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Decentralized Governance and Digital Democracy



Abstract

Governance is very important but often overlooked vertical of blockchain innovation. We at Sigil are convinced that this vertical provides many investable opportunities within crypto ecosystem. Thanks to crypto networks, we can improve reliability of voting schemes, political structures and help our society to coordinate, fund public goods and allocate resources more efficiently.

The term “Governance” is an umbrella term that covers ways and processes on how we coordinate on scale. How we organize our societies, define and enforce rules and make collective decisions. Today our coordination relies mostly on governments and private companies protected by enforceable laws.

Decentralized networks enable us to create new ways of governance on large scale (as [Nick Szabo argues](#)), by transferring some of the rules and processes from our current systems (backed by lawyers and manual administration) to automated, trust minimized protocols, which are aligning economic incentives of participants.

Blockchain governance is still a very nascent topic. By blending of social, political and economic incentives, we see many experimentations in this area, solving mainly these questions:

- *How we govern decentralized protocols and networks.*
- *How we use decentralized protocols and networks to enhance human cooperation.*
- *How we create new types of organisations and entities such as [DAOs](#), [COs](#) (we focus on these concepts later in the article.)*
- *How we can test and implement alternative forms of governance (such as [Futarchy](#), [Liquid democracy](#) or [Radical markets](#))*

We believe that decentralized digital networks will accrue significant value if they succeed in creating new types of governance and tie the governing system into usage of their native crypto assets. These assets (tokens) can then become a vehicle capturing and utilizing political power within whole ecosystems and can also help us to implement better democratic processes in our current political systems.

(From [Sigil investment thesis](#))

In this article we expand our governance thesis and provide overview of projects, which are directly tackling governance and social coordination problems. We also include links and sources for further research.

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Beyond trust minimized Bitcoin

(Ethereum, multi-asset platform, Smart contracts, Programmable assets)

[Bitcoin](#) is already well known as the first truly scarce digital commodity, acting as a medium of exchange and store of value. Using Bitcoin as a digital gold without trusted parties, users can store and transact bitcoin units without counterparty risk. Bitcoin's technical design aims at high [robustness, simplicity and security](#), leveraging redundancies (decentralization) but currently sacrifices programmability and flexibility. This robustness gives Bitcoin a lot of appeal to become a backbone of new open financial system. However, more complex features cannot be implemented on the protocol layer of Bitcoin due to its [technical restrictions by design](#).

That's why [Ethereum](#) was created - alternative decentralized network similar to Bitcoin, but with a different set of tradeoffs. Ethereum is designed to be more programmable and flexible. We can program much more complex logic into the decentralized Ethereum platform itself. So called [smart contracts](#) are executed by the whole Ethereum network, acting as unstoppable, self-executing, perpetual scripts. We can rely on these scripts to be executed without a need to trust any third party. Thanks to smart contracts, Ethereum doesn't act just as a single cryptocurrency (like Bitcoin), but as a whole platform and ecosystem, that allows many other digital assets and other decentralized (uncensorable) services to be created on top of that. These services include:

- Creating own token (digital asset) secured by Ethereum network, with many different functions (vouchers, equity shares, tokenized derivatives, voting mechanisms, access keys, digital gaming items...) all interoperable within the Ethereum ecosystem.
- Complex [decentralized financial applications](#) (staking, lending, betting, margin trading, automatic donations of lending interest to charity ,etc.).
- Alternative monetization models and new ways to finance public goods (automatic taxation, donations of fees and interest returns, decentralized charities, etc.), transparent, with reduced friction and less counterparty risks.
- Digital entities (DAOs - decentralized autonomous organizations) with different governance and voting rules that are enforced and made transparent by the underlying Ethereum network.
- Peer to peer marketplaces and prediction markets without centralized counterparty with reputation and skin-in-the-game mechanisms that are enforced and made transparent by the underlying Ethereum network.

As opposed to a single-asset platform like Bitcoin, Ethereum becomes a [multi-asset, feature-rich platform](#). However, trade offs that were made in order for Ethereum to have these features also means much larger attack surface, more risks and need for more frequent adjustments.

Please note that while Ethereum allows creation of many different governance models, decentralized organizations and decision markets, Ethereum network itself doesn't have a clear formalized governance mechanism and relies on a "soft" human layer (developers, businesses, users, investors, miners and other interested parties) to reach decisions about the progress of the ecosystem. This is not seen as a problem at the moment, because social capital invested into progress of Ethereum usually stems the community to progress together in a desirable direction.

