

How Blockchain Can Improve the Protection of Intellectual Property and Payments

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Blockchain Essay

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Introduction

It was invented over a decade ago, however recently, Blockchain technology has seen rapid improvements and a rise in usage with new trends like NFTs. Blockchain is more commonly known for currencies like Ethereum and Bitcoin however it also provides other uses. (Cai, 2020). Bitcoin, the most popular Blockchain, has received a lot of negative attention recently for being bad for the environment due to the amount of computing power it takes to keep it running. However, the technology is rapidly improving and new startups are developing resolutions to these ecological problems as well as reshaping the way different fields operate (Bodó, 2018). The part of Blockchain technology that has the potential to solve many problems in the entertainment industry are Smart Contracts (Sitonio, 2018). In this essay, I will analyze how Blockchain is currently being used in the entertainment industry and how I think these advancements can be improved to bring change to the current industry landscape. The question I'd like answered is how can Blockchain be used to reduce piracy, confusion over ownership, as well as allow artists to receive transparent and instant micro-payments over their intellectual property.

What is a Blockchain?

A Blockchain is a distributed ledger system that is used for either monetary or data-based exchanges (Ruby Garage, 2018). Layer 1 Blockchains such as Bitcoin or Ethereum operate on a "peer-to-peer" network and require nodes to approve transactions. These nodes are just people and they are active users on the Blockchain that run supercomputers (Ruby Garage, 2018).

Blockchains are made up of multiple blocks that are all connected. A single Block contains 3 main components; the data, the hash, and the previous hash (Ruby Garage, 2018). The data segment is what includes the transactional details; the sender, the receiver, and the value or content of the exchange. The hash is the unique code assigned to the block, it is essentially a digital thumbprint and it cannot be replicated which prevents piracy from happening. Finally, the previous hash key is always embedded into a new block in the chain to further add protection against piracy or to prevent a fake or false block from being added to the chain. Every time a new block is added to the chain, the previous hash key must be identical to the previous hash key listed in the new block. The hash keys are cross-referenced and verified by a node (Ruby Garage, 2018). All of the information in these 3 components must be verified by a node or the transaction will not be completed. However, all of this can be automated with

Smart Contracts. Furthermore, a peer-to-peer network is what causes the issue of energy efficiency in regards to Blockchain as multiple computers have to be active at all times. This is to ensure all transactions are being processed as soon as they come through. However, with that being said, new Blockchains are now being developed and upgraded to include automation through “proof of stake” (or P.O.S), also known as Smart Contracts (Binance, 2020).

What is a Smart Contract?

A Smart Contract is an algorithm that works on an “if-then” basis (O’Dair, 2019). Meaning, whoever creates a smart contract must input the requirements or terms for the payment or data to be released. If the requirement(s) or term(s) are fulfilled, then the receiving party is paid out automatically. Since this technology is fairly young and is still being implemented into the business world, some issues can arise at first glance. The issue I find with this technology is that can the person entering the data be trusted? As well as, is the data accurate and how will it be verified? While keeping that in mind, it is also important to understand that once Smart Contracts are distributed, they are immutable (Binance, 2020). This means that once the contract is implemented and activated, it cannot be changed or altered, only removed. If info is put into the contract falsely; accidentally or intentionally, it can become problematic for all the parties involved. Although if this technology is used correctly, I believe that Smart Contracts can solve music copyright and payment issues. Using Smart Contracts in conjunction with Metadata to support ownership, to prevent piracy and aid in Digital Rights Management, and to have transparent instant royalty/micropayments are some of the major and much-needed changes that smart contract and blockchain technology can bring to the music industry.

Using Metadata Through Smart Contracts to Support Ownership

With the rise of streaming, independent artists, and “DIY” music makers, ownership and correct rights holder specification is becoming a growing issue. In 2016 Spotify was sued by the National Music Publishers’ Association for not obtaining mechanical licenses for many of the songs on its service. Spotify agreed to a \$20 million settlement and a \$5 million penalty for unpaid royalties. They said that the issue they had was locating the artists who had uploaded to their platform and retaining their data (IP Watchdog, 2018). Using Blockchain technology to allow distributors and publishers to embed Metadata into a Smart Contract can solve the big issue of ownership.

For example, UK Artist Imogen Heap has developed an online hub titled MyCelia (MyCelia, 2021) where musicians can connect and the company can help them with data-related inquiries involving their works and Metadata. Artists sign up for a “Creative Passport”. According to the MyCelia website, artists can obtain “a verified digital ID for music makers, where they can access, update, and manage information about themselves and their works, and share it with others” (CreativePassport, 2021). They also have a database for Managers, and Labels as well. The description was taken directly from their business plan on the website, however, I think it can be taken to a whole other level because they are not using the Blockchain’s full capabilities. MyCelia is using a Self-Sovereign Identity (MyCelia, 2021). A Self-Sovereign Identity “establishes trust between the parties and guarantees the authenticity of the data and attestations” (IBM, 2019), without actually storing any personal data on the Blockchain. Instead, the data is stored on a person’s physical ledger. Alternatively, it is portable, fully private, and only accessible by the creator. I think that this technology can be improved if all works were identified as a hash key that had embedded contracts within them. If each creator involved was identified with their SSI on the Smart Contract, then the ownership process and everything related to it could be streamlined. Blockchain records are publicly accessible anyways. The issue comes with sampling and how they will be identified when a hash is associated with the specificities of the original song (i.e Key, Tempo, etc.). If even a slight alteration is made to the original audio then it is no longer the audio that is related to the original hash key. Does this open up an opportunity for piracy?

Using Metadata Through Smart Contracts to Prevent Piracy, Aiding in Digital Rights Management.

What is Digital Rights Management?

