Epic Chain: An AI-driven Entertainment Blockchain

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Abstract

Epic Chain presents a groundbreaking blockchain solution tailored for the entertainment industry, addressing the challenges of high transaction fees, limited throughput, and counterfeit content plaguing existing platforms. Leveraging Ethereum Layer 2 technology, Epic Chain offers creators and brands a secure, scalable, and user-friendly ecosystem powered by AI-driven digital rights management. By integrating Optimistic rollup technology and AI-powered copyright protection, Epic Chain ensures fast, affordable, and authentic fan experiences while safeguarding intellectual property rights. This white paper provides an in-depth analysis of Epic Chain's design principles, Layer 2 protocol, digital rights management protocol, and brand toolkit protocol; highlighting Epic Chain's commitment to security, user-friendliness, and innovation. With features such as simplified token creation, token gating, and decentralized governance, Epic Chain empowers creators and brands to unlock new opportunities in the entertainment landscape. As the platform continues to evolve, future enhancements promise to further revolutionize the entertainment blockchain space. Join us on the journey to redefine entertainment on the blockchain with Epic Chain

1. Introduction

Epic Chain (Ex-Ethernity Chain) originated as an digital collectibles marketplace on the Ethereum blockchain, boasting partnerships with top brands such as Lionel Messi, Shaquille O'Neal, Bruce Lee and the US Space Force among others. However, the market experienced a decline due to high transaction fees, limited throughput, and a proliferation of counterfeit tokens,

rendering it financially unsustainable for creators and brands to offer authentic and affordable content to fans. This whitepaper introduces the Epic Chain blockchain, an Ethereum Layer 2 solution tailored for the entertainment industry, designed to enhance fan experiences by making transactions more affordable, faster, and secure. Furthermore, this paper delves into the integration of AI within the Epic Chain blockchain to safeguard brands and consumers.

2. Epic Chain: The Blockchain for Creators and Brands

Epic Chain is an Ethereum Layer 2 blockchain that addresses challenges such as high transaction fees and limited throughput while maintaining the security, stability, and decentralization of the Ethereum Layer 1. Utilizing the Optimism open-source op-stack, Epic Chain integrates an AI-driven digital rights management process to verify the authenticity of deployed tokens. This process employs an AI-powered matching engine to identify potential counterfeit tokens, thereby safeguarding the integrity of the platform's content. Additionally, Epic Chain provides creators with user-friendly tools for token creation, eliminating the need for extensive technical knowledge or development resources.

3. Design Principles

Epic Chain's blockchain design principles is driven by two core principles: security and user friendliness. Epic Chain's underlying architecture and user experience are fundamentally focused on achieving these two guiding principles.

3.1. Security

Epic Chain's chose the battle-tested and proven Ethereum fork (Optimism's op-stack) because of its code simplicity (with complexity comes uncertainty and vulnerability) and security history (no known big breach, attack, or anything that brought the network down so far). The node infrastructure layout and cloud provider selection mitigate risks such as DDoS and routing attacks. The token creator toolkit utilizes audited smart contract templates and front/back end code with proven track record having been used in the native digital collectibles marketplace.

Additionally, the AI-engine protects users and brands against potential scams and counterfeit tokens.

3.2. User Friendliness

Epic Chain enhances user experience by adopting Optimistic Rollup technology, enabling faster transaction confirmations and reduced gas fees. With ETH as the native currency, users can seamlessly bridge assets and engage with the blockchain. The token toolkit offers creators intuitive interfaces for token creation, eliminating the need for coding expertise and reducing deployment time to minutes.