However, in case of a major disagreement between key stakeholders, this can lead to a separation and "fork" of the blockchain. Forks are not necessarily bad. They can lead to creation of two valuable projects with different visions. However, the lack of hard-coded governance model in Ethereum and resulting need to rely on human leadership could be seen as a weakness by some blockchain idealists.

There are various other use cases for programmable smart contract networks (like decentralized financial products) but for the purposes of this article we will keep **focusing on governance**.

Governing Crypto Networks

(Decred, Tezos, on-chain governance, coin voting)

Both Bitcoin and Ethereum are already well known and broadly used networks. Their governance is quite simple. On protocol level, Bitcoin and Ethereum reward miners with fees and newly minted tokens for producing new transaction blocks and putting them in order. Miners are competing against each other by putting their computing power - hashrate - to work. Miner with bigger hashrate has higher chance of producing the next block and getting reward. Thus, the network is incentivizing miners to produce quantifiable action within the network and compete against each other, making the network more secure.

However, entities are not directly incentivized to provide other kinds of useful work for the network (such as writing code). When it comes to decision making about strategic direction (like a technical roadmap), Bitcoin or Ethereum do not have clear rules, which would define who is making decisions on behalf of the network. Both networks rely on consensus on a human layer - between developers, entrepreneurs and other interested parties.

All technical changes in Bitcoin or Ethereum are proposed, discussed and implemented or rejected via so called [BIP](#) (“Bitcoin Improvement Proposal” for Bitcoin) or [EIP](#) (for Ethereum). This process, while fairly transparent, has bottlenecks - for example there are gatekeepers guarding the code repositories.

Furthermore, disagreements in community can lead (and led) to blockchain forks, where the network splits into two separate networks with a common history but different rules for the future. Thanks to the strong disagreements and lack of formal decision making processes, Bitcoin forked to BTC and BCH in [2017](#) and Ethereum forked to ETH and ETC in [2016](#).

There are, however, alternative networks that aim for the same goals as Bitcoin and Ethereum, but with a clearly defined governance rules. Instead of simply rewarding one group of entities, these networks employ different trade-offs, governance mechanisms and economic incentives.

Let's mention two of these projects - **Decred (DCR)** is competing with bitcoin as a digital Store of Value and **Tezos (XTZ)** is competing with Ethereum as a smart contract platform. In both cases the biggest differentiating factor is governance. Both [Decred](#) (with it's off-chain [Politeia](#)) and [Tezos](#) (with on-chain voting) implemented formal and binding governance.

Formal governance in these projects is manifested by the rules which are embedded in the system and let stakeholders vote and decide on important topics, changes in the protocol and treasury allocation in a way that is a mixture of corporate governance and weighted voting.

Governance minimisation or maximisation?

[There is a lively debate](#) between proponents and critics of formal governance rules within decentralized crypto networks.

