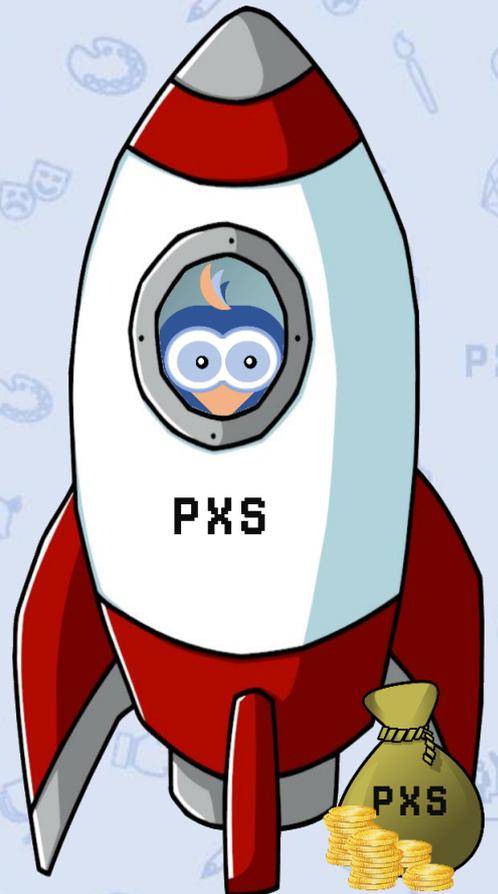


Daily Pixel Art Competition
Blockchain Based



cryptoPIX Whitepaper

**Create
Together
Forever.**



Whitepaper CryptoPIX

A Blockchain Based Daily Pixel Art Competition

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Introduction

For more than 6 months the CryptoPIX team is working on an EOS app for creating collaborative art. It started as a research project, a collaboration between YX Impact Innovations and computer science students from the Delft Technical University. Extensive research has been performed to explore the potential of decentralised games, resulting in the publication of a [thesis](#) on July 29th 2018 and a working prototype of the CryptoPIX application.

The sudden launch of Pixel Master came as a surprise. Since CryptoPIX has been developed totally independent of Pixel Master, the game design is very different. CryptoPIX is more advanced and has the potential to stay active because it is not based on a stagnating Ponzi scheme setup and actually rewards and stimulates users to draw nice art.

CryptoPIX wants to compensate the unfortunate pixel artists/investors that have bought pixels on Pixel Master who are unlikely to earn their “invested” EOS back and lost trust in pixel art games. For this reason CryptoPIX decided to airdrop 50% (37,500,000) of the initial PXS token supply to all EOS accounts that own visible pixels on Pixel Master.

CryptoPIX organizes a 30 day PXS Early Adopter Program. This program will allow people to buy the in-game PXS token. Participants of the PXS Early Adopter Program will get extra privileges in the game. The raised funds will be used for further development, EOS/RAM requirements and marketing purposes.

CryptoPIX will also provide free PXS tokens by means of an airgrab, which means that EOS account holders will get free PXS when they register their account on our website. In addition, CryptoPIX will give away a limited amount of free EOS accounts in order to attract a new audience. This will stimulate users to start playing the game without requiring them to have an EOS account yet.

A brief summary of the game:

- Drawing does not cost tokens or EOS, but the more PXS tokens you have, the faster you can draw.
- Users will be able to make a selection of a drawing within canvas and submit it.
- Users can vote on all the submitted drawings
- The submission with most votes, weighted by the amount of PXS of the voters, wins.
- The users that collaborated on the winning submission will receive their share of the game tokens.
- Every 24h one submission wins and the canvas cleans





Game Mechanics

The game is a competitive cooperative online multiplayer drawing game. The game features a canvas of 1000x1000 pixels. Every player gets to paint any arbitrary pixel on this canvas. The player gets a new pixel to paint once every predetermined interval. The length of this interval is determined by the amount of game tokens the user has. The more tokens the user holds, the shorter the intervals will be. Users will be able to cooperate with a community (or create their own) to create whatever drawings they wish to make.

