REBEL: A Peer-to-Peer Creator Payments Platform

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Abstract. A strictly peer-to-peer model for creator payments would allow artists to earn directly from their fans without needing disbursement from social media and entertainment institutions. We propose a decentralized application, deployed to Polygon (Proof-of-Stake EVM sidechain), that pays creators immediately via cryptocurrency for every user interaction with their content. Uploaded media is seamlessly minted as an ERC721 token (NFT) proving artist ownership. Content is stored on IPFS (Interplanetary File System), so it can never be destroyed by any central parties. Creator payments are transparent (artists take 98% of all profits), immediate, and users can unlock monetary token rewards (ERC20) as their like count grows.

1. Introduction

Creators on the Internet have come to depend heavily on social media, streaming, and entertainment institutions acting as trusted third parties to disburse artist payments. While that model is passable today, it is problematic because of the heavy trust instilled in central parties to pay creators equitably and promptly. Often with major streaming platforms creators must wait months for their earnings to arrive, if at all. Moreover, these institutions' payout policies (take rate) for artists are often murky, and it is difficult for creators to know if they are being paid fairly [1].

What is needed is a fan-to-creator payment platform based on blockchain proofs instead of trust in central media companies, allowing content consumers to transact directly with the artists they love and creators to take the large majority share of contributions. Here, we propose a solution using a decentralized application (series of smart contracts) deployed to Polygon, where for every user "like" of your content you are paid immediately (sub-second) to your crypto wallet. Artist payout percentage is fully transparent (all smart contracts are open source) and total creator earnings are public for the world to see. Cryptoeconomics inherent in the platform mitigates bad actors from gaming the system with fake likes–a common problem with traditional social networks–so that the truly most beloved creators can rise to the top and be recognized.

2. Transactions

Transactions on REBEL are peer-to-peer, occurring directly between fans and creators. When a user with a self-custody cryptocurrency wallet (i.e. Metamask on Google Chrome) visits the application, they must first “connect” that wallet, cryptographically confirming to REBEL the public address of the user.

When a user uploads media content (all music, photo, video MIME types supported) they are given the opportunity to specify metadata about the item including name, description, and attribute tags. On submission, the media file and metadata supplied by the user automatically generate an ERC721 NFT (non-fungible token) on Polygon. Gas fees to mint new NFTs (user posts) are near-zero, averaging 0.0005 MATIC (or <$0.01 USD), and no fees are charged by REBEL in this process. The media file and metadata are pinned to IPFS and the resulting IPFS hashes are stored directly in the ERC721 struct, along with the public address of the creator. Thereafter, all NFT’s created by a particular user address are visualized in that address's profile gallery.

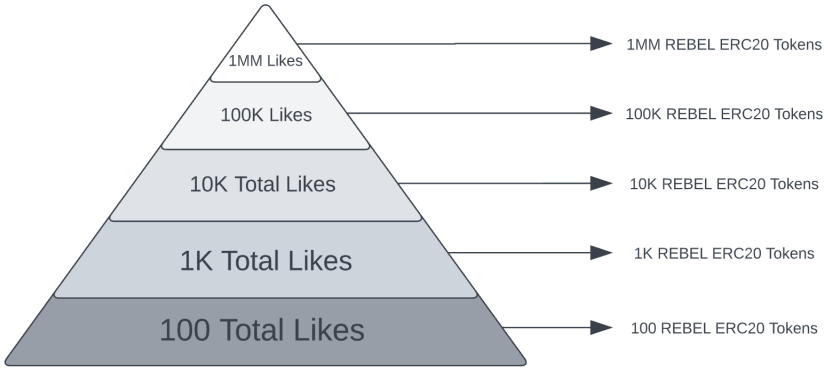
When a user “likes” a particular post, they are prompted to sign a payable transaction (with value .02 MATIC) which they must confirm using their private key. On confirmation, 98% of that transaction value is sent directly to the creator’s cryptocurrency wallet (.0196 MATIC, or $0.03 USD at the time of writing). A 2% transaction fee is taken by REBEL, purely for reinvestment in scaling application servers, growing the engineering team, covering vendor costs, and innovation. Delivery of funds from fan-wallet to creator-wallet averages less than 1 second, thanks to the high throughput of the Polygon sidechain.

3. Incentives

As creators accumulate likes for their posts (NFTs), they stand to unlock valuable rewards in the form of ERC20 tokens. 1 Billion REBEL (Rebel Artist) ERC20 tokens were minted on the Polygon mainnet. 500MM of these tokens are part of the public crowdsale, priced at 1 MATIC: 1 REBEL token. The remaining 500MM REBEL tokens are owned by the core REBEL decentralized application smart contract address.