4. The Layer 2 Protocol

4.1. Epic Chain as an Ethereum Layer 2 Blockchain

Epic Chain is an Ethereum Layer 2 blockchain with high transaction throughput and highly reduced gas fees with optimistic rollups, based on Optimism's op-stack [1]. As mentioned above, Epic Chain's chose op-stack because of its code simplicity, security track record and the economic viability of the optimistic rollup.
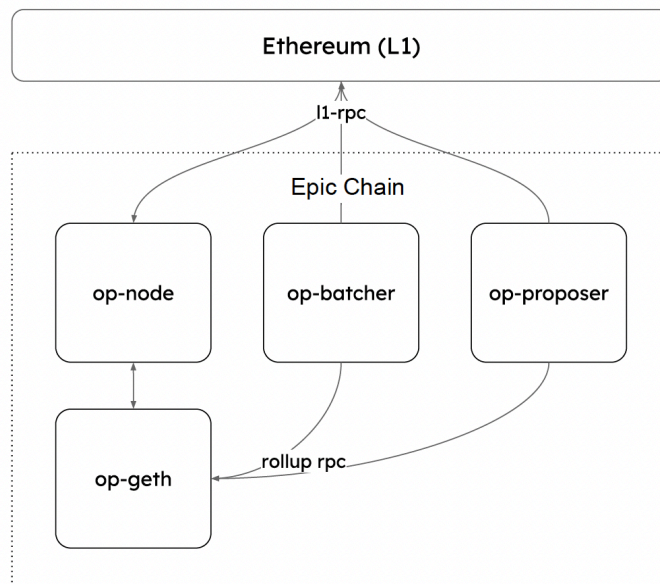
4.2. Rollup

Epic Chain utilizes the op-stack default configuration with 2-second blocks and leverages the latest op-stack delta upgrade with span-batch enabled, which reduces overhead by representing a span of consecutive L2 blocks in a more efficient manner but preserving the consistency checks as regular batch data [2]. The overhead of the original batch format comes from:

- Redundant data in L2 blocks: i.e. parent hash, L1 epoch timestamp
- Block data organization: data organized in a non-friendly compression way
- RLP data encoding is not optimized
- Unnecessary data for consistency checks

Span-batches address these inefficiencies with a new batch format that, along the Ethereum Dencun upgrade, allows to reduce rollup gas fees to up to 93%, making it very efficient to run even with low transaction volume which make operating the blockchain sustainable in the long run.

4.3. Scalability and Redundancy

Each blockchain component is running in docker containers on virtual machines which can be dynamically scaled up hardware-wise (CPU, RAM, storage) as well as their network bandwidth (ingress and egress).

The blockchain state is backed up several times a day in online storage and daily in offline storage. Should the main node provider fail, there is a secondary node provider ready to have the blockchain state restored and back operating in a few hours plus the time that takes for the RPC DNS change to propagate.

5. The Digital Rights Management Protocol

5.1. AI-Powered Copyright Protection

Epic Chain incorporates a feature in its blockchain execution layer to prevent copyright infringement abuse with an AI matching engine. In the contract deployment and execution flows, the node intercepts calls for setting and changing token metadata and sends the metadata to the AI matching engine queue. The AI matching engine will process the metadata asynchronously so as to not disrupt or delay the deployment or function execution, and compute a similarity score. The similarity score, a percentage that denotes how similar an image is to an existing authenticated asset, is then stored on-chain and is used to flag those tokens that exceed a certain similarity threshold. The score is available on the native block explorer, the DRM search page (or authenticity search), a REST API for developers, and on-chain in a dedicated smart contract that can be queried via the native block explorer or programmatically (hardhat).

5.2. Score Record

The on-chain storage of token similarity score ("DRM smart contract") is indexed in the off-chain database ("DRM database") for faster access by the DRM service, which serves the block explorer, the DRM search page, Epic Chain's native digital collectibles marketplace, and external applications that can query via REST API.

5.3. Training

The AI matching service is trained frequently from an off-chain storage which is updated with text and images from authenticated assets trading in blockchains with significant volume (Ethereum, Solana, Polygon, etc.) and verified and/or authenticated by third party sources (i.e. Opensea [3], Magic Eden, etc.).