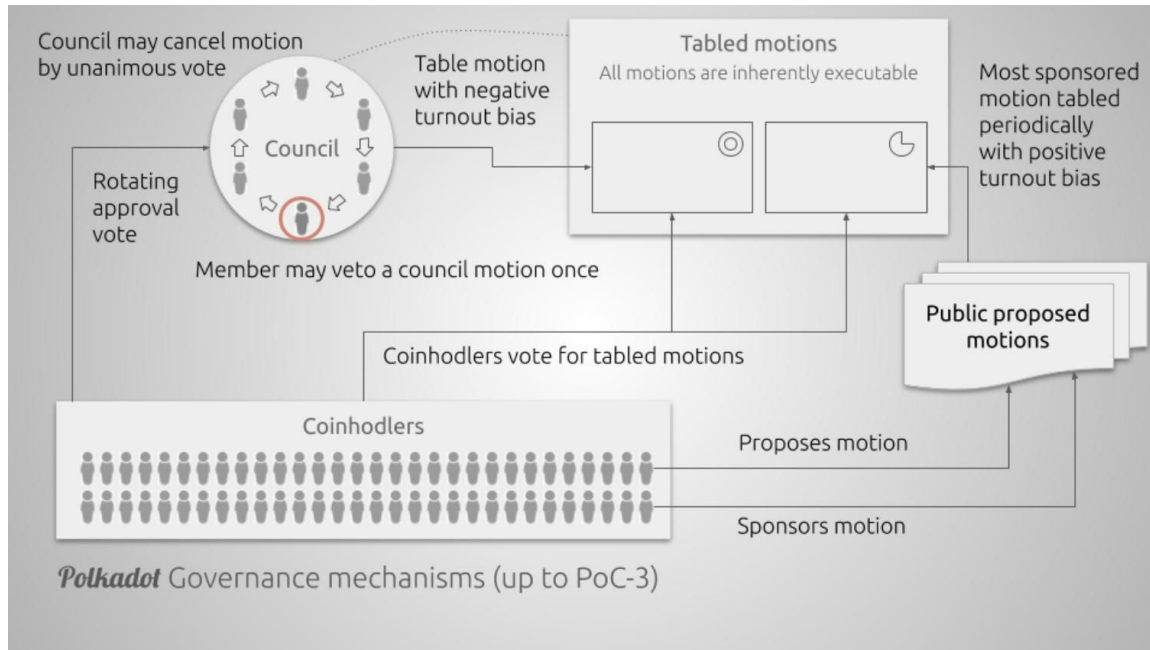
Arguments [against](#) formal (on-chain governance) are revolving around the idea that blockchains should be neutral and trust minimized, and also around the fact that every governance needs a soft “human layer”, because otherwise the system can be hijacked or gamed by bad actors or powerful elites. This already happened in [EOS](#), a crypto network which is governed by 21 Block Producers (“BPs”) reaching consensus. These block producers are elected by EOS token holders. In theory, all 21 BPs should be independent, but behind the scenes, [powerful stakeholders colluded](#) to gain control of multiple BPs, thus made the network much more centralized than intended.

We will probably see many governance models failing in a similar way like EOS, getting captured by big stakeholders. Sometimes these attacks can be beneficial for network, if they will play out in similar fashion as corporate takeovers by [activist investors](#).

On the other hand, a network without formalized governance rules can be subjected to the “[Tyranny of Structureless](#)”. In short - lack of formal and open governance process can lead to a chaotic and non-transparent structure, where elites arise and entrench themselves to maintain power. Lack of process also leads to disputes and disagreements that can't be solved formally and can lead to schisms (or forks in case of a blockchain).

So the clearer the rules of governance are and the more transparent the decision process is, the easier it is for the participants of the network to reach consensus on a given topic. And if the process is mutually accepted as legitimate, all participants will accept the outcomes even if they had a different voting preference.

Another crypto network [Polkadot](#), which is building a fully interoperable “network for blockchains”, is maximizing the formal governance, putting itself to sharp juxtaposition vs. governance and trust minimized Bitcoin.

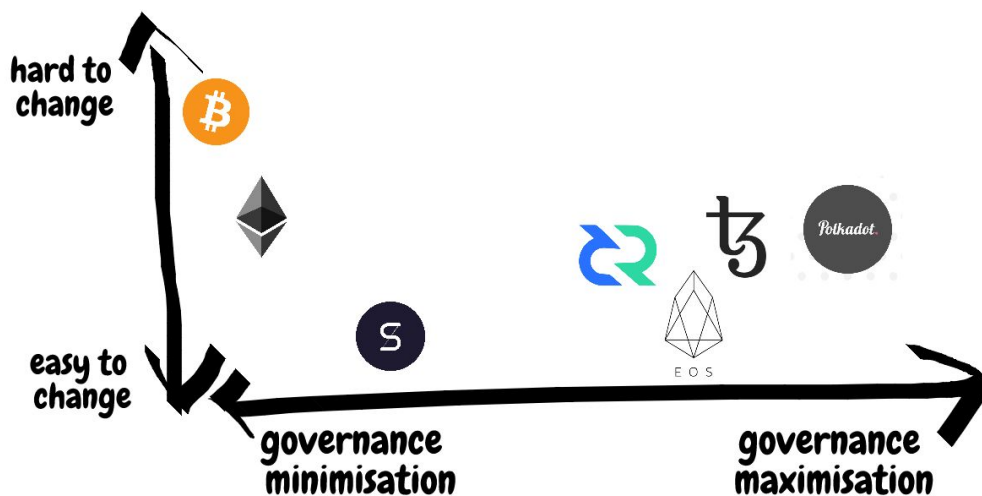


[Governance of Polkadot](#) consists of a Council with elected members and voters (DOT holders) with multiple different voting mechanisms. Complexity of Polkadot Governance resembles British Parliament (one of the [longest functioning political institutions](#)) more than anything else in the crypto ecosystem. This complexity creates a lot of different breaks, which add security to the system. However, it remains to be seen whether closed kabal of elites won't be able to capture the ecosystem (like in EOS).

