

DIANA : Blockchain Lunar Registry

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1. PRELUDE

“The Internet is the first thing
that humanity has built that humanity doesn't understand,
the largest experiment in anarchy that we have ever had.”

Eric Schmidt (Internet World Tradeshow, 1999) [1]

1.1 The Blockchain Essence

After the huge initial success of the Internet, another step toward autonomy for a world rocked by the global financial crisis brought on by US subprime mortgages was announced in 2008.

In October 2008, Satoshi Nakamoto released his Bitcoin white paper (Bitcoin: A Peer-to-Peer Electronic Cash System) [2], and many developers worked to implement blockchain technology with the goal of emancipation from centralized finance.

If the information revolution that is the Internet put information in the hands of the people, blockchain and distributed ledger technology have created a trust revolution enabling the decentralization of power and decision making.

Substituting blockchain for the Internet in Eric Schmidt's words:

*"Blockchain is the second thing
that humanity has built that humanity doesn't understand,
the largest **action** in anarchy that we have ever had."*

Blockchain technology has enormous potential to bring advances to different aspects of our world once again.

In one word – Decentralization,

In one Sentence – Giving power back to the people.

Blockchain has been brought to the attention of the general public via cryptocurrencies.

Even though the use of Blockchain for digital money is only the tip of the iceberg, blockchain has recently become a byword for cryptocurrencies.

The best-known case of the use of blockchain technology is the new currency, Bitcoin, which subsequently spawned the rise of numerous other cryptocurrencies referred to as Alt coins, and giving rise to markets formed by members of the public enticed by the expanded opportunities for investment.

Ironically, this sort of phenomenon is eclipsing the real meaning behind blockchain, namely decentralization. This is because the torrent of new cryptocurrency technologies is following in the footsteps of the centralized systems of the old institutions.

The reason for the current fierce technological competition in the blockchain field is a reflection of the effort to replicate the performance of the Fiat Money systems we seek to escape.

This would invalidate the noble power that Blockchain has unleashed upon the world.

Let us review the real meaning behind blockchain.

The blockchain is aimed at bringing about a revolution in 'freedom' and 'trust' by breaking free of centralized systems and transferring decision making power to a network of users. It is designed to expand the decision-making nodes from one to multiple nodes so that the participating network (various nodes) becomes the decision-making institution.

This means that rather than having a system for issuing and transacting money monopolized by governments or banks, the group of participants itself (network) carries out these functions. This means that humanity's shared resources can be managed using a token economy for insurance, personal ID's, and others, instead of by centralized institutions, which will disappear.

This is a technological solution to the issue raised by Prof Elinor Ostrom's 1990 paper, *Governing the Commons*, wherein she proposed a 3rd solution for the autonomous handling of common resources, rather than by countries or markets as a matter of course.

1.2 Common Heritage of Mankind

Antarctica, the Arctic, and the ocean depths are all pieces of humanity's universal heritage. Any particular country or company cannot own them. In the absence of any alternative, they are our shared heritage.

However, below the surface, the nations of the world are embroiled in a silent war over this common heritage. Although on the surface international treaties prevent them from asserting sovereignty over this heritage, the existence of reports on mineral and fishing resources show that they are locked in a struggle for whatever more significant share of the pie they can get.

This raises some suspicions.

- 1) If this is humanity's common heritage, why can't citizens get involved but the central organizations we call countries can?
- 2) Is not the property of everyone also the capital of anyone?
- 3) If a primary organization (country) obtains the rights, will the benefits be distributed appropriately to humanity?

The answer from history so far is a resounding NO.

In 1968, American ecologist Garrett Hardin wrote a provocative essay for *Science Magazine* entitled *The Tragedy of the Commons* [3].

Cattlemen are stuck in a system where they have no choice but to raise an unlimited amount of livestock on a limited amount of pasture. If everybody believes they can use the commons as he or she wishes and everyone pursues their interests, everyone is headed down the road to disaster.

Humanity's dependence on resources entails the possibility of the 'tragedy of the commons'.

Privatization or shared ecosystems with appropriate systems are needed to avert this tragedy.

The same applies to the Moon and outer space.

2. The Moon

2.1 Who owns the Moon?

Article II of the UN Outer Space Treaty

Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

Although the UN Outer Space Treaty, ratified in 1967, prohibits the ownership of the Moon or celestial bodies by a nation, it says nothing about private ownership. This does not preclude the interpretation that private entities such as civil enterprises could exercise property rights over extra-terrestrial resources[4].

