DICE

A New Generation Social Cryptocurrency

Brief Overview Book

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DICE Money

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DICE Brief Overview Book

The DICE Money

Website: **https://dice.money**

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Contents

INTRODUCTION TO DICE 4

THE CLUSTER MODEL 5

FUNDRAISING AND INVESTMENT 7

Crowdmining 7

Scraping 8

Investment Mining 8

Donation Mining 8

Valuation Collateral 9

Acquisitions and Discontinuation 9

SUMMARY 9

INTRODUCTION TO DICE

DICE (a made-up word abbreviated from "Digital Certificate") are simply small blocks of data that are very difficult to make. The process of making DICE blocks is called "***mining***". It requires significant computing power and time, in order to generate a data block that ticks the needed requirements for a valid DICE. The power used in the generation of the block carries its intrinsic minimal monetary value, just like coins and banknotes issued by central banks carry intrinsic value guaranteed by the issuing bank. Therefore DICE data blocks can be used as exchange medium for goods and services, in the very same way as normal money.

Once a DICE block (a.k.a. "DICE unit") is mined, it can be stored and later used in exchange for something else – to buy something for instance. The new owner can then use again it in their turn to pay for something else, and so on. Since it is a tiny block of data, a DICE can be easily sent by email, or stamped or printed on some material. It can be even spelled out vocally over the phone, if necessary.

DICE units have value which is always expressed as numbers power of 2. This is purely due to technical reasons in the way mining is done.

Valid units can have 21 possible values: $\frac{1}{1024}$, $\frac{2}{1024}$, $\frac{4}{1024}$, $\frac{8}{1024}$, $\frac{16}{1024}$, $\frac{32}{1024}$, $\frac{64}{1024}$, $\frac{128}{1024}$, $\frac{256}{1024}$, $\frac{512}{1024}$, 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, or 1024 DICE.

The fractions have prefix "***mibi***", as in "*4 mibiDICE*" (that is $\frac{4}{1024}$ DICE), or even shorter - "*256 mDICE*" (that is $\frac{256}{1024}$ DICE), etc.

An important detail to mention is that every DICE is a finished piece of work. Once mined, it can never change. Altering even a single bit in the block will lead to the entire unit not being a valid DICE anymore. The value also remains constant. Therefore in order to achieve any possible number, one or more units need to be used.

An example: Hannah needs to send 11 DICE to Michael. Since an 11 DICE unit does not exist, she needs to combine more than one unit in order to achieve the value of 11 DICE. There are number of possible ways to do that depending on what DICE Hannah have; one way would be to use one 8D unit (8 DICE), one 2D (2 DICE), and one 1D (1 DICE). She however might not have a 1D unit but use two of 512mD (512 mibiDICE) instead, to make remaining one full DICE.

In summary, DICE are used in the very same way as coins or cash.

This is how a typical DICE looks like:

```
PCgYTDduAZnSNBf4HWsgHsydEXvaE2Tk1h9
SEN48kKXshLWgcyGRauftj22TcCQPUcV7nD
Fx6ubFmfsTsgfc46QZwhgTQ1RaS3J3njy4N
gmBDPfxMgUmdZyEuBsqwkntPsMVwaGoACos
riBn5sh4wcPSWriWUSyDVNHMfyuSj3rkQ9m
```

Of course this is not the only possible way DICE can look like. It could be also a QR graphical code, a bar code, or simply a binary block of data. Eventually it comes down the finding the best representation method for a 128-byte block in a particular scenario.

The way DICE is generated is relatively simple, but requires intensive calculations. It described in more depth in the Technical Whitepaper.

The process of mining DICE is essentially a loop in which a large number of attempts is made until a block of data which is valid, is found. For that only a piece of free software and a computer are needed, or a specially built mining rig which is a high-power system able to produce more units within shorter time. Mining DICE can be done by anyone.

It is only important mention that mining does not require online connection. The further operator validation however, does. The mining equipment can simply store a large number of new units while mining offline, and then validate them with the operator all at once when brought up online. Every mined DICE holds the address of the address of the associated operator, and is completely self-sufficient for validation and valuation at any time in the future.

Association with operators can't change – once mined DICE remain associated with that operator forever. Therefore it is a miner's task to select who will be the operator they are mining for. It is also possible to mine for more than one operator at once.

