SPHERE:
Real Money Or Electronic Surrogate?

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Abstract. Decentralized nature of Sphere electronic currency introduces several new properties that the traditional one does not have.
Here, we shortly review all functions and properties of real (fiat) money and propose new features that belong to Sphere.

1. Introduction

As it is known, there are three main functions of real money, *unit of account*, *medium of exchange* and *store of value*.
Unit of account is a monetary unit of currency used to represent the cost of any economic item. The economic item can be any service, goods, asset, liability, etc.
Medium of exchange is an agreement between people to use money as an instrument for exchanging any economic items.
Store of value is a possibility to save, store and retrieve money at any time. The value of the money should also be stable over time.

It is also known [4] that there are several properties of money. Among them: *durability*, *fungibility*, *portability*, *stability* and *identifiable*.

Durability means it can be used for a long period of time.

Fungibility means the unites of currency must always be interchangeable.

Portability means it can easily be transported.

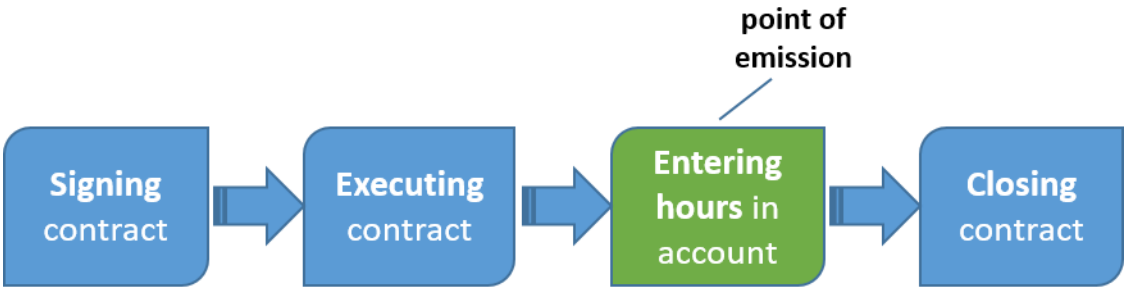
Stability means that the value of money should not fluctuate much.

Identifiable means the value of money should be easily identified.

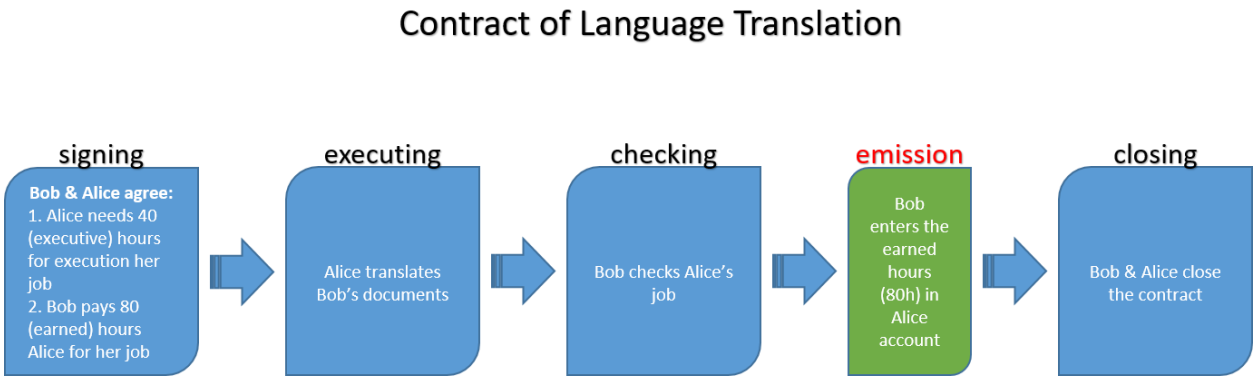
Further, we will consider a possibility of existence of all above-mentioned properties and functions in Sphere.

2. “Identifiable” property

As it was shown in [1], Sphere is expressed by hours. The hours are earned by a party of business contract. “*Hours first, Spheres second*!”. Not vice versa. In other words, the process of emission of Spheres can be presented as it shown on the following figure:



Below, we show how the emission of Spheres works in a real business contract.



As soon as Alice has earned hours, she can get Spheres in an equivalent portion or she can use her hours for getting any service of NCN [2].