- On September 25, 1954, the Chilean lawyer Jenaro Gajardo Vera paid the Chilean government CL\$42,000 (Chilean pesos) to register the Moon.
- The American Dennis Hope has claimed personal ownership of the Moon and planets of the solar system since 1980 and has been selling parts of them since 1998 (Lunarembassy.com).[5]

These are examples of people taking advantage of a legal loophole of the UN Outer Space Treaty - that it fails to mention individuals - to assert personal ownership.

To assert ownership of the Moon, you need first to determine whether the Moon is an object, which it is not.

An object is defined as something that can be managed or controlled. Management and supervision of the Moon are impossible, so it does not fall under the category of object, so ownership of the Moon will not be recognized. It is nothing more than a scam.

The Moon, as part of mankind's universal heritage, definitely cannot be owned by an individual.

2.2 Human and financial resources focused on the Moon

2.2.1 The nations' Star Wars fever

A second space race is underway as China has jumped into the space race with an enormous amount of capital, following in the footsteps of the US, Soviet Union, and Europe.

- Luna27: The European Union and Russia plan to set up an inhabitable settlement on the Moon
- Moon Village project: A project to build a village on the Moon by the European Space Agency International Lunar Exploration Research Center

2.2.2 In the search for prosperity in space

Mankind's history proves that the wealth goes to those who open up new frontiers. As resources are depleted on the Earth, it is no longer easy to accumulate wealth by opening up new borders, and the world's leading companies with the most significant accumulation of technological capital are turning their eyes to the Moon. These seek to amass a great deal of wealth by opening the frontiers of space, just as in the great age of exploration.

- Blue origin: A project to exploit Moon resources. Jeff Bezos, CEO of Amazon, invests \$100 million per year in this project.
- Moon Express: A lunar resource-mining company set up by American entrepreneur Naveen Jain
- Blue Planet Foundation: Tetris developer Henk Rogers formed the International Moon Base Alliance (IMA) and International Moon Base Summit together with world space agencies, enterprises, and universities to move forward with this Moon exploitation business
- Google's Lunar X Prize, Space X, China's Change etc.

2.3 Reason for the Moon Rush

2.3.1 The Moon is not a wasteland. It's a 'gem'.

There are many minerals buried in the Moon, such as helium-3, that are expected to be a future energy source for use in nuclear fusion, as well as titanium, iron, and aluminium.

2.3.2 Terraforming the Moon

Terraforming the Moon to remodel it into a suitable environment for human habitation is one proposal for the perpetuation of the human race after escape from the Earth, which will eventually be overpopulated as Stephen William Hawking warned.

2.4 Possible developments after pioneering the Moon

2.4.1 Ownership disputes

Some countries, including the US, are using their national laws to legitimize private companies owning and doing business on the Moon.

The UN adopted a separate agreement for the Moon in 1979, according to which the Moon and natural resources buried therein are the common heritage of humanity. However, some important countries such as the US and Russia refused to ratify this agreement.

In short, we can expect to see some disputes over ownership of outer space and the Moon shortly.

2.4.2 Monopolization of wealth

From the end of the 15th century to the 18th century, European empires colonized new continents while the kings and several shareholders monopolized the new wealth.

This was the so-called Age of Exploration.

Because launching ships requires a vast amount of capital and there is risk involved, the concept of shareholders was born. Funds are raised by issuing stock, and the enormous remaining profits are allocated as dividends. The native populations and citizens of these areas were wholly excluded from these profits, even though the assets belonged to such people.

2.4.3 The Moon, the Earth's eighth continent as humanity's universal heritage

Now humanity is progressing from the age of maritime exploration to the age of space exploration. Although humans make mistakes, they can learn through the process of trial and error. The error in monopolizing wealth in the age of research must not be repeated in the age of space exploration, because the Moon does not belong to a small minority but is the common 'heritage of humanity'.

3. The Diana Project

What happens if we don't assert our ownership over what is ours?

We end up abandoning it.

The Diana project was birthed to decentralize ownership through group participation (registration) of citizens and an issuance of a Cosmic Crypto Currency to actualize the citizens' movement for the Moon.

The reason why issue Diana is in line with the argument of Olson:

If the individual cannot be excluded from the benefit of aggregate, the individual has no incentive to voluntarily contribute to the production of such aggregate benefits. We also have to eliminate freeloaders.

by Olson [6]

Therefore, we have to assert our collective rights to the Moon via registration. In order to claim our right, it requires reasonable action.

