in this document. There are no warranties, conditions or agreements, express or implied, between the parties, except as expressly provided in this Agreement. This Agreement may be amended only by a written document duly executed by the parties.

Disclaimer of Warranties

You agree that your use or inability to use Cryptomind tokens is solely at your own risk and you remove all responsibility from the Cryptomind team. Since the date of issue, Cryptomind tokens will be sent to you without warranty of any kind, either express or implied, including all implied warranties of commercial value for a particular purpose without violating anyone's intellectual property rights. As some jurisdictions do not allow the exclusion of implied warranties, the above exclusion of implied warranties may not apply to you.