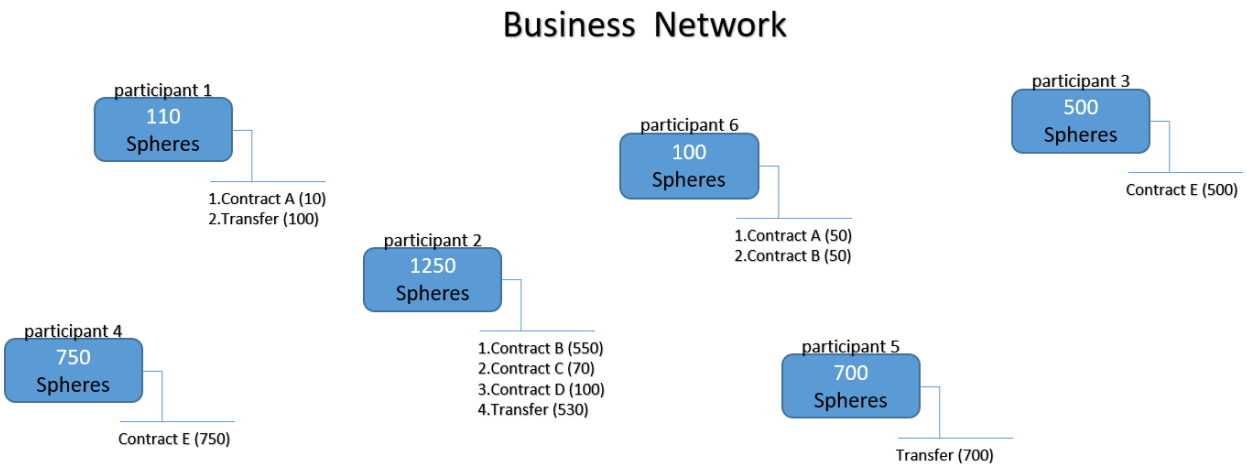
Thus, the value of Sphere is the amount of hours which participant of NCN had earned in a process of execution of a business contract.

3. “Stability” property

This property is the most important one among others. Unfortunately, we do not have yet a precedent in history of financial system of any country where a fiat currency showed constant stability over a long period of time. There are many reasons why the fiat currency is unstable. Among the most influential reasons are inflation and deflation.

In traditional fiat system, function of stability depends on many different factors. These factors have different economical nature. The mechanism of factor regulation are pretty complex and weak.

We come to a solution that let function of stability be as simple as possible. Our solution is to connect directly business activity to the cost of this activity. In other words, we form a stabilized fund for each currency unit by introducing hours earned by a business contract. “*Hours first, Spheres second*!”.



As shown in the Figure above, a participant of NCN network (business network) can have either, Spheres that he or she earned (hours) or Spheres that were transferred from another participant.

4. “Portability” property

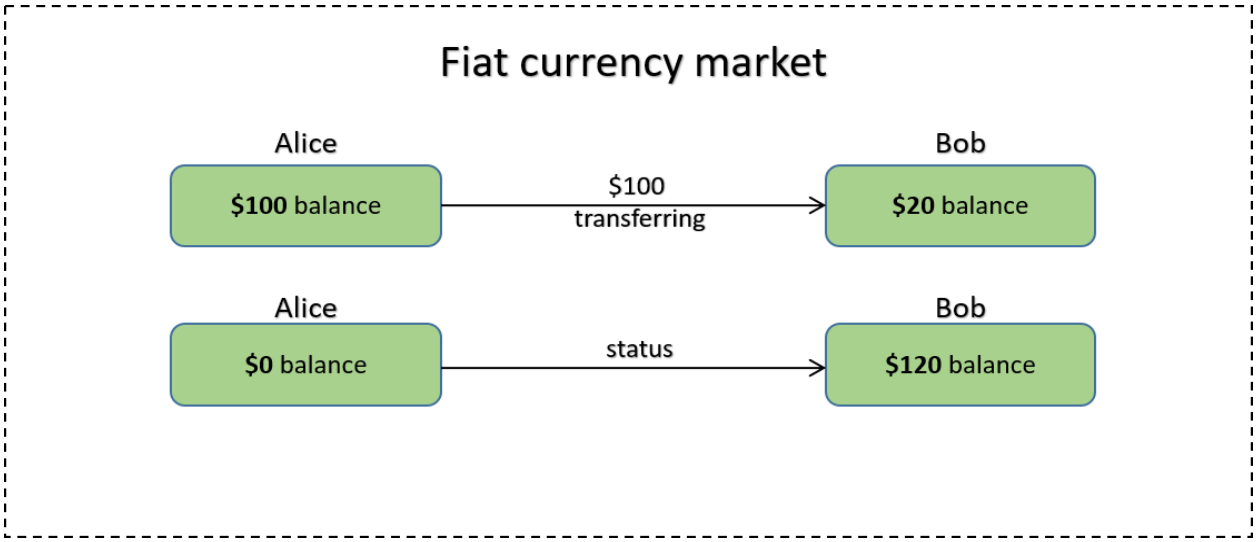
The property means an existence of banknotes (paper analog) of a currency that can easily be transported. The paper analog leads to extra expenses for a currency emitter. The extra expenses are needed for a maintenance service.