Upon meeting certain “total cumulative likes” thresholds the REBEL ERC20 tokens stored in the core contract will automatically be distributed to a creator’s cryptocurrency wallet. Based on supply and demand, these tokens’ value will fluctuate with the market and they can be exchanged for other cryptocurrencies (i.e. ETH) via platforms like Uniswap liquidity pools.

Payment of incentives is immediate upon hitting milestones. “Total likes” count is calculated as the sum of all likes across your NFT posts. The incentive at each level can only be received once. A clear breakdown of incentive rewards and corresponding “like thresholds” is given below:

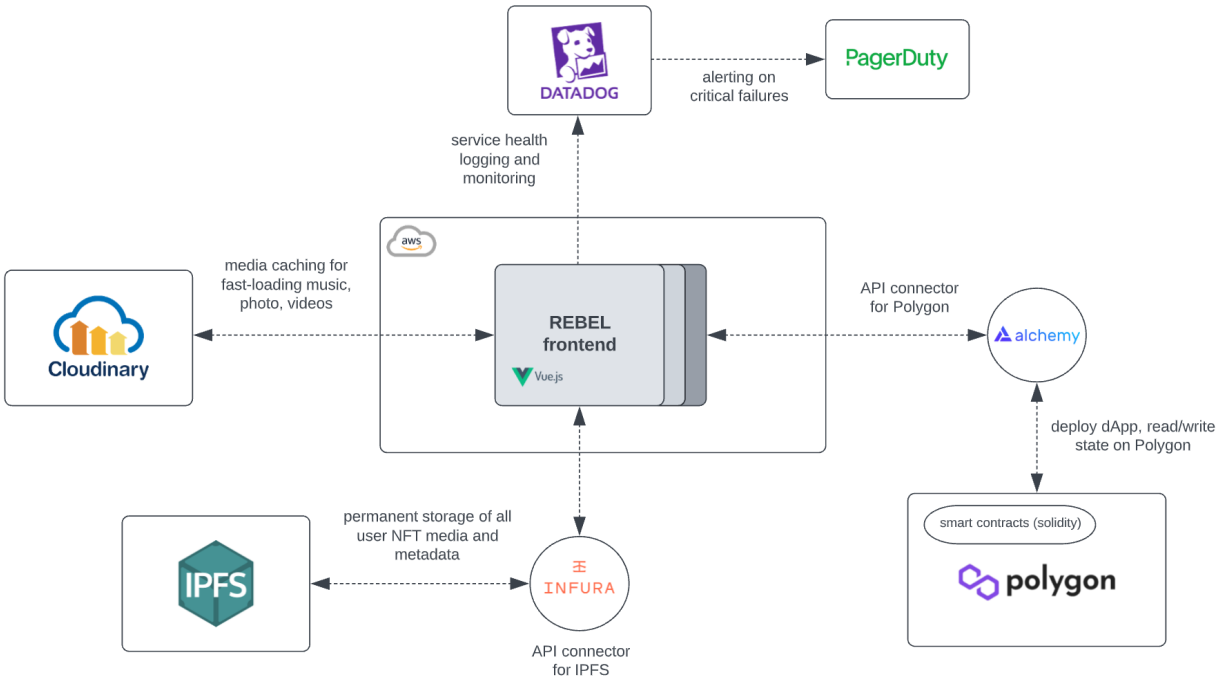


4. Architecture

At the base of our design is the Polygon Proof-of-Stake EVM (Ethereum Virtual Machine) sidechain. Polygon gives us high throughput (>1K TPS) [2] of event confirmations and provides near-zero gas fees (<$0.01 USD) for all user activities in app (minting, liking, etc). This allows for a seamless Web3.0 user experience, devoid of long confirmation wait times and prohibitive gas fees. We leverage Solidity for writing all smart contracts, OpenZeppelin for base smart contract logic, Hardhat for testing, compiling, and deployments, and Alchemy APIs for as our gateway to Polygon nodes.

For minting NFTs, we leverage Infura's pinning API to IPFS (Interplanetary File System). Cloudinary is used for media caching and dynamic media transformations on our frontend, again to optimize for a seamless, quick-loading user experience.

Our architecture is novel in that we've omitted any centralized backend service / database layer, relying solely on blockchain and IPFS to read data. For our frontend Vue.js service, this is setup within a private AWS VPC, dockerized, and assigned to an auto-scaling group of EC2 nodes. Metrics and logs are sent to Datadog, and anomaly monitors are configured to trigger Pagerduty alerts for any critical failures.