Digital Rights Management is a way to track digital content that is released online using Metadata and “Watermarks” (Digital Guardian, 2018). Most digital content that we access daily is protected by DRM (Digital Guardian, 2018). Movie and music streaming services use DRM encrypted files to protect the rights of the content owners and creators. When subscribing to a streaming service, you are only renting the content rather than owning it. When companies use DRM to protect their content, they can do the following to their files:

- Prevent files from opening or playing.
- Prevent a file from being edited or changed.
- Prevent a file from being copied or moved from its original download location.
- Prevent you from taking screenshots.
- Only allow a file to be used for a set period, a certain number of times, or only while a subscription is active and paid for.

(Digital Guardian, 2018)

Digital Rights Management is useful when you are renting digital content, however, if a user purchases the same content, you are not restricted. So what if someone buys a song and uploads it to a site for millions of people to download for free? That is where Blockchain and piracy come together. I believe that if a song is sold to the owner with a hash key embedded within it (like a Block) then it would still be traceable. The merchant would even be able to have the owner register for an account and all purchases would be stored there. Each merchant could have their own Blockchain with users having their own SSI. If a hash key is assigned to the purchased file, and attached to the customer, they would be marked as the “owner”. If the owner lists their file up for free downloads, then they are offering up their asset with a unique hash key (it can't be replicated, so it would only be able to be downloaded once). For this to be successful, a transfer of ownership would have to be completed. Since Blockchain records are publicly accessible, people would be able to see who owns what. If the file's unique watermark is picked up, then the owner and all listed creators in the contract can be notified of what was pirated, and the location, etc.; the metadata of the leak.

Using Metadata Through Smart Contracts to Have Transparent Instant Royalty / Micropayments

Two parts make up musical recording copyrights; The Composition and The Master. The Composition includes all artists, writers, and musicians involved. The Master belongs to the “maker” which in most cases is the label depending on the artist’s deal. However, when an artist is independent the line between the two can get blurred if one party takes on multiple roles in the creation of the works. Additionally, all parties associated with the business side of the works can also get complicated, especially if multiple publishers are involved. Performing Rights Organizations, distributors, publishers, labels, and creators all get a percentage. This can take months for payments to get verified and go down the pipeline. I think that with a Smart Contract, all parties involved would get paid instantly, just like how a listener can receive a song instantly. I believe using Micropayments is a way to streamline royalties into instant payments with everyone’s cut assigned before the payment reaches the payee. New Blockchain technologies allow extremely low transaction fees when using Smart Contracts (Binance, 2020). Thus, low transaction costs and Smart Contract fulfillment would make this possible. A contract would be set up where if the song is played for a certain length then money would be released to everyone in the contract. This is similar to how streaming services count plays. A listener must play a song for a minimum of 30 seconds for Spotify to count the stream and payout an artist. However, the artist has to wait a minimum of 3 months to a year before they receive the money for that single play. The technology to make this happen is present, it just has to be implemented correctly. This would benefit independent artists as well as signed artists, as labels can cut down on bookkeeping expenses if they ensure that the Smart Contracts are set up properly.

There are issues though that can occur if measures aren’t put in place to protect them. The biggest one I can think of is monetary exploits. Independent artists who upload their music to Spotify are known to be putting their songs in “pay-for-play” playlisting services in which a song is “playlisted” into an independent curator’s playlist. This “curator” then pays for plays on the entire playlist which come directly from a stream farm and are marketed as “real streams”. The money for these plays shows up in the creator’s bank through their distributor, however, the money received isn’t nearly worth the risk of getting your account banned. Spotify has become aware of this only recently and only has begun taking action. If Micropayments are set up and

are received instantly, there is no time for the plays to be screened and deemed as legit thus strict rules must be put in place during the creation of the Smart Contract.

The first instance of Micropayments being made on a song sale was on the Ujo Music Platform on which artist Imogen Heap had made her song Tiny Humans available for sale using Ethereum only (O'Dair, 2018). "Once the purchase was complete, the payment was instantly sent by distributing the rights in the following manner: 91.25% to the singer and 1.25% to the sound engineer and each of the six musicians." These payments went directly to the payee's accounts via the Ethereum blockchain (O'Dair, 2018). This technology is seen now with the sales of NFTs and on NFT marketplaces. Artists are paid out instantly when an item is sold, but this type of technology is being implemented into streaming services as well.

Audius is a digital streaming platform that artists and fans can use and sign up for free (Audius, 2021). It's built on a Blockchain and the Blockchain features multiple smart contract options for creators. They can set a song to be monetized or free, if it is monetized they are paid in \$AUDIO - the platform's token, which is worth real money. The token can be stored in the platform's wallet or can be transferred to any other wallet outside of Audius. Creators can also set conditions for fans and their releases using built-in Smart Contracts. For example, a creator can specify that only fans that shared their previous release can play a new release. This is a perfect example of an "if-then" scenario where a Smart Contract could be used for Micropayments. Audius has also recently partnered with TikTok, and songs uploaded to Audius can be used on TikTok. Since the start of the pandemic, many indie musicians have taken their careers online, and many have turned hobbies into careers. I think that Blockchain combined with Metadata, and Smart Contracts can be what the industry needs to allow independent artists to thrive in a commercial artist-driven market and protect their rights.

Conclusion

With companies in the entertainment industry - specifically doing administrative work can be streamlined with Blockchain. Companies like *LimeWire* (LimeWire, 2022) are returning using Blockchain technology allowing them to operate legally in the new landscape. As everything we interact with is now part of a digital ecosystem, our securities must adapt as well. I believe that using Blockchain with other technologies is a brilliant move for all content creators and companies that support and represent them. Transparent royalty payments, micropayments, piracy protection, DRM support, and transparency in rights ownership are just some of the major, and much-needed benefits that these technologies can offer.

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