color platform

Color Governance

Beige Paper

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The Color Platform Team

Governance

Introduction - Ostrom Style Governance

To understand something, it helps to break it down to its essence. What is the Blockchain? To really understand the blockchain it is important to view it for what it really is: A common resource. A common resource is something that needs to be managed with the good of all of its stakeholders in mind. Luckily, non-proof-of-work algorithms as of now, don't have a huge impact on the outside world (pollution, special landfill prone electronics, etc.), so those that we build this model around are simply the participants of the Color Network.

So when we design a governance system, we need to do so with all the common pitfalls of shared resources in mind. Despite what some have said, the Tragedy of the Commons is just as much of problem in blockchain as in any other public good. Blockchain does a lot for us in terms of the relationship between those that provide consensus, fee structures, and its users. The power of blockchain is that part of the equation is solved for us. The trouble then becomes, how do we deal with the changes that need to happen as to not have contentious forks, ensure all the participants have a voice, and the currency is maintained such that all stakeholders are accounted for.

1. Define clear group boundaries.
In the Color Platform there are Users, Council Members, and Block Builders. We can further subdivide Active Users, New Users, and Power Users, all of which can receive different perks and incentives.

2. Match rules governing use of common goods to local needs and conditions.
The rules governing the system are designed such that all the stakeholders are taken into account. Being a cryptocurrency that doesn't use a resource intensive proof of work consensus algorithm gives this a unique partial free win for this category because it innately doesn't care about anyone else but its users, and the impact outside of their actions is minimal. Ultimately, as long as they are kept happy and feel accurately represented (not as much of a free win) then this need is surely met. Aside from that, Color strives for a balance between every active participant in its ecosystem by giving each of the group boundaries ways to participate in decision making on some level.

3. Ensure that those affected by the rules can participate in modifying the rules.
In The Color Platform allows users to vote in its treasury allocation system, and to take extra part in where a portion of the inflation gets directed to in the form of pixels. Having direct control of decisions and flow of community funding gives each individual member a voice, not just an elite few or group of developers.

4. Make sure the rule-making rights of community members are respected by outside authorities.

In order to avoid outside interference by legal authorities and non-affected parties, we ensured that not only did our ICO pass the Howie test, but also that we maintain enough decentralization that the Color Platform cannot be shutdown simply by putting the Core Dev company out of business.

5. Develop a system, carried out by community members, for monitoring members' behavior.

This comes back to Consensus rules involved in staking, rules in the code, and the processes involved in changing them. Mechanisms will exist in the code to prevent bad actors, and strictly based on the secure nature of blockchain. As far as when things do get out of hand, there are options available to the Color Steering Committee and community to take. Aside from this, basic reputation systems are planned to be added for Block Builders, and eventually in the treasury system to ensure voters don't get taken advantage of.

6. Use graduated sanctions for rule violators.

The biggest rules that can be violated are the consensus rules. For this reason it is required that those that participate in consensus stake coins in this system, thus risk losing them if it is found out they are performing poorly or against the intended rules of the system. Also, there will be rules in place that affect the reputation of those that put forth treasury proposals, but do not meet the requirements that they promised in their proposal. Contrarily, those with good reputation are more likely to receive funding in the future.

7. Provide accessible, low-cost means for dispute resolution.

Dispute Resolution can occur within the Color community by active community members voicing their opinions, voting on who gets treasury funding, earmarked for what reason, and through this governance process users can make their voice heard by choosing what gets funded on the platform. Also, special votes will be possible in the treasury system that can be proposed by the Steering Committee to help guide the decision making process.

8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system.

First layer of governance occurs at the pixel level, choosing where pixels go personally, and through influence and convincing the community where it is important. The second tier would be the treasury budget and how that is allocated. Finally, the community has a voice in how the Steering Committee and Core code base gets committed.

OSTROM RULES Summary	Color Platform Actions
1. Define clear group boundaries.	Users, Council Members, and Block Builders.
2. Match rules governing use of common goods to local needs and conditions.	Focus on Users, Balance between groups.
3. Ensure that those affected by the rules can participate in modifying the rules.	Becoming a Council Member has an extremely low barrier. Pixels and community participation are free.
4. Make sure the rule-making rights of community members are respected by outside authorities.	Maintain Decentralization. Pass Howie Test - Outside world only affected by community involvement.
5. Develop a system, carried out by community members, for monitoring members' behavior.	Consensus Rules, Reputation System for Treasury and Block Builders
6. Use graduated sanctions for rule violators.	Consensus Rules. Staking, Bad Reputation Scores, etc.
7. Provide accessible, low-cost means for dispute resolution.	Treasury Funds Voting Mechanisms, Pixel Funding, Color Council Special Voting and Steering Committee.
8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system.	Pixels -> Treasury Vote -> Council Votes -> Steering Committee Actions.