THE CLUSTER MODEL

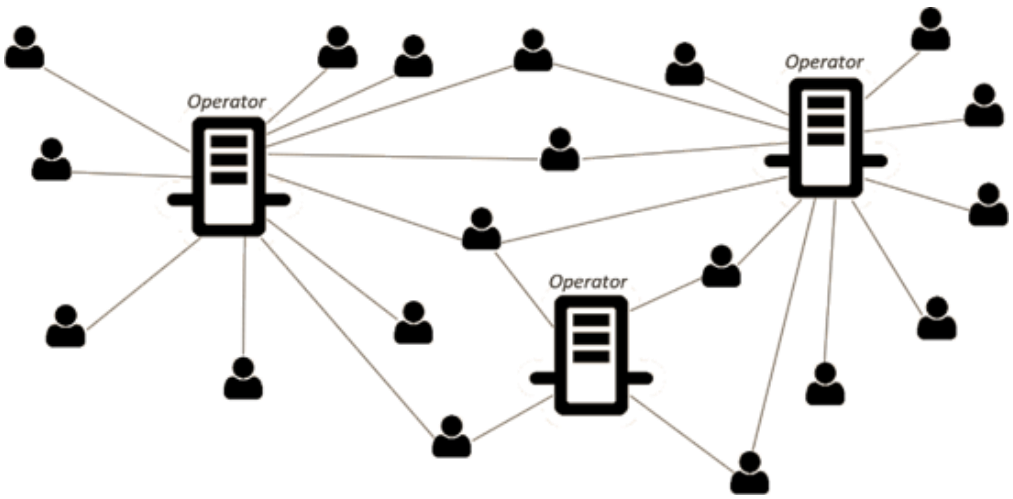
So far it can be seen that DICE are more or less just normal money made in a way to have it easy for use in the today's connected world. That's not everything about DICE, though.

To return back to the mining process, anyone can be a "*miner*", and can freely create new units of DICE. For that, only the needed free software and a computer, would be enough to start.

Just like every piece of money is associated with a certain country, DICE units are associated with a certain entity. That could be anything or anyone – a company, a hospital or school, the local council, bank, even the country. It could be also a single individual. This entity unites all DICE units mined for it only. It is called an "***operator***". In essence that is just a piece of software installed on a computer, or a pre-configured device connected to the Internet.

What an operator does, is to provide a central point of contact only for the units associated with it. The role of an operator is to provide validation of the associated units, and to serve as a "witness" in deals where those units are being used. Every operator also maintains a ledger, which is built from digital addresses of people, and "*prototypes*" of DICE. The prototypes are not DICE themselves, but signatures of valid units. Therefore an operator does not have the actual DICE, but is still able to securely verify whether someone else does have it.

The overall structure is called "***cluster model***" because it consists of a number of nodes (the operators) in a global network, whereas every node is a small network of its own.



During a trade between two parties, the DICE units are transferred directly without going through the operator. In order to close the deal though, both sides need to show that they are genuine, and for that they turn to the operator.