Every 24 hours an art competition will take place within the game. In this competition the players get to vote on the best drawing made during that day. The winners of this competition receive (PXS) game tokens.

Drawing Mechanism

A player will not be able to draw a pixel with the same color as the pixel itself, as this would make it easier for people to overwrite pixels such that they 'own' that pixel and receive its reward.

There are two main drawing methods: drawing by staking and drawing by spending. In drawing by staking, the player will be able to place pixels for free, however there is an interval in between the pixel placements. This interval decreases as the player accumulates more tokens. This limitation is put in place so that players benefit from having more tokens, and cannot spam pixels for free. In drawing by spending, players can spend PXS to place a pixel instantly. The PXS tokens spent will be burned.

This would enable faster, and possible riskier gameplay, while also providing the system with a 'token sink'. This token sink would (partially) compensate for the amount of tokens created for rewards, to bring more stability to the token's value.

Token supply and reward system

Giving out rewards would mean that tokens would have to be created to pay out the rewards. As the game tokens would preferably have a max yearly inflation rate of 5%, the daily reward amount should be $(\sqrt[365.25]{1.05} - 1) \approx 0.0134\%$ of the total supply at that moment. This boils down to a reward of roughly 13,500 tokens in case of a total supply of 100,000,000 tokens. Over time, this amount will increase as there will be more tokens every day. Because tokens may also be spend into the token sink, the amount of tokens may reach an equilibrium.

The rewards will be paid from the PXS tokens reserve. A reserve of 900,000,000 will allow the game to keep going for at least 47 years and which should be sufficient. For the reason the maximum PXS supply is set to 1,000,000,000. In addition, all spent tokens in the game will go back to the reserve which will extend the lifespan.

Interval period

The interval for pixel placement will be declining depending on the tokens you have staked as well as the duration of a game iteration. The interval period for each player (in seconds) will be calculated with the following formula: $\frac{1}{c \cdot (at^2 + b) \cdot s}$, where c is the maximum amount of pixels painted per second we want for the infrastructure, s is the player's tokens staked fraction of all tokens staked, t is a decimal number from 0 to 1 representing the time elapsed



during the game iteration and a and b is determined by solving for our preferred end time interval at the end of the game iteration.

By defining the interval this way there is no incentive for players to spread their tokens over multiple accounts instead of keeping them on one account as the clicks per second ($= interval^{-1}$) time will increase linearly depending on your tokens staked. This rate will also make sure that if the deadline of a game iteration is approaching, the interval time will quickly increase. This is done by dividing by $at^2 + b$, where a is chosen negative and b such that the whole expression remains positive. The expression $at^2 + b$ now degrades as t approaches 1. Dividing by this expression raises the interval later in the game. If the interval time does not increase it would give people a big incentive to only play at the end of an iteration.

Colors

We will give players enough colors to use such that they can be creative and have fun creating. At the same time we also want to keep the drawing process simple and do not want to clutter the screen with too many colors to choose from. At the start players will have the choice out of 16 base colors. Participants in the Early Adopter Program will get additional exclusive colors. The exclusive colors will be made available for sale to other players.

Buying the exclusive colors will cost the following:

- Bronze: 10,000 PXS
- Silver: 10,000 PXS (only available if user has the Bronze color)
- Gold: 10,000 PXS (only available if user has the Silver color)

After the launch new exclusive colors may be offered as limited editions and be tradable.

Canvas Size

In order to simply visualize the drawing board, while at the same time providing simple atomic actions to the player, the drawing board will consist of a canvas with mn pixels. The exact size of the drawing board may depend on the technical limitations and the feedback given during the testing of the game, however its starting dimensions will be 10001000 pixels as this is the initial size used by other similar games.