Table 1.1 - Ostrom Summary

The community of Color Platform users and owners of the computing infrastructures integrated into the platform, is in effect a Decentralized Autonomous Organization (DAO). And there are some basic governance challenges that all DAO face.

Rich vs. others. The decision making and the money-holders are directly linked, thus leaving those users with less money out of the decision making process. This can create a dichotomy later on which means that proposals that help rich users and don't benefit regular users can be preferred.

This idea of having the largest holders being solely responsible for the direction of the coin and where funds and resources are devoted to makes sense in the beginning, but as soon the logic is propagated at scale, that would be the equivalent to 'banks' making decisions for all users, which is not different than most fiat systems in the world today.

Responsibility. Also, if a core team or the steering committee runs out of funds to support the project, like paying the developers, running ad campaigns, doing community outreach, and attracting new users all need to be the responsibility of the network and its participants.

At the time of writing this white paper, a coin which has these properties does not exist. We're working hard to address this issue and will update the white paper at a later date once more details are finalized.

Overview

The Color governance system will be at the cornerstone of Color's strategy to become a dominant coin in the space. The philosophy of our governance structure is such that the decisions that need to be made on the platform from the beginning and ongoing need to keep the five major stakeholders in mind:

- New Users
- Existing Users (with reputation)
- Active Participants on the Color Platform
- Developers/Maintainers
- Network Infrastructure Providers

In existing systems you can see these five stakeholder groups (or less) existing in some kind of pyramid that has clear winners and "losers" on every step of the decision making process and beneficiary scale. Take Dash for example, a regular new user (unless they were really wealthy) would not have much of a say in the decision making process. In existing systems Masternode prices are $100,000+, which dictate your direct involvement capability with the platform's primary governance engine. If we were to consider who might be the largest beneficiaries to the least in Dash, we might get a pyramid like the following: Masternode owners, Developers/Maintainers, Miners & Existing Users (With reputation), New Users.

This pyramid is similar amongst a lot of coins, where the regular users don't get a lot of benefit, and block builders are always in a precarious position where in a lot of cases block builders (miners in other networks) can even be hostile to the network, and not have the best interests of it at heart. Not only that, but as Vlad Zamfir so eloquently put it, "When miners become more powerful, everyone else gets less of a say." The reality is, whether we like it or not, with the advent of pools, the coveted decentralization that we hold so dear has become a lot more centralized than we'd like to admit. While P2P mining pools and decentralized exchanges exist, the incentives to make really great products do indeed stem from the profit motive, which is why it may be quite some time before those systems really take off in any meaningful way.

So then the question becomes, how do we fix it? Regular old user's don't have a say, and don't get benefits right away from using most existing cryptocurrency systems. We want to reward every part of the ecosystem and allow everyone to have a voice. This is why

we've devised a system that benefits the entire ecosystem and provides them with a platform, not just those few at the top. A design this way from the beginning is crucial.