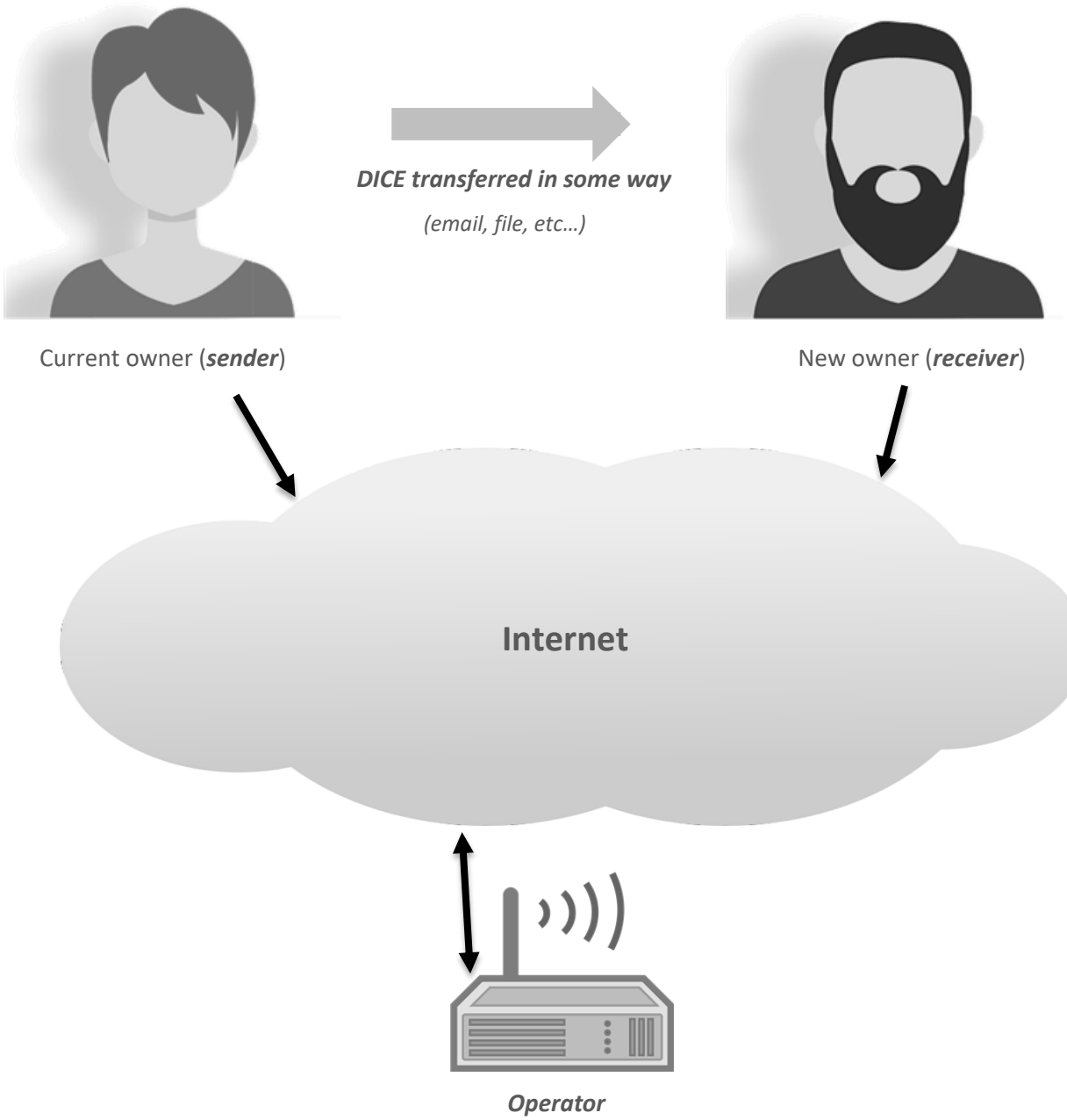
Several conditions need to be satisfied in every deal:

1. The DICE unit must be valid and currently owned by the sender.

2. The sender needs to know and confirm that they are sending DICE to the receiver.

3. The receiver also needs to know and confirm that they already have the sent unit.

4. The operator needs to confirm that everything so far is the way it is recorded in the ledger.



Due to the fact DICE is simply a block of data which can be transferred from one person to another without the need to go online, it is possible to use it in offline trade as well, of course at the expense of heavily reduced security. This is not a recommended way to use DICE, however it is technically completely possible one.

During an offline trade the operator is not contacted and the receiver also can't verify whether the sender is in fact the current owner of the unit. The sender in its turn has no information who the receiver will be, therefore unable to "confirm" that they are in fact sending the unit to that person. The operator is not being made aware of any trade as well.

The only thing that both parties in the deal are able to prove is whether the unit is actually a valid DICE.

From technical perspective this scenario is easily handled by enabling every DICE unit to be "released" from its current owner thus effectively turning it into a bearer bond. Releasing can be done only by its currently known owner, and needs to be confirmed by the operator. Therefore units used in offline deals must be previously released from ownership. These units are called "***ownerless DICE***".

Once an ownerless DICE is passed from one person to another, the new owner is immediately able to claim ownership over it by informing the operator that they are the new owner of the unit. Since the operator knows there is no current owner of the unit, it is immediately able to assign the claimer as its new owner, thus concluding the previously made offline deal. It completely possible that an ownerless unit has been used several times before someone actually claims ownership over it.

Offline trade is extremely risky because there is no way of knowing whether the exchanged ownerless DICE are in fact ownerless at the moment of the deal. Therefore although technically possible, it is not recommended in any case, unless an additional layer of security is used in the trade.

FUNDRAISING AND INVESTMENT

Apart from being a simple digital replacement of money, the fundraising and investment are the areas where DICE really shines. A cluster being an individual node in the global network is also a small network of its own with the operator in the heart of it. This small network can function as a closed social group united around a common idea or goal, and able to raise DICE through mining.

Crowdmining

"*Crowdmining*" is a new term introduced with DICE. It is similar to crowdfunding in the sense of group of people connect and raise funds for certain cause. In the DICE scenario these funds are being raised by mining DICE associated with the particular operator in the cluster.

The interesting part in this is actually how this works so both the operator and its miners are equally incentivised. In order to explain this we need to take a step back and return to the way mining is done.

DICE mining uses two external parameters – "*global complexity*" and "*local complexity*".

The global complexity is a single number which globally defines the difficulty of mining a unit with value one DICE.