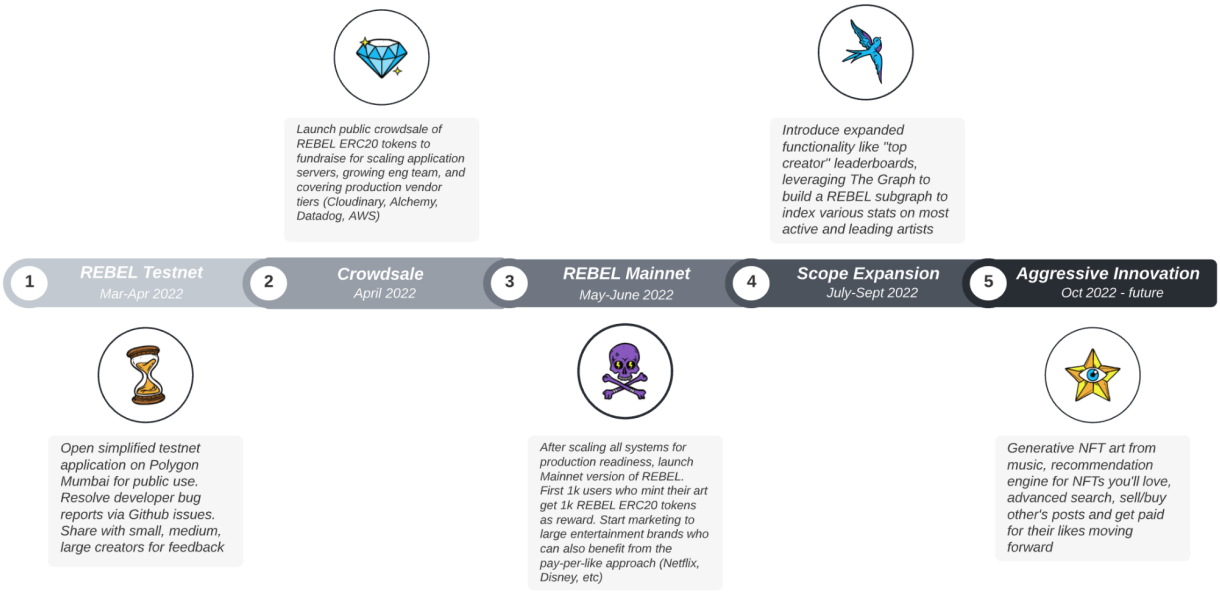
5. Privacy

In the spirit of decentralized blockchain technology, we have anonymized user profiles to place an emphasis on a creator's art over personality, biographies, and profile pictures. Every public wallet address automatically has a profile in REBEL, complete with random avatar, even if they have not yet posted any content.

Once you've connected your wallet, you will automatically be re-routed to your public address page, where you can start uploading content. Essentially, this creates universal Internet pages, where only the owner of a wallet address can add content to the page. Artists can think of their page as a central portfolio to store all their music, photographs, and videos forever, without fear of it being lost.

We have not strived to re-invent social media networks with REBEL. If an artist would like to deanonymize themselves and share their work on other platforms, they are free to do so, and we provide easy-to-use social sharing links in-app to help them broadcast their work.

6. Roadmap



7. Conclusion

We have proposed a new model of creator payments not dependent on trusted social media, streaming, or entertainment institutions in the middle. These central parties often take an order of months to pay their content makers, and pay small fractions to creators of the large profits they themselves generate. Creator disbursement policies are commonly vague and artists are left wondering if they are being paid fairly. To remedy this, we proposed a fan-to-creator payment system and NFT minting platform leveraging blockchain technology so that artists can be paid transparently in real-time. Fans can be certain their contributions go directly to their favorite artists, and creators take 98% of all fan contributions in the form of cryptocurrency payments to their digital wallets. Moreover, artists stand to unlock monetary ERC20 token rewards as their overall like count increases. Ultimately, it is REBEL's aim to give digital artists of all kinds–musicians, photographers, videographers, and beyond–the most transparent, fast creator payment system so they can make a better living and thrive in their craft.

References

[1] A. Cush, “How Musicians Are Fighting for Streaming Pay During the Pandemic,” https://pitchfork.com/features/article/how-musicians-are-fighting-for-streaming-pay-during-the-pandemic, 2020.

[2] T. Brown, “What do you prefer - Maximum Security or Cheaper Transactions?,” https://blog.polygon.technology/what-do-you-prefer-maximum-security-or-cheaper-transactions, 2021.