Governance Rewards

We believe that with the addition of the Pixel program and voter compensation it accomplishes two things: Fixing the imbalance of rewards in a system by encouraging real usage and participation, rather than simply chanting the mantra of "Hodl". By introducing Pixels, users are incentivized in sending and interacting with the platform at large, rewarding them for becoming notable figure on the platform, and possibly recipients of more Pixels. In some respects, they could be seen as upvotes that turn into spendable "points" at the end of a given week. This distribution will be essentially a core dApp for Color and will function as a way for new users to hit the ground running with the Color Platform, or a way for active users to have a voice and be rewarded.
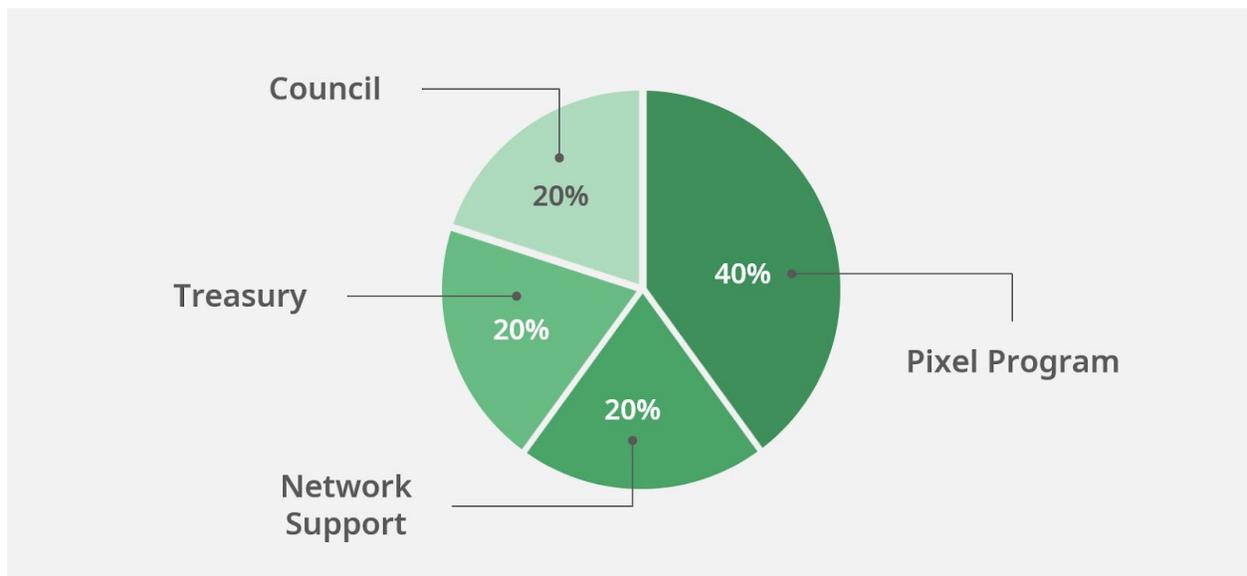

Figure 4-1 Reward distribution

Tentatively, new coins minted will have a distribution similar to the following:

Pixel Program **40% of the Rewards**

These are given from the formula introduced in the Pixels section. This will reward new and active users who contribute and utilize the platform. The Platform will generate every week 200,000 CLR for Pixel rewards.

All platform users will get awarded 5 Pixels a day just for having an account on the Color Platform. Pixels have no value in and of themselves, but when they are sent to other Color

wallet holders each week, they will be exchanged at a specific rate of Color Coins. In order for the gift economy and proper distribution of coins to be achieved, the majority of each block reward needs to be given back to the users who provide value to the system. All the infrastructure and investors in the world doesn't always serve the interests of the users, which Color Platform puts first.

$$\frac{\text{Pixels Received by Individual Wallet in a Week}}{\text{Total Pixels Received by All Wallets in a Week}} \quad \text{x} \quad 200{,}000 \text{ COL}$$

Block Builders **20% of the Rewards (Tentative)**

Block Builders will be elected according to the process outlined in the White Paper or Color Consensus Beige Paper. Block Builders will provide the consensus and propagate the Color Chain forward. They are usually elected because they have superior hardware and are figures of the community. The Block Builders are also required to be a Council Node. Being a Block Builder isn't meant to be an immensely profitable endeavor, but rather a fairly compensated position for the work and effort they give to the Color Platform.

As of this writing there will be:

49 Block Builders

28 Backup Block Builders

Block Builders will be compensated at 2x the rate of the Backup Block Builders. For more information on this, see the Color Consensus Beige Paper.

Treasury 20% of the Rewards

 The Treasury will be the lifeblood of the continuing development of the Color Platform. In the future, the community may want to grow and have ideas for the coin that would require something beyond the budget, and eventually the Steering Committee team would hope to compete for Treasury funds in which the Council Members can vote for. The treasury will be a place where anyone can come, pay a proposal submission fee and that proposal would then be up for a vote in the Treasury system. If it gets certain amount of votes and the funds are still available, then that proposal will be paid out.

The Platform will emit 100,000 CLR every week (declining every year by a certain rate) and transfer 30% of transaction fees to the Treasury.

Council

Council in Color will be users who have over 50,000 Color (CLR) who stake it towards the network in order to gain rewards and be able to vote. In order to help stabilize the coin and add security to the network they participants are rewarded in Color Coin. When a user wants to retrieve their coins from their stake, they must wait for a lockup period to conclude before their stake is returned to them. Currently the lockup time is set to be somewhere between 21-28 days (TBA).

Council members will get an additional 10 votes for every 50,000 coins they have, however, with the quadratic formula they won't be able to effect the vote in quite as linear of a fashion. They will also have the opportunity to vote on proposals concerning treasury funds, changes in governance policies, and changes to the direction of the Color Coin, and vote on the appointment of Steering Committee members.