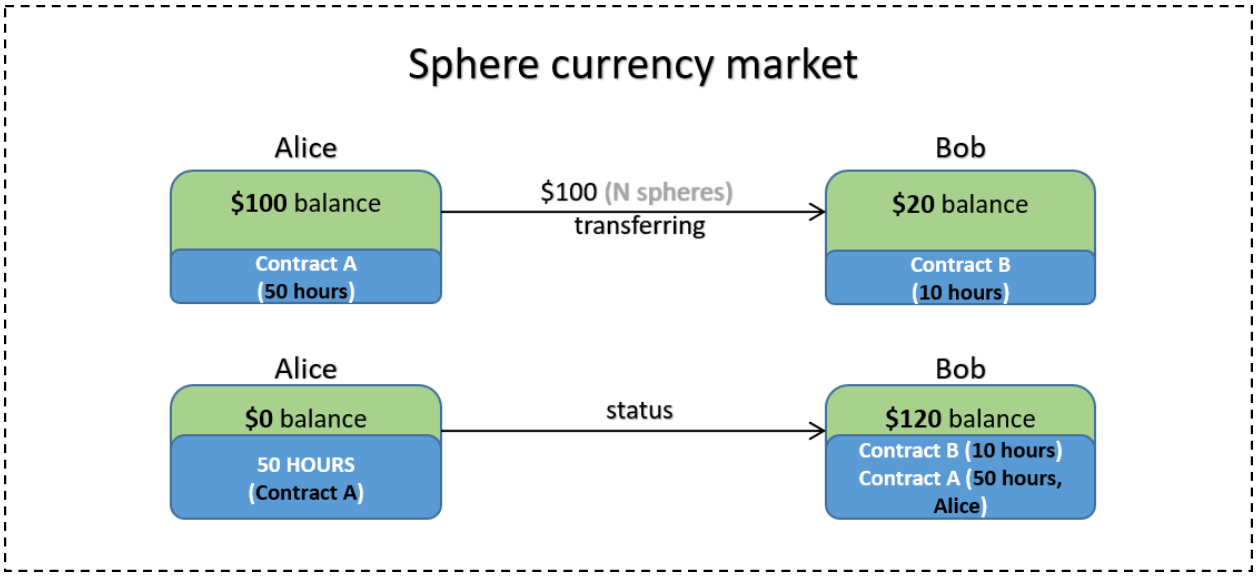
Electronic currency has an analogic property, *transferability*. In compared with the portability property of fiat currency, the transferability property allow, *first*, to transfer (transport) money for a minute, *second*, to remove expenses on banknote maintenance and, finally *third*, to secure money flow as strong as possible.

5. “Fungibility” property

The property allows to balance the level of possibilities for every currency holder. For example, if Alice has 100 unites of currency and can buy a coffee machine, then, Bob who has also 100 unites of the same currency will be capable of buying the same coffee machine. Bob can buy the machine even if he will exchange his 100 unites for Alice’s ones. Alice’s unites are interchangeable with Bob’s ones and vice versa.

Sphere has the same property but presents more opportunities to work with it in a more productive and profitable manner.





In the fiat market, as soon as Alice transferred all her money to Bob, she got nothing.

In the sphere market, after transferring all money to Bob, Alice got hours that she earned by Contract A. She cannot convert her 50 hours to spheres but she pretty can get any service (contract) of NCN by using all earned hours. Meantime, Bob gets more credibility in NCN as he got more money confirmed by earned hours.

6. “Durability” property

In compared with fiat currency, Sphere’s durability is as long as there are two participants of NCN.

7. Functions of Sphere

As fiat currency, Sphere implements also three functions, *unit of account*, *medium of exchange* and *store of value*.

Unit of account is hours (minutes).

Medium of exchange is accepted by all participants of NCN, by default.

Store of value is saved, stored and retrieved by SB (Smart Box) [2].

However, there is a core difference in nature of Sphere and any fiat (or other electronic) currency. So, any fiat currency is supplied with exterior object (gold, for example). Thus, to reach stability in the cost of the fiat currency for a long period of time, the gold, *first*, should be stored in a vault (be removed from circulation), *second*, should not be changed in terms of its quantity for a period of vault storage.

As for Sphere, we connected it directly to its origin (executed business activity expressed by earned hours). Such mechanism has great advantages in terms of possibility to directly stimulate stability over a long period of time. In other words, as soon as you get hours you will always be capable of getting different service of NCN.

8. “Law of Conservation of Hours”

As it was shown in Figure above, the hours that were earned by a contract are tied to a participant of the contract. Earned hours have equivalent value in Spheres. In general, the equivalent value is fixed at the moment of

signing contract. Even if Sphere holder decides to use Spheres (get any service, convert to fiat currency), the hours that he or she earned will stay in wallet (SM, smart box) on a constant basis.

Our concept allows us to formulate *the law of conservation of hours* for NCN (isolated system):

“In NCN, earned hours never change their holder even if an equivalent amount of Spheres is being transferred between different participants”.

For more technical and mathematical details, please, see [3].

9. Conclusion

We have proposed an electronic currency, Sphere, that have all the properties of fiat money. The core difference from fiat currency is that, Sphere has two unique properties. *First*, measurement unit (unit of account) which is totally spawned and supplied by an economic activity. *Second*, circulation of Spheres does not influence its cost.

We hope that our decent work in this article will help other researchers find approaches in creation of new electronic economy and currency as well.

References

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