Sometimes the governance is not baked into the system, but emerges organically around the network, and is later ossified and formalized, like in case of [Synthetix](#). Synthetix does not have any formal governance rules, but community is actively proposing changes and voting on them

(see [Synthetix Improvement Proposals](#)) and developers are respecting the will of the community.

We expect more experimentations with blockchain governance to emerge and try out different concepts. There are many different tradeoffs tried out - some networks have governance optimized for defensive attributes (being hard to change), others for speed of innovation (easy to change). Some rely on governance minimisation, relying on [social contract](#) and informal process on human layer, others are maximizing governance by including formal rules and governance structures.



Regarding the question if formal governance is better than governance minimization, the jury is still out. Both sides of the argument have compelling reasoning, and we will see many different models emerging and competing on the free market.

Path to Digital Democracy

(Bottom-up, Alternative voting models, Futarchy, Radical Markets)

So far we talked about governance within decentralized blockchain networks. But how can we use these technologies to improve governance in the real world?

Take political voting as an example. Elections and referendums, as we know them today, are a suboptimal way to make collective decisions. These events tend to produce extreme narratives

and debates and are often captured by populism. Voters are forced to make binary choices leading to polarization and increased tribalism. Elections and Referendums thus become a big “zero-sum game”, where the voter is powerless and covert corruption keeps going on.

In the digital age with internet technologies and decentralized networks it is entirely possible to present the wider spectrum of concrete choices and complete information to the voters. It is also realistic to record the political promises into blockchain databases and hold politicians accountable within concrete timelines and budgets. We are living in a world where your everyday behaviour, shopping choices and content consumption is broken down to the smallest chunks of data and [analyzed by artificial intelligence](#) for the purposes of ecommerce, marketing and business profits. Why on earth are we not dealing with governance proposals (like political promises and programs) and strategic directions of our society in an equally sophisticated way?



In the 19th century [the representative democracy prevailed](#) as a governance model because it was the only logistically feasible way to execute the democratic principles. It would not be realistic to collect detailed preferences of all voting population, write them down in physical paper documentation and transport it via horse-driven carriages to government in a reasonable timeframe. There was a limited number of governance options in the slow-paced physical world.

But nowadays we have all the tools to radically improve upon centuries old political institutions, voting models and governance structures. Especially interesting is the concept of an ideal [Digital Democracy](#), which protects all the key principles of democracy but aims to improve upon the corrupt and malfunctioning downsides of the system. In simple language it could be compared to machine learning where a set of key beliefs is defined and voted upon and then the digital democracy system looks for optimal way to execute them for the common good using

knowledge of the crowd (prediction markets) and other tools.

Naturally, the change will not come from incumbent political authorities, who have the incentive to maintain their entrenched status quo. It will be hard to design a new system with a top-down enforcement. We should rather look at bottom-up experiments, that will compete on a free market, scale up and iterate, until they are robust enough and battle-tested for mass, nation-state level adoption.

These structures could initially work similarly to Swiss cantons where small communities, industries and maybe non-profit organizations declare their goals on blockchain in a transparent way and seek political or economical (funding) mandate from the group of population on a voluntary basis. In other words, technology doesn't necessarily make our governance trend towards globalism, but may increase the sovereignty and ability to coordinate on local level as well.

The above concepts are not in the stage of "wishful thinking" anymore. Thanks to decentralized networks such as Ethereum, Decred and Tezos we can participate in new models of governance and test them with real economical value on the line. It is happening around us as we speak. We are very excited about these projects as they give us hope that future of mankind could be great despite the evident bumpy road ahead in the short-term, where failing financial and governance systems of the past will unleash severe geo-political and social ramifications upon all of us.

Innovations in Digital Democracy

Modern Democratic governance can be divided into two basic components:

1. **Power distribution** - who will make decisions? (e.g. election of representatives)
2. **Decision making process** - how do we decide? (e.g. submitting and accepting/rejecting proposals)

Digital economies are serving as a sandbox for experimenting with both of these components. Tools like smart contracts make it easy to implement complex rules on scale in an automated fashion and without trusted third parties.