They will also be required to perform the Logic Running Function by contributing Computing Power to the Platform. This function hosts business logic of dApps, perform processing of users' operations and store results to the underlying blockchain. Business Logic of a dApp, hosted by a Logic Runner, is executed within a devoted environment, provided by Color Virtual Machine (CVM).

Anyone can become a logic runner, they simply need to partition a certain amount of computer power for the platform, stake the necessary coins, and they will be rewarded accordingly. For now this is done at a flat rate by running the software, but in the future becoming a Logic Runner may have different tiers, requirements, and reward structures.

The Platform will emit 100,000 CLR every week (declining every year by a certain rate) and transfer 30% of transaction fees to rewards of Council Members for their activity in governance of the Color Platform. Council members can only earn rewards if they are actively staking their coins and if they spent all of their voting points for the month.

dApp Creators and Bootstrap Phase

 The dApp creators will provide real use cases and value in the system, and can impose their fees within their apps at their own volition. They will enjoy free or near-free hosting within the Color Platform and can charge less prices for their services because they aren't being forced to pay for hosting on the Color Platform. Additionally they can earn money in

the form of Pixels that users use to fund its development, acting as a pseudo "ICO" or bootstrapping system, and they can impose their own fees and make requests from the treasury as well.

The Treasury

The treasury funds make a large part of the block reward, but what are they for exactly? A quick peek into Dash's Budget tracker[1] shows us that these funds, at least in Dash, the largest longest running coin with an integrated treasury system, the fund usage is rather diverse. Funding anything from Latin American outreach projects to building up services, and even keeping the Steering Committee around to work on the project. That's right, if Color Platform users decided that once the Core development team runs out of their own funding, it is going to have to prove its worth to the network through continually requesting the needed funds for the monthly operating expenses to the treasury.

Some examples of expected treasury proposals would be feature adds to existing dApps, new dApps, outreach efforts, our partners and Steering Committee requesting operating budgets, etc. The idea is that the more eyes that are on the treasury, higher quality submissions will be a must. This will prevent waste and amateur proposals from being the only things that are in the treasury system, outside of the monetary incentive and high competition alone.

How Treasury Voting Works

Treasury voting will be handled slightly differently than the first-past-the-post voting methods used in other blockchains. The way that treasury funding works in Dash for instance. In Dash, the proposals with the highest amount of votes win. One proposal, and one vote per masternode. This system has worked well for the most part, but what it doesn't do is give users the ability to show what proposals really matter to them. After all, only the highest voted proposals get through. However, I wouldn't want funding for the Core Dev team to get cut because I funded a marketing effort in Venezuela, for instance. The solutions, we believe can be found by looking at some other voting systems, such as Quadratic Voting.

Quadratic voting gives you a pool of votes that you can spend multiples on one proposal, but the more votes you want to vote on a proposal, it gets exponentially more expensive with that pool of votes to do so. A typical Quadratic voting table might look like this:

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[1] "Budget - Masternode monitoring and budget voting - DashCentral.org." https://www.dashcentral.org/budget. Accessed 3 May. 2018.

A user gets awarded 50 votes. Spending them might look something like this:

Number of votes	"Voice Credit" cost
1	1 **(In Color, voting once is free)**.
2	4
3	9
4	16
5	25

Aside from 1 vote not having a voice credit cost, Color plans use a traditional Quadratic Voting scheme when it comes to *extra* votes. Our preliminary plans are to implement a true Quadratic Voting model through a friendly user interface. The reason Color does not want to make it cost anything for 1 vote, is say, there is a small proposal for a feature add on a component dApp that everyone wants to see happen, but perhaps there is a funding battle going on between two competing dev teams or two big ideas. The pure quadratic voting system would leave those projects out of consideration entirely because participants would be too busy spending their votes on a few select proposals. Thus, we've opted to make only the process to adding weight to a vote cost those precious voting resources. Additionally, if Council Members want to receive a reward that month, they must spend all of their voice credit, otherwise their reward will be split amongst other participating council members.

