Revisiting the on-chain governance vs. off-chain governance discussion

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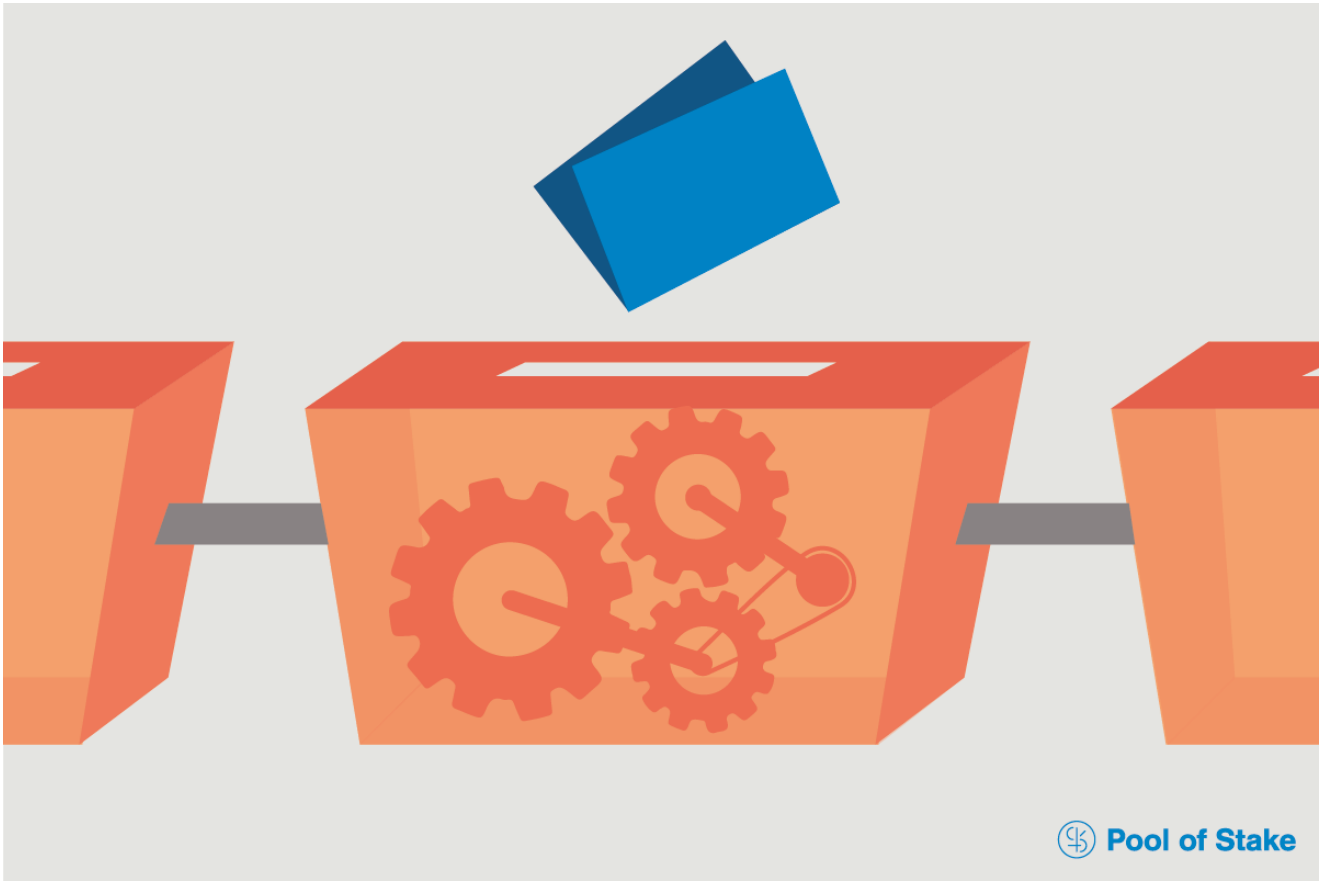

In this article we introduced you to the history of blockchain governance and disagreements on protocol evolution. We saw that first generation blockchain projects are characterized by unspecified governance mechanisms. In second generation blockchains we saw a trend towards off-chain, specified governance structures in order to handle disagreements in a

more efficient way. In third generation blockchains we witness a trend towards on-chain governance. In the following article we explain the difference between on-chain and off-chain governance and provide an overview of the ongoing debate in the blockchain ecosystem.

Fred Ehrsam, co-founder of Coinbase, wrote an article on blockchain governance that was widely debated within the community, strongly supporting on-chain governance. Off-chain governance can be seen as a decision-making that first takes place on a social level and is afterwards being actively encoded into the protocol by the developers . Ehrsam argues that Bitcoin and Ethereum mostly rely on off-chain governance. For instance, Bitcoin developers share their improvement proposals (BIPs) through a mailing list and Ethereum collects improvement protocols (EIPs) on Github. Ehrsam argues that the Bitcoin governance system resembles the checks and balances system of the US government. Just like Senate developer submit pull requests BIPs to the community. The miners take the role of the Judiciary which decides whether or not proposals are adopted in practice. Lastly, the users just like citizens in a nation state can revolt and switch protocols or sell their tokens. Ehrsam also draws from Albert Hirschmann's classic voice or exit paradigm affecting change in a system. He compares voice to relying on existing governance structures, strong exit to forking the chain and weak exit to selling tokens. According to Ehrsam, Ethereum also falls in the category of an off-chain governed blockchain. This is because, as he argues, for major decisions to be effected Ethereum is reliant on the guidance of Ethereum's creator Vitalik Buterin.

In contrast to off-chain governance, in on-chain governance rules are hardcoded into the blockchain protocol. This means, any decision that is being taken, is automatically being translated into code, e.g. decisions concerning blocksize. One blockchain project which plans to implement on-chain governance is Tezos. To overcome the difficulty of unmotivated developers, developers can broadcast their improvement proposal on-chain. Once the proposal gets approved via an on-chain vote it is implemented in the testnet. After a specified amount of time, a final vote occurs and it is implemented in the mainnet. Interestingly, on-chain governance protocols may also help us to roll back and edit ledger history. In off-chain governance systems forks are currently used to erase undesirable on-chain actions of the past. As an example we saw the Ethereum fork of 2016 after a substantial amount of Ethereum was stolen in the DAO hack. The blockchain project dfinity plans to resolve such edits on chain through voting mechanisms on chain. After a hack or after undesirable content was uploaded to the chain, users can vote to undo the action and thus break the immutability aspect of blockchains.

Just like off-chain governance on-chain governance comes with various problems. In a clearly defined on-chain governance metasystem the system may be legitimately gamed by some stakeholders where previously undefined norms held misbehaving actors in check. The proposed benefits of an on-chain governance system is that it is predictable and stable, so it becomes difficult to argue for a meta change once the protocol has been gamed. More fundamentally, Vlad Zamfir argues that governance problems should not be thought of as

design problems but rather applied social problems. What he means is that governance is an unpredictable and emergent phenomenon. Therefore it cannot be fully engineered in advance and has to keep the flexibility of unplanned occurances.

is developing a platform where users can stake several Proof of Stake coins at once so they do not have to rely on the absolute security of one investment. Some of the projects we integrate into our pool, will pursue on-chain solutions and others off-chain solutions. When a user has a well diversified portfolio, all the different governance solutions can confuse him or and lower his or her motivation to participate in this process. As a solution, at we create a simple and unified voting mechanisms through which users can participate in the various governance systems of the native blockchain governance.