PixCoin – A Web3 NFT Photography Marketplace

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1. Overview

The modern age of over-accessible digital photography has unfortunately reduced the special artistry associated with the craft. In the past, analog film photographers could only take 24 or 36 photos for each roll of light-sensitive film. The film roll must then be carefully preserved and meticulously developed, a process which can take up to a few days, before the film photographer could even see his work; digital cameras, on the other hand, allow the photographer to take thousands of photos and store them all on a tiny SD card. This ease of access inadvertently makes each individual photo less special, and turns the art of photography into a bland routine.

The PixCoin platform aims to return a sense of exclusivity to photography, using a tokenomic incentive model to motivate photographers to value each individual photo more.

2. PixCoin Cryptocurrency Design

The PixCoin platform is a decentralized Web3 marketplace that trades NFT photography products using the PixCoin cryptocurrency.

Essentially, PixCoin corresponds to digital pixels. One PixCoin is equal to 100 digital pixels. Therefore, a typical 1920 x 1080 corresponds to 207.36 PixCoin. PixCoin is an inflationary model cryptocurrency. Users exchange PixCoin tokens over month-long periods, where the amount of purchase per user per month is capped at 1000 PixCoin. This model prevents rampant inflation, with the amount of PixCoin in circulation strictly proportional to the size of the user-base.

3. Marketplace Design

Empirically, all users on the PixCoin platform possess the same abilities and are virtually identical by design. However, user will naturally gravitate into two main categories: suppliers and consumers.

Suppliers are photographers providing photography products to be circulated on the marketplace. To upload a photo onto the PixCoin marketplace, the supplier must "pay" an amount of PixCoin proportional to the literal number of digital pixels in the photo. A photo with higher resolution or larger frame size has more pixels and will cost more to upload. On the other hand, these photos may also generate higher demand on the marketplace and lead to better returns. Since the supplier possesses a limited amount of PixCoin, he must carefully and deliberately choose each photo to upload to the marketplace. Furthermore, he must also deliberate between uploading fewer "high-quality" photos products or more "low-quality" products. In general, a typical supplier will upload between 1 – 5 photo products each period (one month.) Limiting supply in this fashion will lead to higher quality and healthy market demand through artificial scarcity.

As a side not, "high-quality" photo products are not necessarily better products. For example, a single large format high resolution landscape photo would have comparable cost and "artistic value" compared to a collection of smaller-format lower-quality photos that tell a narrative.

Once these photos are uploaded unto the marketplace, they are "minted" into Non-Fungible-Tokens (NFTs.) This protects the authenticity of the photo product. NFT photo products are then put to auction, with the starting price set to the supplier's upload cost (the pixel-size of the photo.) An "auction cost" is related to this process. The supplier pays this cost entirely, as it is used to mint the NFT. The specific amount of the auction cost is determined by the cost to mint the NFT.

Once the NFT photo product enters the auction marketplace, the second category of users, consumers, will competitively bid on the product using their PixCoin. At the end of the auction period, a length of time set by the supplier, the consumer user with the winning bid transfers the specified amount of PixCoin to the supplier, bound by a smart contract, while the NFT photo product is transferred to the consumer's address. In the situation that no consumer bids on the NFT photo product, the product remains with the supplier and he is refunded the upload cost. The auction cost is not refunded.

The suppliers profit can be described by this equation:

$$\text{Supplier Profit} = \text{Winning Bid Price} - \text{Upload Cost} - \text{Auction Cost}.$$

4. Tokenomic Incentive Design

Under this tokenomic model, the supplier is incentivized to produce the highest quality photography products possible. Typically, the supplier will turn a profit since the winning bid price is definitively higher than the upload cost, because the starting bid is set to the upload cost, and the auction cost is very low and usually negligible. However, a lower quality NFT photo product may cause the supplier to receive a net loss. If the difference between the winning bid and upload cost does not fully cover the auction cost, then the supplier will lose the short amount. Alternatively, if the NFT photo product receives no bids, the supplier will lose the entirety of the auction cost. With the second situation in particular, however, the supplier is still incentivized to continue using the PixCoin platform, despite the loss, because the supplier retains possession of his NFT photo product, which should compensate for some of the lost auction cost. Nevertheless, this model motivates the supplier to generate the highest possible quality products in order to avoid loss and maximize profit.

5. Development

The PixCoin platform is a decentralized Web3 marketplace. It is not owned nor operated by any particular entity, but maintained and owned collectively by users. Programmatic development decisions will be determined based on community forum vote, similar to other decentralized platforms such as Nouns. A DAO treasury will maintain and protect the integrity of the platform.