Differential Voting and Funding
Differential voting will be what determines if a proposal passes or fails. Votes for normal funding proposals will require a 10% passing differential to be passed, and major funding votes or systematic changes/constitutional changes will require 20% passing differential. After that, only the highest rated proposals will pass as funding allows. If a proposal met the differential but there is not enough funding, the next highest voted proposals will be funded until no more proposals can be funded. This is to ensure proposals for small amounts the the community generally likes don't get blocked because a larger effort passed, but the funds weren't there for it. Below is an example table for how a 100,000 color could potentially get split with differential voting:

FUNDED	Proposal	Color Requested	Vote Differential
YES	Proposal Core Funding	30,000	34% Passing
YES	Marketing Effort China	20,000	23% Passing

YES	Android Wallet Port	15,000	21% Passing
YES	Spectrum Stress Test	25,000	16% Passing
NO	Japanese Exchange Listing Fee	15,000	15% Passing
YES	BrazilCoins Listing Fee	3,000	14% Passing
NO	ColorCoin Documentary	10,000	13% Passing
YES	Conference Booth	2,000	12% Passing
NO	ColorCoin Conference	10,000	11.8% Passing
YES	Convenient Store Chain Integration assistance	2,000	11% Passing
NO	Game Show Sponsor	1,000	9% Not Passing

So, as explained above, the funding for the first 4 proposals drops the remaining Color in the budget to 10,000 Color. Therefore, despite passing, the Japanese Listing Fee Proposal must be proposed again during the next cycle. Because it passed, it may be reposted without paying the Proposal fee. The system then moves down to the Brazil Exchange listing fee, much cheaper and almost as popular, it is funded. This pattern continues until the treasury runs out of money or there are no more passing proposals. Even though the treasury has enough Color left to fund the Game Show Sponsor, the remaining funds are instead burned and are taken out of circulation.

Treasury Proposal Costs

The way the treasury will work within Color is that nodes with a certain balance of Color or above become Council Members will be able to vote on proposals (which can be submitted by anyone if they pay a fee). As with other treasury systems there will be a dynamically calculated proposal fee that changes every month. This will take into account three things:

1) The number of proposals submitted last proposal cycle
2) The cost of a proposal in terms of USD now vs. the last proposal cycle
3) The amount of unallocated treasury funds in the last cycle.

This will ensure that there won't need to be a rule change every time the price of Color changes. If the last proposal cycle went by and almost no one submitted proposals, the

cost would drop significantly for that fact alone, but if the price of the Color token going too high was part of the reason no one submitted proposals, that would further drive down the price of proposals as well. We hope to prevent spam proposals, but also not price out anyone who wants to add value to the system.

Steering Committee

Steering Committee will govern the technological evolution of Color Platform. Among their responsibilities will be how major codebase changes (releases) happen, and how larger decisions are put forward on to the community and committed to. The 9 members of the Steering Committee will represent all communities that burgeon from the Color Platform: platform developers, dApp developers, infrastructures for Council Nodes and Block Builder, end users of dApps. The 9 members of the Committee will be elected by the Council Members through direct voting.

The major obligation of the Steering Committee is to oversee the development process of the Color Platform.

Color Platform code will be publicly available at GitHub and open for contributions and issue reports. Open source software is driven by two forces - enthusiasts that code "just for fun"[2] and companies that benefit from communities or services that emerge around the software.

In Color Platform we will provide valuable incentives to both categories of contributors. Patches, accepted by the Core Dev team, will receive rewards in CLR. The actual volume and procedures are still to be defined, but we believe in coding community and that with little support it will become one of the strongest drivers to Color Platform technology excellence.

Another aspect of the software development is Quality Assurance. In open source software it is the community that voluntarily submits bug reports. Well-written reports, with detailed descriptions on how to reveal a defect, will be rewarded from Governance Support expenses.

Extension of the platform, such as new features and improvements, could be submitted through treasury projects. If the community votes for such a proposal, it receives funding.

The Steering Committee may, from time to time, put special requests up in the Treasury to get feedback from the Council Members on their own internal processes and decision

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[2] Torvalds, Linus; Diamond, David (2001). Just For Fun: The Story of an Accidental Revolutionary. New York, New York, United States: HarperCollins. ISBN 0-06-662072-4.

making. This will aid in avoiding contentious forks, and ensuring that the stakeholders are kept in mind.

Arbitration Committee

Arbitration occurs when a dispute on the network occurs and the parties involved seek help of the committee to resolve it. This could be something like someone taking control of an account illicitly, steals funds, or does harm to the ecosystem or the network. These judgements do not occur lightly and the burden of proof will be high, and judgements will take time. However, we do believe this will be an integral part of the network in giving people a voice and way to get their claims heard. The committee will consists of 5 members, the majority of whom must agree on a cases outcome for funds to be overturned.