Elimination of centralized authority is a key in any innovative governance process, because the central institutions could exploit power by excluding or censoring some participants, effectively making the innovation impossible. In comparison the trustless smart contracts automatically process inputs, apply the governance ruleset and produce 100% immutable and publicly auditable result.

These innovations are not exclusively invented and enabled by digital world and crypto networks. For example [Phragmen multi-winner election method](#) was invented in 1890. It has never been deployed on scale in the real world, but 130 years later, it will be used [to “elect” validators in Polkadot network](#).

While these technologies won't solve every issue, they could vastly increase transparency of public (and corporate) spending and decision making, if implemented correctly. Early example of such (maybe unwanted) blockchain transparency is project [DigixDAO](#). Holders of DGD token could vote on a proposal to dissolve the project, and divide the remaining ETH in it's treasury pro rata among DGD holders. Proposal was rejected and the whole process was later analyzed by user [DegenSpartan on twitter](#).

We see many experiments with alternative voting models and governance mechanisms in crypto space, that are applicable in “real world” outside of networks. Below we outline the most interesting ones.

[Weighted and staked voting](#)

In some networks, it may be beneficial to put weights on voting based on the amount of stake that a voting party holds (or quantifiable work that the party performed on behalf of the system). The idea being, that if you have more skin in the game, you will be more dedicated towards producing the right outcome.

Earlier we mentioned Decred and Tezos. Both projects are using staked voting to make decisions about the network, with the possibility of delegation of votes. While Tezos employs a [token voting process](#) (with the option to delegate your vote to bigger staker), Decred employs a [ticket system](#), where voters aren't voting directly with their staked DCR, but rather compete on scarce governance object - ticket.

Both Decred and Tezos have a high voter turnout (>50% of all tokens are routinely participating in proposals), but this is not a given. Many other projects suffer from [voters apathy](#), and/or are [hijacked by rich whales](#) (big token holders).

These voting systems are favoring interested parties who are more involved and affected by decisions. On the other hand, naive voting by capital can lead to plutocracies and political oligarchies, where big voters have advantage over small ones, as we can see looking at [Banzhaf power metric](#). This is more or less fine in common corporate structures, but will probably fail in management of public goods. Some other mechanisms need to be put in place here for protection of the minor voters. Many different protections are being tried in blockchain ecosystem (such as [ragequit](#) in MolochDAO), with various degrees of success.

[Futarchy](#)

A new form of government model, [proposed by](#) economic prof. and author Robin Hanson. In Futarchy, decision making is conducted by voting and market speculation. First, delegates vote on which values we should strive for. Second, market participants on prediction markets are using money to bet (speculate), which policies are most likely to maximize the values we voted for.

Market participants are incentivized to speculate in order to profit and the result of such “[prediction market](#)” (on which policy to use) is binding. Core idea of Futarchy “vote values, bet beliefs” stems from the notion that markets are smarter in predicting outcomes than centralized elected decision makers.

[Gnosis](#) aims to experiment with [Futarchy](#) for governance of their projects. [DAOstack](#) implements loose variation of Futarchy called [Holographic Consensus](#), where DAO members make governance proposals and market participants bet, whether proposals will be passed or rejected.

[Radical Markets](#)

Radical markets are another new concept (presented by E. Posner and G. Weyl in their [book](#)) which can be utilized in purely digital ecosystem. Radical Markets is an umbrella term for a whole set of policies. We will outline two of them to illustrate in which direction these concepts can go.

[Harberger Tax](#)

Harberger Tax is a self-assessed Tax combined with mandatory sale of property. Once a year every owner assesses the price of a given property and pays a tax based on that value. The catch is, if there is a buyer who is willing to buy given property for the assessed price, the owner must sell the property.

This is disincentivizing owners to assess prices and pay taxes that are too low, while ensuring the property ends up in the hands of the owners who can use it most efficiently. Such a system probably cannot exist on scale, because it would violate many private ownership rights that our society takes for granted. However, in specific domains, especially in digital, closed loop economy, it may find its place in some niche markets.

One of the projects, [ENS](#), was considering to implement a Harberger tax concept and ultimately [rejected](#) it for selling of ethereum domains. However, there are other blockchain projects which may experiment with some form of the Harberger tax idea, for example [digital art collectibles](#).