Competition

A periodic competition will take place within the game. This adds an extra aspect on top of the game to make the player earn rewards. In this competition the players get to vote on the best drawing made during that competition round. Those who participated in the creation of the winning picture during this competition will receive game tokens as a reward.

Collaboration & Competitiveness

Players will be more effective when collaborating with others, as they will be able to create bigger drawings within a reasonable timespan.

In order to make the painting mechanic more competitive on its own, anyone can draw wherever they like. Paintings are drawn in parallel. Players can choose to draw on his 'own project' just as easily as they can draw on someone else's project. Players can find all drawings of the current competition round on the canvas. To choose a drawing to vote on,



the player can browse the voting interface of the application. Here they will find all submitted drawings of the competition.

Game Iterations

Each iteration of the competition will last for a set period of time. This period will likely be 24 hours long. This period length will give most people around the world the time to participate and draw, and would limit the effect timezones have. To give players the opportunity to always be able to draw there will be always a canvas available to draw on. Since the voting period for the competition requires a static canvas, the game will take a snapshot of all pixels as soon as the competition ends and allow people to vote on the submissions made.

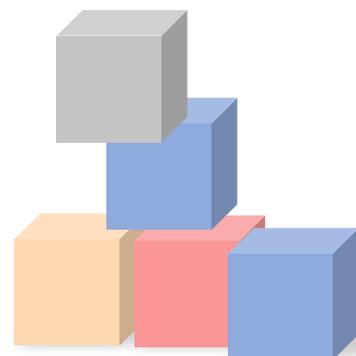
With this approach new players joining the game for the first time will immediately be able to draw and will not be stuck waiting for a voting period to end. As opposed to keeping the drawing from last period and continuing on it, the new canvas at the start of each voting period will be a clean white canvas. We would like to promote a fast paced drawing experience where new drawings are constantly created. Cleaning the canvas after every period will incentivize creating new drawing and will avoid having the same drawing win each time.

Voting Mechanism

We would like players to vote on the drawing they find the best. However we do not want to limit the player to only vote once per competition. It should feel more like a upvote system, where players will be able to upvote multiple drawings that they feel are good. The risk of making people only able to have one vote is that they will vote for one painting only to prevent another painting to win, effectively creating a sort of two party system. Having players able to upvote drawing will make it a fun experience for the player. They will be able to look through the submissions and like whatever they feel deserve it.

Building up pixels

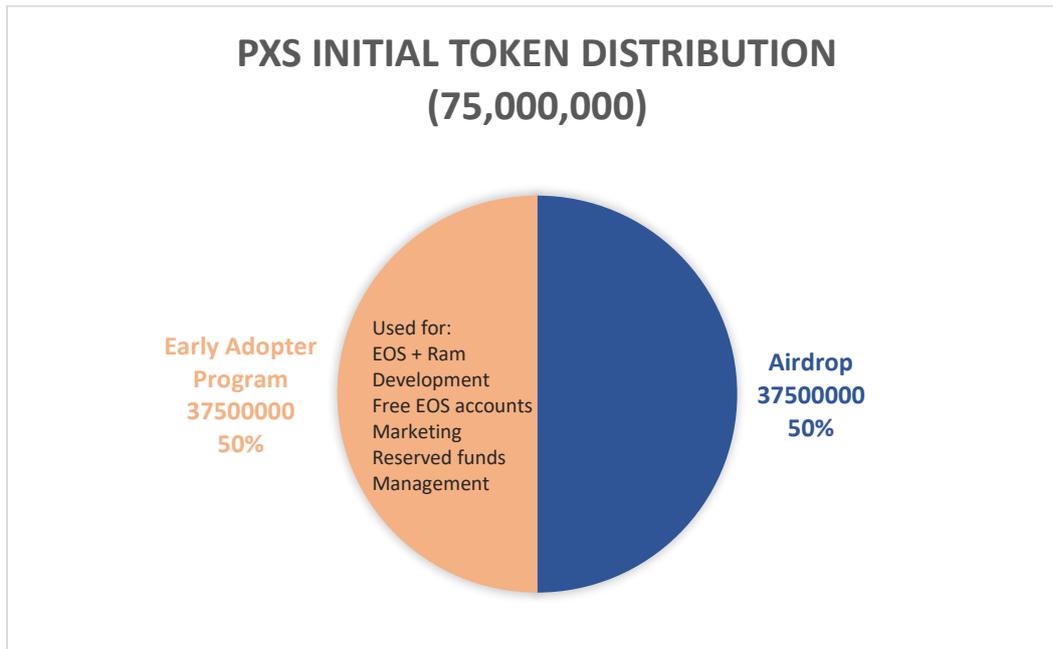
In order to have more impactful gameplay, players will not be limited to placing one pixel at the time. Players will be able to build up pixels over the day, up to 100 for now. These pixels can then be placed all at once, or in smaller amounts. The build-up speed of these pixels corresponds to interval period of the player.