Creating the Basis:

- Build a Lunar Registry System™
- Registration by public participation
- Registration is recorded on blockchain

The registration records are permanent but their being forgotten by the public has no meaning

- Designing a token economy
- Issuance of DIA when registered
- Use DIA as a crypto asset to circulate the story of the Moon in everyday life

3.1 The Diana Effect

The Diana project, which harmonizes world citizenship, space industry, and ownership of the Moon, creates a variety of effects.

- Exploiting the Moon using the Diana Project is no longer a zero-sum game between significant capital and the citizens of the world.
- The participation of global citizens in humanity's universal heritage will further strengthen the development of the space industry and create new industries and have a knock-on effect as new technologies spread to other industries.

- Also, the acquired space resources and development benefits will be distributed equally to the citizens who own the joint assets, thereby implementing a win-win game in which all involved are winners.

3.2 The Diana monetary policy

The Moon will be divided into 9,790m² units for registration purposes, generating a total of 3,874,204,892 cells.

One Diana will be issued for every cell, meaning that total of 3,874,204,892 can be issued, but the 2 billion which correspond to the front side of the Moon will be issued first.

The reason for this is that the speed of the Moon's rotation on its axis is the same as the speed of its orbital rotation, meaning we only see one side of the Moon on Earth.

3.3 The Token Economy

Diana issues two tokens.

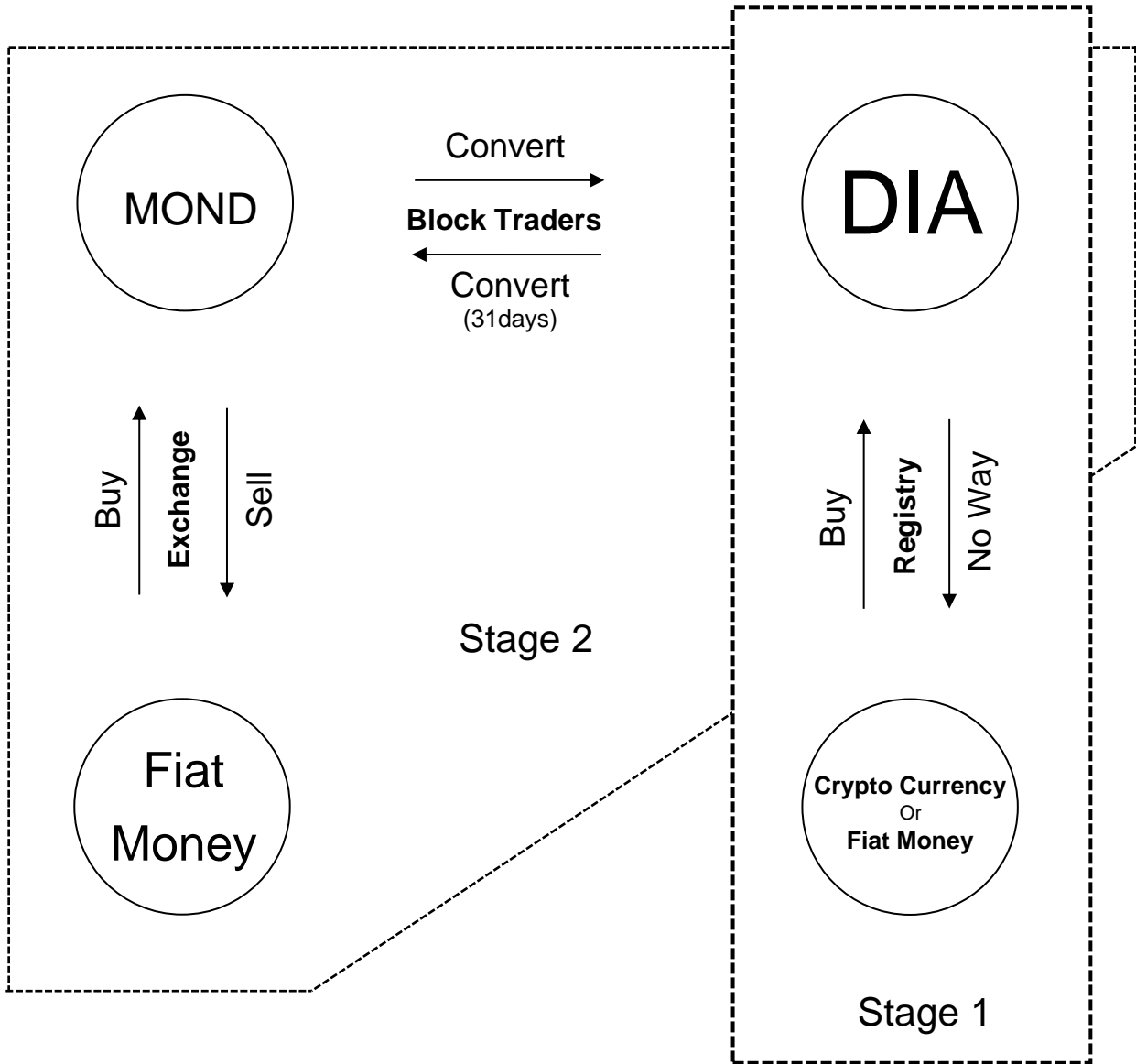
- DIA: registration token
- MOND: transaction token