[Quadratic voting](#)

Quadratic voting is an alternative voting process, [designed by Weyl](#), which allows for nuance (or a spectrum) in voting, rather than just binary Yes/No outcomes. Each voter has fixed amount of vote credits, but the cost to cast each vote quadratically raises from the previous one, i.e. $\text{Cost to vote} = (\text{Number of votes})^2$. [This mechanism](#) allows voters to express, if they feel particularly strongly about a certain issue/policy, which can lead to a better minority representation.

Most notable [Smart contract](#) tool on Ethereum that implements quadratic system in decentralized organizations is [Democracy.earth](#).

There are many other voting models that can be easily tested in decentralized digital ecosystems and organizations, such as negative votes and vote markets. Let's wait and see how these will get adopted (or not) in the coming waves of innovation and whether they will be able to solve some common problems of [public choice](#) theory, such as [rational ignorance](#).

Apart from voting, we are building tools to reinvent public funding, divert revenue streams and create new business models, that support financing of public goods and solve tragedy of commons (for example in open-source development), as outlined in [this paper](#).

Digital Organisations

(DAO use cases, frameworks and infrastructure)

[Decentralized \(or Distributed, or Digital\) Autonomous Organizations](#) (DAO) are similar to legal entities. But instead of relying on a legal enforcement in their jurisdiction, they exist in a digital world and are relying on smart contracts and economic incentives.

[Coase's theory of the firm](#) explains why companies and corporations emerge and how they are structured. We see DAOs as an evolution of companies. This evolution is enabled by new collaborative technologies such as smart contracts, online community tools and blockchain. DAOs thus further improve [social coordination and scalability](#), and may make the legacy corporate structures obsolete. They will:

- replace deep hierarchies with flat networks (or [markets](#))
- replace law and bureaucracy with trust minimized code
- replace closed audits with open access to data and upfront verifiability

DAOs are [collaborative networks](#) with economic power. Some DAOs will create completely new peer-to-peer modes of cooperation. Bitcoin, Ethereum, Tezos and Decred can all be seen as DAOs, but their governance and structure differs. Others can still function more like current

companies, investment funds and non-profit organizations, but with added benefits of using smart contracts and being transparent, global and fully digital.

As it sometimes happens with pioneers, the first formal “The DAO” [ended up in ruins](#) due to a software vulnerability, but the DAO ecosystem has carried on experimenting with various use cases in mind.

Funding of public goods, grants

Open-source projects (like vast majority of blockchain protocols) are basically a [public good](#) that is widely utilized. Many entities rely on open-source software. However, there is still no sustainable way to fund the open source projects. They are not financed by taxes (like many other public goods) and rely on voluntary donations and grants from private corporations. [Gitcoin](#) is one example of a decentralized platform tackling this issue.

[Moloch DAO](#) and [MetaCartel DAO](#) are DAOs built on Ethereum which aim to facilitate [donations and grants](#) to support R&D, marketing and development in Ethereum ecosystem. Members contribute funding (in a form of cryptocurrency, token or stablecoin) and vote on funds allocation. Individual members have the possibility to “ragequit” - instantly withdraw their money in case of an unfavorable voting outcome (after paying the withdrawal fee). Similar DAO model is introduced by [Dandelion Orgs](#) built by Aragon.

DAO funding is also being tested for political goals. [YangDAO](#) was created as a fork of MolochDAO to support US presidential candidate Andrew Yang. Yang fans are using it for fundraising and for financing of viral marketing campaigns.

Fundraising and investing

Big topic within the crypto ecosystem is fundraising and investing. During 2017 ICO boom we have seen huge misallocation of capital and misalignment of incentives. But the market quickly evolved and new, smarter approaches are being tried including [DAICO](#) (currently tried by [Aragon](#)), DAT ([Decentralized Autonomous Trust](#)) and so called [Continuous Organizations](#).

Instead of directly selling tokens in ICO events, decentralized projects use innovations such as [bonding curves](#) in order to better [align incentives](#) between investors, users and project teams. Simply put, investors and supporters will buy or sell tokenized shares of a project from a specific smart contract. This smart contract will automatically mint shares or destroy shares based on the user demand and will also automatically adjust the price. One such example of [token using bonding curve](#) is decentralized insurance pool [Nexus Mutual](#).

Investment funds can also be transformed into DAOs. [MetaCartel Ventures](#) formed by community behind Moloch and MetaCartel, is interesting also because it combines digital governance enabled by blockchain and legal entity (LLC), where legal events are triggered by blockchain voting.