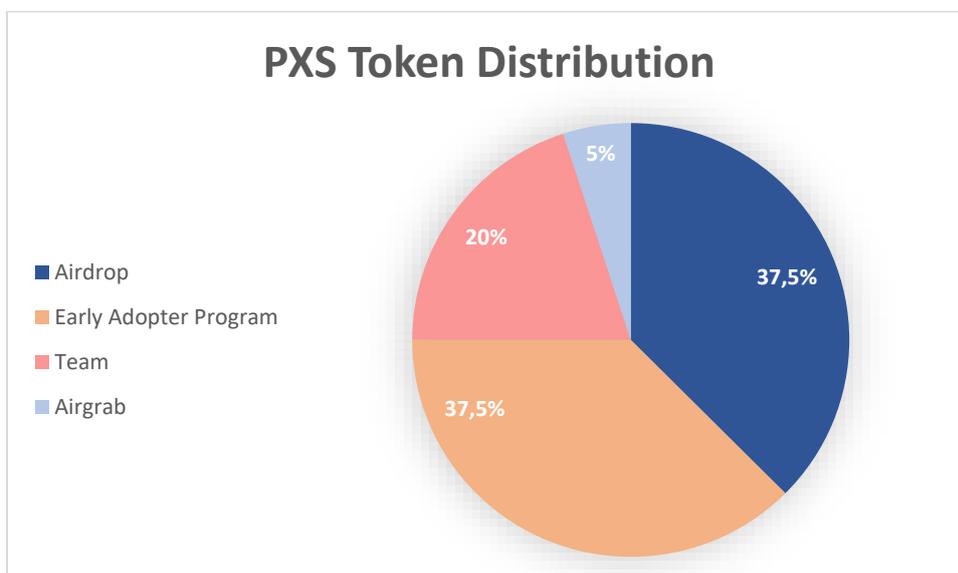


PXS Token distribution

- 75.000.000: Initial PXS supply distributed before launch
 - 37,500,000 (50%): Airdrop to Pixel Master visible pixel owners
 - 37,500,000 (50%): Sold via Early Adopter Program to cover funding for
 - EOS + RAM requirements
 - Development
 - Free EOS accounts
 - Marketing
 - Reserved funds
 - Founders/management



- 20.000.000: Reserved for the CryptoPIX team as an incentive to deliver a high quality and to keep improving the game after launch.
- 5.000.000: Reserved to provide free PXS tokens to EOS account holders that register





PXS Airdrop to Pixel Master pixel owners

CryptoPIX has been developing the game already for more than months. The sudden launch of Pixel Master, another pixel art game on EOS, therefore came as a surprise. The game did attract a lot of users in a very short time span, spending together about 150,000 EOS on the game in just one week. Pixel Master showed the potential of a decentralized collaborative pixel art game.