5.4. Authentication

Authentication of deployed tokens can be automatic or manual. With the automatic mode, before running the token metadata through the AI-matching service, the DRM service verifies if the contract:

- has the same address as the authenticated contract in the source blockchain - was deployed by the same wallet that deployed the original authenticated contract

If any of the above conditions are met, the contract will be assigned a similarity score of 0 (since it's considered authentic). If they're not the same address, then the metadata is sent to the AI-matching engine to get the similarity score.

If the author of the original token deploys the contract with a different wallet than used in the original blockchain, the contract will be flagged as counterfeit (similarity score will be 100 if they used the same metadata). In this case the manual authentication mode can be used, where the author needs to prove that they deployed, have admin rights, or have access to the deployer wallet of the original token contract. This is done manually by verifying the aforementioned with a specific amount token transfer on Ethereum to a verifier smart contract, or a community known wallet.

6. The Brand Toolkit Protocol

6.1. Simplified Token Creation

To create a new token or digital collectible and give it utility, one needs to either hire a solidity developer for the smart contracts, a full stack engineer for the front end, and a smart contract auditor; or subcontract a company that provides these services. These options consume time and money and they're not always the most secure way to release a token to the public. Epic Chain is not only a blockchain tailored for the entertainment industry, it also builds tools around its core
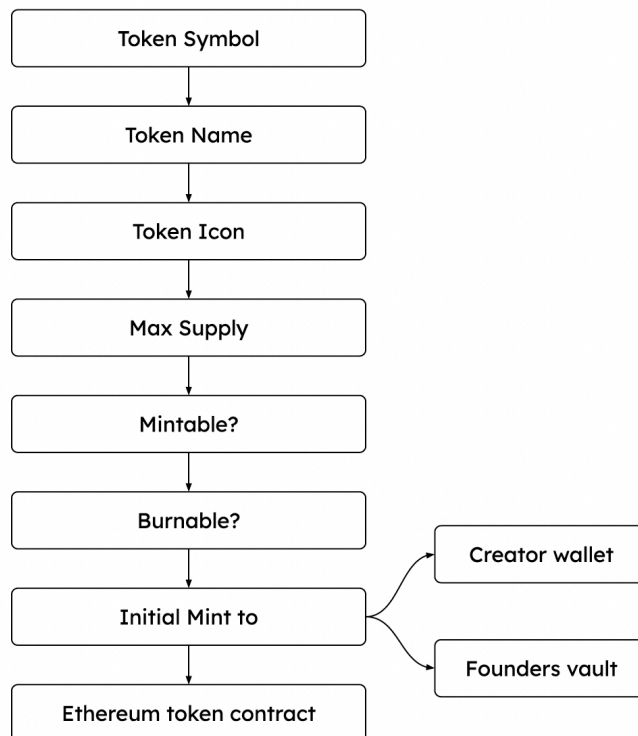
to make it easier for creators and brands to release their own currency or social tokens, digital collectibles, and their link to the real world.

7.2. The Currency / Social Token Creator

The token creator boasts a drag and drop web based interface to create a currency or social token in a few minutes, all it's needed is a web3 wallet (e.g. Metamask) with some ETH in the Epic Chain blockchain.

The creator tool also gives an option to store the newly created tokens in a founders vault which is more secure than simply storing them in a single wallet; create a DAO page in minutes where holders can vote; and create an e-commerce page where users can purchase assets (real and digital) with the new token.

The token can also be added to a decentralized exchange platform for easy trading.

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│ Ethereum token contract │
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7.3. The Digital Collectible Creator

The Digital Collectible creator is also a drag and drop web based interface where creators can generate a non fungible token within minutes, and have it immediately available for sale in the Epic Chain's digital collectibles marketplace, and its trading currency can be a token created with the currency / social token creator.

