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**Title:** Non-fungible token as a new type of business model in the field of tokenomics

### **Abstract**

The main purpose of this research is to bring the discussion on the potential usage of blockchain with the use of so-called non-fungible tokens (NFT). As for now, there are a lot of applications of blockchain that base their 'business models' on the future value (or rather price denominated in fiat money) of their token in future. Recently, the market was flooded by ERC-20 tokens developed for the purposes of Ethereum dApps. Most of those tokens are vulnerable to the fluctuations on the highly volatile cryptocurrency market, thus making such business models very risky and unstable. As an answer to this problem, **we propose the usage of non-fungible tokens (NFT) that are also designed to be divisible. In this case, the token would not be listed on cryptocurrency exchange market**, instead it may be allowed to be cashed for national currency every specified period (e.g. a month).

As a representation of cryptocurrency market, we present the model based on Minimum-Spanning Tree (MST) that examines the correlations between a set of variables. We use the sample of 172 cryptocurrencies and compare the tree from the whole sample to the tree containing TOP20 cryptocurrencies (based on their transaction volume from the last day of period from 24.12.2015-05.06.2016 – to be updated by June 2018). The results show that the cryptocurrency in the center of MST in both cases is Vertcoin (first cryptocurrency to offer stealth address). Moreover, one of three main branches in TOP20 model shows the strongest correlation between Vertcoin and Ripple. Most of the connections in this branch are stable, meaning that we can identify them also in MST for all 172 variables. The analysis of the whole tree shows the connection between Ethereum and Ripple through Nubits, which is not included in TOP20 MST.

In the main part of our research we discuss the potential laying in non-fungible tokens. The most known application of NFT is 'Cryptokitties' dApp. Each token represents different 'cryptokitty' whose price is based on its characteristics. Such token is developed in ERC-721 standard, where every token is distinguishable and its value depends on specified variables. In this model, token is not divisible, as it is not possible to purchase a fraction of a 'cryptokitty'. However, there are modifications of this model, e.g. ERC-864 or ERC-888 standards, that enable divisibility. Such model opens door for a lot of applications, especially where there are many frequent micro-transactions. **This type of model may be useful for real-time exchange of data between devices of multiple parties – data portions are distinguishable and may be transferred from one party to few other parties at the same time.**

We show an example of electric vehicle charging stations connected to the commercial facilities using Demand Side Response enablers. The value of each transaction depends on time-of-day, load of the facility, availability of chargers, weather conditions, etc. In such case, each transaction needs to be settled between EV user and owner of EV charger (most often building administrator), DSO and blockchain platform owner.