However, after just one week Pixel Master slowed down fast after similar pixel art games popped up. It showed that the economics behind Pixel Master, basically a Ponzi scheme setup, is not sustainable. As a result of the sudden slowdown, many users that have bought pixels are unlikely earn their “invested” EOS back and lost trust in pixel art games.

CryptoPIX wants to give something back to these unfortunate pixel artists/investors and wants to restore trust in decentralized pixel art games. For this reason CryptoPIX decided to airdrop 50% (37,500,000) of the initial PXS token supply to all EOS accounts that own visible pixels on Pixel Master.

- 8 Oct 2018: CryptoPIX made a snapshot (10:01:09 UTC) of all EOS accounts with Pixel Master pixels
- 11 Oct 2018: Airdrop to all Pixel Master pixel owners who will receive their pro rata share in PXS tokens. This share based on the value of their visible pixels.





PXS Early Adopter Program

The PXS Early Adopter Program will start on Oct 13th 2018 and will take 30 days. During this period 37,500,000 PXS tokens will be sold in exchange for EOS. Every day a fixed amount of PXS tokens is sold. The tokens are divided over all participants on a specific day, based on the amount EOS they have put in.

The first day of the Early Adopter program is a special one. On the first day of the program an increased amount of PXS is sold compared to the other 29 days. The first day 8,500,000 PXS tokens are sold, each of the other days it will be 1,000,000 tokens.

In order to distribute participation in the program evenly over the day, participation early in the day will be compensated compared to later in the day. Participation at the start of a day will give the participant 4% more PXS in return for their EOS compared to participation at the very last moment. The compensation is scaled linearly over each 24h period. This compensation will offset the extra risk taken and prevents people to delay their participation until the end of the day.

Participation in the Early Adopter program means allows the participant to invest in the PXS token at a very early stage. In addition, participants of the PXS Early Adopter Program will get cosmetic privileges in the game.

- Participants will get a special ribbon or a badge next to their names in the game.
- Participants will get extra colors for free, based on the amount of EOS they have spent during the Early Adopter Program.
 - Bronze: All participants
 - Silver: Participants that have spent more than 25 EOS
 - Gold: Participants that have spent more than 250 EOS
- An exclusive one time canvas will be made available for participants only. Details will be announced later.

In the unfortunate case insufficient funds would be raised from the Early Adopter Program, all funds will be returned to the participants.

PXS Airgrab

In order to provide free play to new players, PXS tokens are reserved for this purpose. All they need is an EOS account. Since we only want to provide free PXS once per person, one will need to verify their identity by means of their Facebook account. To stimulate early adoption the first accounts will receive more PXS than later adopters.

The free PXS tokens are distributed over the verified EOS accounts as follows.

Accounts	Free PXS per account
1 - 100	1000
101 - 1,000	500
1,001 - 10,000	100
10,001 - 50,000	25
50,001 - 305,000	10



Free EOS accounts

CryptoPIX aims to attract users from a broad audience, and is therefore providing free EOS accounts to 100 people without an EOS account. CryptoPIX will reserve EOS from the raised funds for this purpose and will look for a good way to make sure these accounts are given to people outside the crypto community.

Timeline

- 8 Oct 2018 (10:01:09 UTC): Snapshot made of all of EOS accounts with PM pixels
- 8 Oct 2018: Release Whitepaper
- 11 Oct 2018: Airdrop to PM visible pixel owners
- 13 Oct 2018 (00:00:00 UTC): Start of Early Adopter Program
- 15 Oct 2018 (23:59:59 UTC): Early Adopter Program paused (10.5 million PXS sold)
- 1 Nov 2018 (00:00:00 UTC): Beta version launched
- 8 Nov 2018 (00:00:00 UTC): Early Adopter Program continues
- 4 Dec 2018 (23:59:59 UTC): End of Early Adopter Program
- 17 Dec 2018: Launch of the game and start of airgrab