The main reasons for this are:

1. DIA is indivisible as it is a proof of registration token. DIA has the role of a certificate showing the state of registration.
2. MOND is 1:1 with the US dollar as a transaction token. It has all the functions of a cryptocurrency (super split ability).

Brief Token Information

- Token Name: DIA & MOND dollar
- Token Standard: ERC-20x(DIA) & ERC-20(MOND)
- Total Amount Issued: 3,874,204,892
- Token types:
 - DIA : Registration token
 - MOND : Transaction token (1MOND = 1USD)
- Exchangeability: YES
- Token Decimals
 - DIA : 0 (indivisible)
 - MOND : 18 (divisible)
- Exchange rate: Exchange with MONDs subject to registration fee of DIA at exchange



[DIANA Token Economy Scheme]

The DIA token will be issued at registration. DIA does not split as it is a record of cell registration.

DIA's external transactions and transactions as cryptocurrencies are carried out with MONDs.

The exchange rate of DIA and MOND is exchanged for the equivalent of the registration fee of the DIA at the time of exchange, and the DIA is exchanged only as an integer without being divided. The exchange of DIA to MOND can be done after 31 days. In other words, liquidity of DIA is frozen for 31 days and carries voting power to contribute to the community based on loyalty.

3.4 DIANA registration price policy

The DIA registration cost is designed to increase with the number issued as the issue quantity for each section is limited.

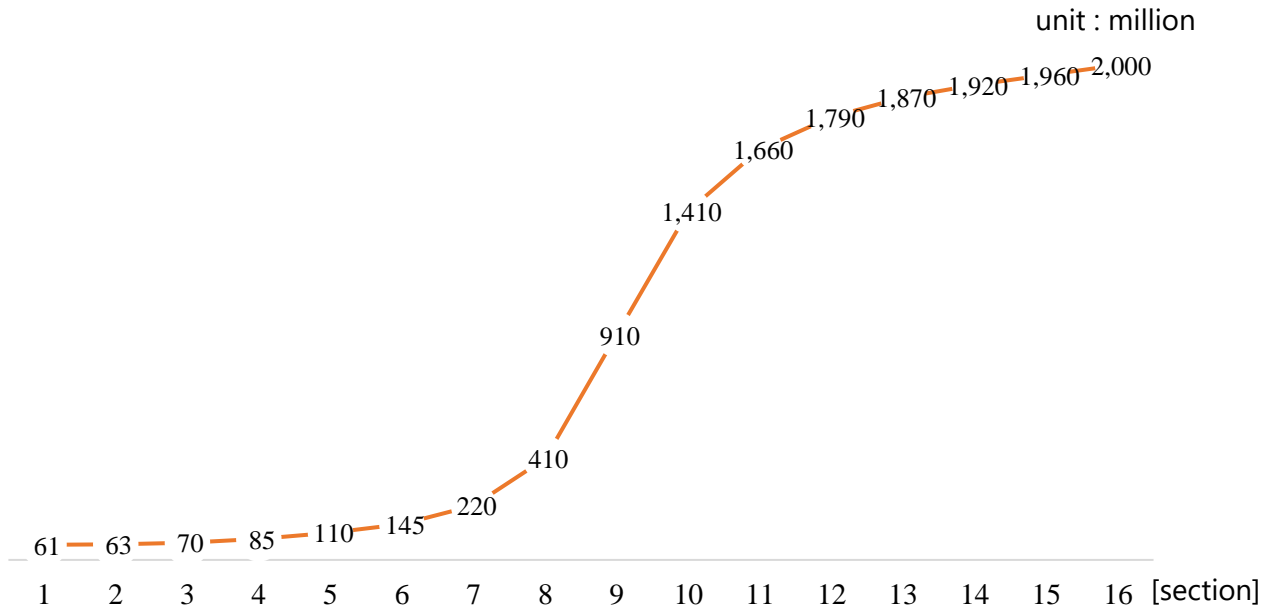
This is a breakthrough approach that provides a dynamic value boost to all market participants and prevents them from being exploited as speculative means.