Project and community coordination

DAOs are also being formed around already existing decentralized projects. In [dxDAO](#) members are using DAOstack framework to manage decentralized, auction-based exchange protocol [DutchX](#). DutchX was originally built by Gnosis, but later handed over to be governed by community. DAOstack framework gives community members of dxDAO tools to vote, allocate resources, track reputation and pass proposals which are affecting the project.

[Deversifi](#) (former Ethfinex) also switched to DAO-based governance. [Pakt.network](#), a blockchain infrastructure project, is [thinking about decentralized governance](#), trying to sustainably solve challenges with community moderation.

Thanks to blockchain, we are seeing projects with shared and widely distributed ownership - [owned and governed by communities of users](#).

DAO builders and infrastructure

DAO builders and infrastructure providers are projects that aim to provide tools and platforms for building decentralized organizations on scale. Most notable DAO builders and infrastructure platforms supporting decentralized governance are:

- [Aragon](#) - Building their own DAO “[Operating System](#)” and whole alternative [Digital Jurisdiction](#) on Ethereum for dispute solving between digital organizations. They will also release their [own chain](#) on Tendermint, which will be interoperable with Ethereum.
- [DAOstack](#) - focusing on building [platform for DAOs](#) for coordination on [bigger scale](#), utilizing so called [Holographic Consensus](#) and Prediction Markets to figure out, what members of organisation should focus on (treating attention as a scarce resource).
- [Colony](#) - platform for digital companies, with plugin-like collaboration and payment tools, can be used by regular companies to harness some advantages of community led DAOs.
- [Democracy.Earth](#) - platform enabling digital, decentralized [democratic organizations](#) with open participation and political inclusion, utilizing quadratic voting. Democracy Earth

already conducted successful experiment with quadratic voting in [State of Colorado](#), cooperating with [RadicalxChange](#) community.

- [DAOHaus](#) - a framework for creating simple digital organizations that are optimized for non-profit treasuries and grant distribution.
- [Commonwealth Labs](#) - with their flag project [Edgeware](#) built on Polkadot, they aim to create testing [laboratory](#) for various governance models based on economic incentives.
- [Kleros](#) - creates a decentralized judicial system to solve disputes in digital ecosystems.
- [Gitcoin](#) - platform for [decentralized funding](#) of open-source development and issuing bounties for freelancers.
- [Bounties network](#) - similar to Gitcoin, this platform enables issuing crypto bounties.
- [Bitnation](#) - one of the first attempts (2014) to create a purely digital, borderless nation with its own citizenship, notary and governance.

Curation of Content

(Token and Reputation Curated Registries)

In decentralized networks and organizations, we are discovering new ways to efficiently curate content thanks to economic incentives, open access and smart contracts enforcing the rules.

[Token Curated Registries \(TCR\)](#)

TRC is a decentralized system that incentivizes users to create and curate lists with content. Instead of having a central authority as a curator, collective community maintains TCR. There are already websites with free curated content, such as [Reddit](#) which is governed via upvotes and downvotes. However TCRs bring [monetary incentives](#) to the mix. There is a monetary cost to adding new items to the lists and curators are incentivised to provide content according to the rules of the system. There are control mechanisms to ensure that all curators are following the rules.

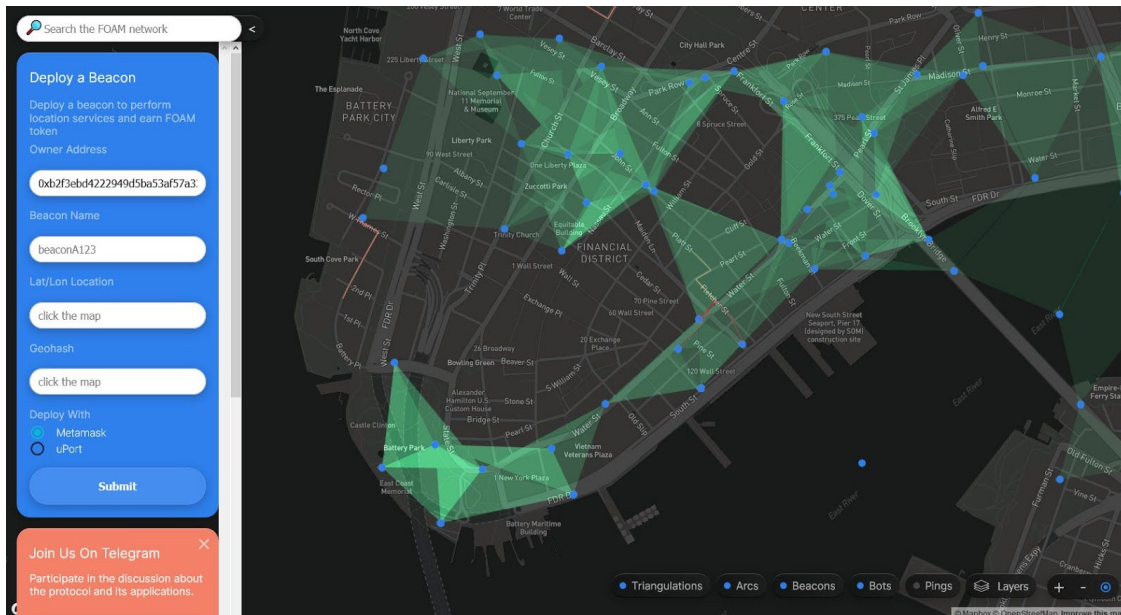
Why does it need a token?