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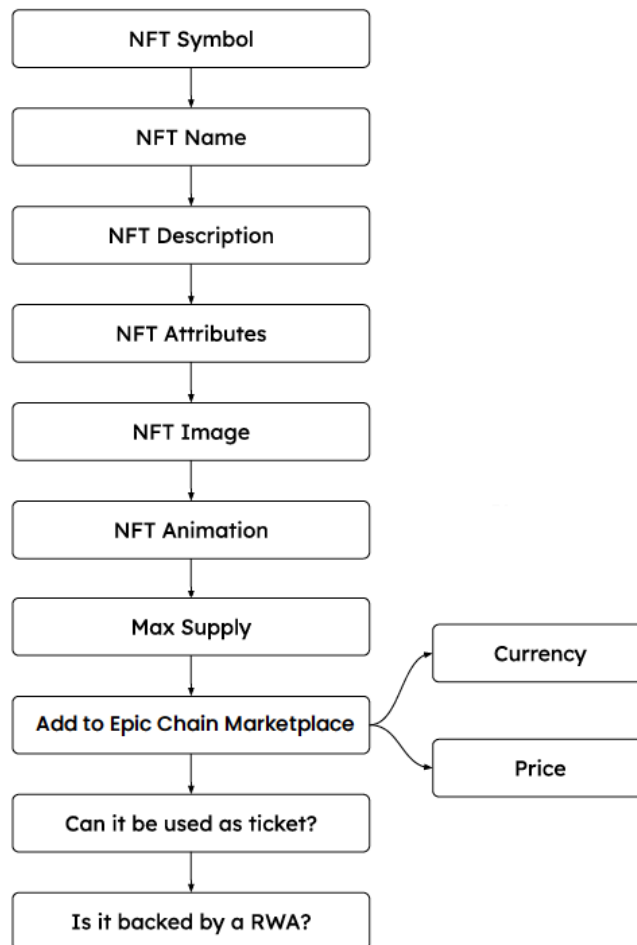
7.4. Token Gating

The token gating is a tool where creators can produce digital and physical events where social tokens or digital collectibles generated with the creator tools above are needed for access.

8. The Governance Token

Epic Chain (Ex-Ethernity Chain) released its protocol token ERN in 2021 on Ethereum [4]. It's been utilized for the native authenticated digital collectible marketplace and also DeFi products. EPIC is the first bridged and bridgeable ERC20 token in the Epic Chain blockchain, and as such comes with benefits:

- Gasless transactions: for most of the utilities offered in the Epic Chain blockchain, the use of EPIC will not require ETH to pay for transactions, through account abstraction [5]
- DAO: the Epic Chain blockchain will be fully operated by a decentralized autonomous organization where EPIC holders will be able to vote and decide the development of the blockchain
- Carbon footprint offset: we dedicate a percentage of the EPIC trading volume to offset carbon emissions produced by the power needed to operate the blockchain.

9. The DeFi Protocol

The Epic Chain blockchain ecosystem has a set of smart contracts to offer universal staking. Basically users will be able to stake EPIC and earn rewards in other ERC20 tokens and also stones which are used to redeem assets in the Epic Chain ecosystem.

10. Future Enhancements

The Epic Chain blockchain will continue to add in-node and platform features and functionalities, amongst them:

- Enhanced fraud protection through AI
- Generative AI to assist content generation for creators
- Smart contract generation and optimization with AI
- AI tech and dev support

11. Conclusion

Epic Chain represents a paradigm shift in the entertainment blockchain landscape, offering a transformative platform that addresses the pain points of high transaction fees, limited throughput, and counterfeit content. With its Ethereum Layer 2 architecture and AI-driven digital rights management, Epic Chain ensures a seamless and secure fan experience while empowering creators and brands to unleash their creativity without constraints. By prioritizing security, user-friendliness, and innovation, Epic Chain sets a new standard for blockchain-based entertainment ecosystems. As we embark on this journey, we invite creators, brands, and enthusiasts to join us in shaping the future of entertainment on the blockchain. Together, let's unlock new possibilities and redefine entertainment for generations to come with Epic Chain.

Legal Disclaimer

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References

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