DIANA registration price policy,

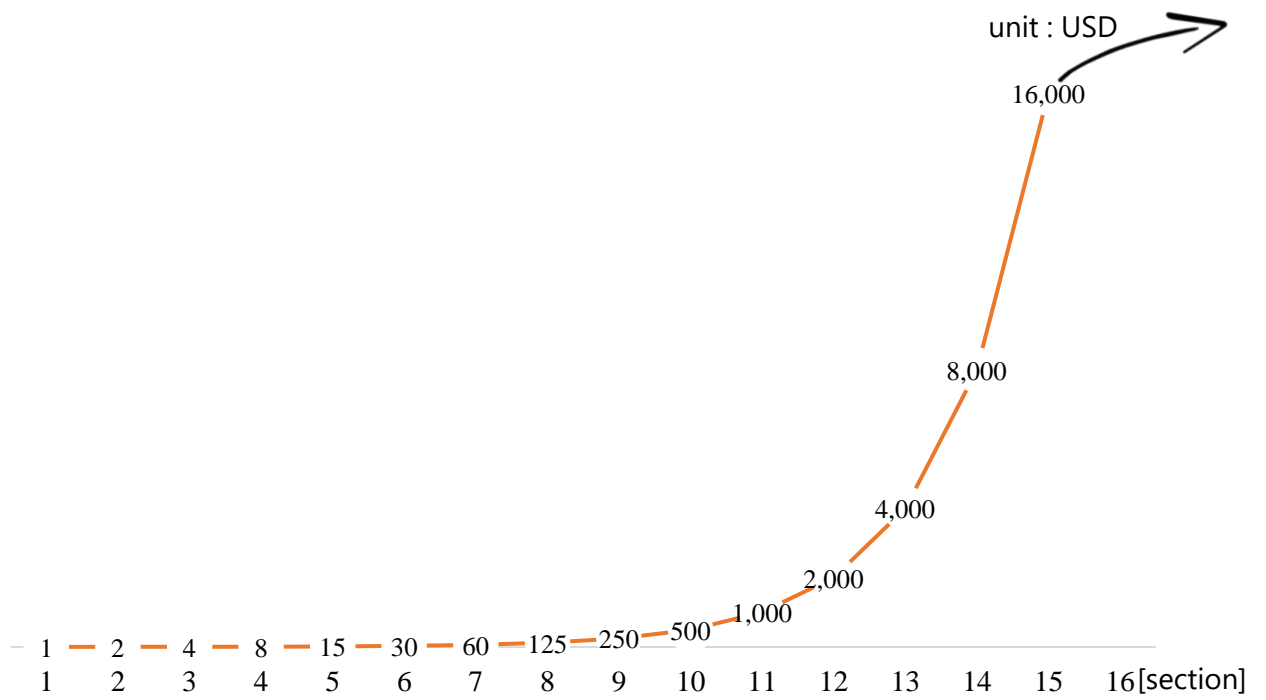
- First, provides economic gain for initial participants
- Second, limits indiscriminate speculation
- Third, leads stable future value increase

The table of 16 sections for registration price is as follows.

Section	Issued amount of DIA	Registration Price (USD)	No. of Registrations	
			Min	Max
0	0~60,000,000	Genesis		
1	60,000,001~61,000,000	1	10	10,000
2	61,000,001~63,000,000	2	5	5,000
3	63,000,001~70,000,000	4	2	2,500
4	70,000,001~85,000,000	8	1	1,250
5	85,000,001~110,000,000	15	1	600
6	110,000,001~145,000,000	30	1	300
7	145,000,001~220,000,000	60	1	150
8	220,000,001~410,000,000	125	1	80
9	410,000,001~910,000,000	250	1	No
10	910,000,001~1,410,000,000	500	1	No
11	1,410,000,001~1,660,000,000	1,000	1	No
12	1,660,000,001~1,790,000,000	2,000	1	No
13	1,790,000,001~1,870,000,000	4,000	1	No
14	1,870,000,001~1,920,000,000	8,000	1	No
15	1,920,000,001~1,960,000,000	16,000	1	No
16	1,960,000,001~2,000,000,000	Market Price	1	No