In addition to the global complexity, there is another number - local complexity which can only vary within a certain small range from the global complexity. The local complexity is individually chosen by every operator, and defines the minimum value of a valid unit associated with that particular operator.

Scraping

The key element in the crowdmining mining concept lies in the local complexity value, and more precisely – in the difference between it, and the absolute global minimum.

Let's visualise this with an example:

Assume the global complexity of mining a unit with value one DICE is the number 40 (the meaning of this number is explained in the DICE Technical Whitepaper). At any time the local complexity can only spread within a small range of 10 lower, up to a maximum of 10 higher, from the global complexity. Anything outside of this range will not produce valid DICE units.

Let's imagine an operator has set their own local complexity at 33. This means they are three above the global absolute minimum which is always 10 lower than the global complexity. Let's remember that the operator has no control over the global complexity, only over its own local one.

At level 33 the operator will not validate newly mined units with complexity 30, 31, and 32. Although they are valid in global aspect, they fall under the bar locally set by the operator. Therefore miners will not be able to claim those new units from the operator.

Those "rejected" DICE however are not lost. They are still valid globally, and are in fact the value that the miner raises for this operator. Every other mined DICE with equal or above the operator's local complexity, gets successfully validated by the operator, and given to the miner.

This scheme allows the operator to "scrape" the units which are not passing the pre-set minimum, but are still valid globally, white the miner gets the rest.

The obvious question arises "Why would a miner want to mine for an operator with minimum complexity greater than the global minimum?"

The reasons for this could be a variety of preferential options given to the miner when dealing with the particular operator. They could be also based on brand loyalty, or could be completely speculative.

On the other end a similar question - "Why would an operator want to set a local complexity at the global minimum?"

Obviously at par with the global minimum there will not be a possibility for scraping for the operator, however apart from marketing and promotion reasons, it could still have options for raising in another ways mentioned below.

Investment Mining

The "*investment mining*" is another news coming with DICE. To a certain level it relates to the crowdmining.

All DICE scraped by the operator still carry the signature of their original miner. Therefore an operator always knows how much has been raised through scraping from each individual miner. The raised DICE can then serve as an investment made by the miner into the operator thus further incentivising the miner to associate with this operator.

Donation Mining

As the name suggests this is mining done on behalf of an operator with all mined units going to the operator. There is no financial incentive for the miner in this case. Such scenario can be used by charitable organisations or ones who offer loyalty benefits.

Valuation Collateral

Due to the specifics of DICE mining, the process inevitably leaves a unidirectional digital signature data block called "prototype" in possession of the operator for every mined unit. Prototypes are not tradeable as DICE units, however they are proof of already done work for the particular operator, therefore holding inherent residual value up to 50% of the actual value of the original unit. The reason for this halving is because the creation of a prototype requires exactly half the amount of the work needed for the creation of an original DICE unit.

Since prototypes are proof of work done exclusively for the operator, they can be considered as legal stock in a commercial entity, therefore can be used by the operator as collateral in other credit deals. In the worst case scenario the creditor would then be able to assume full control over the validation of those prototypes, and in fact acquire a stake in the business up to their total value.

Acquisitions and Discontinuation

Already mined DICE units are impossible for modification, therefore once mined, every DICE will hold the operator's address in its data forever. When an operator acquires another operator it also acquires its entire prototype database. Therefore the new owner will need to continue emulating the original operator in deals with the already existing units, although further mining for the old operator address could be disabled.

In case of an operator going completely off grid, there wouldn't be a validation authority for the DICE associated with the particular operator. Transactions will lack the "third side" of the witness. Therefore all DICE units for this operator will not be tradeable anymore, nor would any new ones be possible to be mined.

This potential outcome serves as a natural immunity against unstable operators in the ecosystem since miners would be much less attracted toward operators with unclear future.

SUMMARY

1. No single ledger in the cluster economy
2. Practically impossible to steal
3. Can be mined and traded offline
4. Absolutely free transactions
5. DICE are just files and require no special wallets or rely on exchanges
6. No middlemen in the transactions
7. Clusters unite people around a common cause for funding
8. Gives power to everyone to become a socially significant entity
9. Not based on the presumption of an ever-increasing demand
10. Not affected by the recent and future blockchain hacking and clampdown
11. Introduces a new model of initial offering called IDO (Initial DICE Offering)
12. Deterministic value that makes it much less volatile and closer to cash

Hopefully this opens the window toward a better understanding of what DICE is, and why it is a revolution. Money has worked great for centuries. Why destroying something good for the prospect of something unproven?

DICE is building on top of the traditional concept for money, not against it.