Any monetary unit can be used to spark activity in TCRs, but in crypto networks special purpose

fungible tokens with monetary value are used as a “stake”. When participants have to stake (or lock) their money in the system, they immediately get a monetary skin-in-the game.

These tokens usually have floating market price, which increases friction, but provides another layer of incentives to the mix. Attacker who wants to harm the system for financial gain (e.g. out-staking the community and generating incorrect dispute resolutions) needs to hold specific token of the TCR to do so. If the attack becomes too damaging, token will quickly lose value, as other community members start to sell, thus incur financial loss to the attacking staker. Such tokens of the network can also be seen as an [investable asset](#) - the more popular the TCR is, the more items it has on the list and the more tokens are locked up in staking, effectively driving demand for tokens up and supply down.

[Foam.space](#) has probably the biggest TCR to date, with more than 8500 items on its list. It is essentially a digital map with a technology providing “Proof of Location”. Users can add points of interest on the map, but they need to lock in tokens in every point. Whenever added point on the map doesn't fit the reality (e.g. wrong address, or wrong description), other users can stake token against the point, disputing it and summoning other members of community to stake tokens to resolve the dispute. Losing party loses staked tokens and based on the results of dispute, point of interest is either removed/amended or stays listed on the map.



Reputation Curated Registries

RCR is using non-transferrable reputation within the ecosystem (instead of a token), which in effect doesn't have a market price. RCRs aim to provide better protection against vote buying and bribery in the system.

Curation via prediction markets

Curation via prediction markets is a mix of centralized moderation and upvoting/downvoting of content pieces but with the added staking element. Users will bet whether the authority (official moderator/curator) approves or deletes the content piece. Users will bet with their staking monetary units (like ETH) either “in favour of” or “against” approval of a content piece and thanks to this “prediction market” mechanic you can see an “expected reputation/quality” of the piece already before the official moderation/curation will take place.

Conclusion

You now understand the path from Bitcoin as a governance-minimalized network, through Ethereum smart contracts and formally governed networks to innovative concepts of digital democracy. You learned about various governance models, blockchain tools and infrastructure projects that can power new ways of organization across markets and societies.

The main principles of decentralized governance can be summed up as follows:

- **Bottom-up** instead of top-down. This is necessary because politicians are incentivized to keep the status quo.
- Increasing **power of individuals**. The goal is to reduce barriers of entry to political process and enable participants to express opinions in more granular way.
- Governance **by wisdom of the crowd** (enabled by open markets and skin in the game) rather than by the uncontested power of authorities.
- **Avoiding centralized gatekeepers** that could turn into censors or bottlenecks.
- Making political process more **transparent and data driven**.
- **Collaborative intelligence** promoting cooperation instead of competition.
- Using positive **economic incentives** in political context.
- Governance models need to be **resistant against hijacking** by malicious actors.
- **Lowering barriers of entry** as physical jurisdictions and geo ring-fencing become outdated.

While digital democracy and decentralized governance still have many unsolved challenges, we at Sigil believe that innovations mentioned in this article will vastly improve global coordination. Some of our investments are reflecting this thesis and we will keep having exposure in the crypto assets gaining traction in this space. As an extra benefit to investors Sigil is not a passive hodler but aims to actively participate and experiment with the new governance models, which results in staking rewards that have a positive impact on our ROI.

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