[The above line graph shows the issues per section]



[Line graph of registration cost per section]

3.5 Distribution Policy

- 50.075% : Public (registration)
- 1.548% : Founders& Team
 - 0.516% : Founders
 - 0.516% : Development Team
 - 0.516% : DAO
- 48.377% : Reserve

4. Cadastral Map

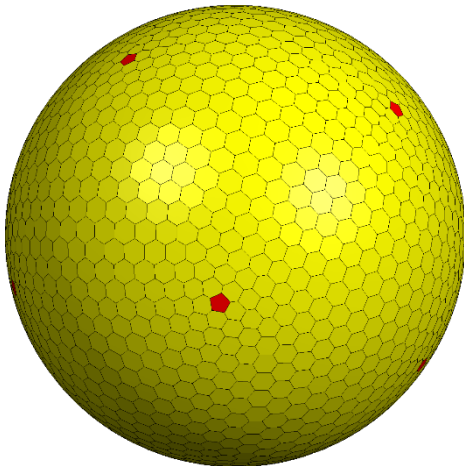
Let us assume the Moon is an ideal sphere.

If the surface at the top of the sphere is flattened and it is divided into equal areas such as squares, there is a distortion effect, and the shapes of the cells change depending on the latitude and longitude of the division.

The most suitable method of dividing into equal areas is not to flatten out the sphere first but to divide into fixed cells from the top. This would produce a Goldberg polyhedron, first described in the 1930s.[7] A Goldberg polyhedron has three essential features.

- Each side is either a regular hexagon or pentagon
- There are 12 pentagons. The rest are hexagons
- Three sides meet at a vertex

The following figure is a visualization of GP (15,0), one of the Goldberg polyhedrons



DggridR (Discrete Global Grids for R)[8] was utilized to divide the whole into 3,874,204,892 tiles -GP(19683,0)- with the area of each cell being 9,790m².

Each cell was assigned a 3-word address.

4.1 Address system

There are no roads or buildings on the Moon, so we cannot use a conventional address system (building, road).

The address system for the Moon was inspired by What3words [9].

The addresses take the format of combinations of noun.verb.noun (e.g. diana.love.you) to make it easy to recognize, and all 3,874,204,892 cells are given unique addresses.

This generates about 4 billion addresses.

Examples of Moon addresses:

- diana.love.BTS
- i.am.yourfather
- amstrong.land.Moon

5. Summary

▷ Purpose

- Peaceful universal sharing of the Moon, the common heritage of mankind
- Decentralization of ownership through group participation of citizens
- Citizens' Revolution on Extraterrestrial Resources

▷ Objective

- Development of blockchain Moon registration system
- Establishment of basis for ownership (register acquisitive prescription) by registration of participants
- Issue of DIA token as proof of registration

▷ How to participate

- Visit blockchain Moon registry (www.diana.io) (construction of lunar address system, 3-word address system)
- Select the cell (Moon land 9,790m²) and check the 3-word address
- Registration of selected cell

▷ Reason this is possible

- The Moon and celestial bodies are not owned by any particular country. They are the common heritage of mankind. (UN Space Treaty article II, 1967)
- Diana does not claim ownership of the Moon, but creates a Moon registry based on blockchain and provides registration services for participants
- Registration does not mean current ownership. By registering the Moon, mankind's common heritage, using a blockchain, it provides a basis for ownership for future ownership disputes between countries and interest groups

▷ Value

- Collective ownership of the common heritage of mankind
- Equal opportunity for wealth
- Mankind's first cosmos blockchain registry

▷ System (protocol)

- ERC-20x(DIA) & ERC-20(MOND)

▷ **Policy**

- Service launching without initial coin offering (ICO)
- Operation of decentralized autonomous organization (DAO)
- Token economy system

▷ **Monetary policy**

- Issue of total 3,874,204,892 DIAs
- Issue of first 2 billion corresponding front side of the Moon
- Issue of two different coins
 - DIA when registering
 - MOND for external transactions

6. References

- [1] Internet World Trade Show, New York, 18 November 1999.
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- [5] https://en.wikipedia.org/wiki/Extraterrestrial_real_estate
- [6] Mancur Olson, Jr. The logic of collective action, 1965.
- [7] https://en.wikipedia.org/wiki/Goldberg_polyhedron
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