

Can Blockchain #FixStreaming?

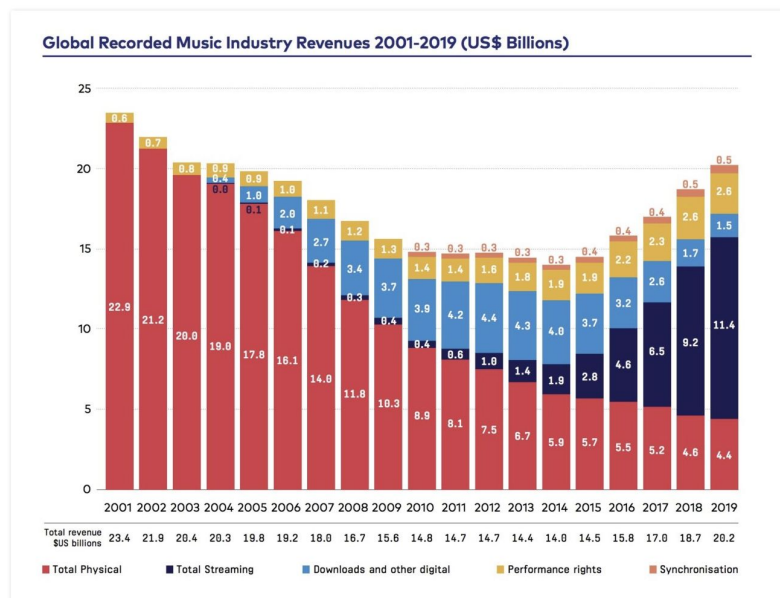
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I. Introduction

“In order to get past piracy, we needed streaming to win, now we need to fix the leaky pipe” - Kwame Kwaten

According to a BPI survey, music is the most widely spread form of entertainment in 2020, with 72% of the respondents consuming music on a daily basis. The streaming market represents \$11.4bn and is exponentially growing.

Fig. : Global recorded music revenue (\$bn) - IFPI



Making and distributing music is easier than ever and streaming is highly beneficial for creatives in terms of diffusion of their art however its financial model doesn't benefit the creators of the music. Music streaming nowadays is very much a means to an end - Taylor Swift the number 1 earning artist only generates 6% of her income from streaming and 91% from touring - streaming is the best medium artists currently have at their disposal to build their fanbase and sell tickets for live shows.

Faced with the impossibility to perform live due to Covid-19, artists now have to rely on digital income and in the words of Nile Rodgers from Chic, "Covid has given me a real opportunity to drill down on my numbers, and I am completely shocked".

A 2020 joint poll between The Ivors Academy and the Musicians Union, reveals that 8 out of 10 music creators earn less than £200 per year from streaming.

The #BrokenRecord movement is a UK-based initiative founded in 2020, in the midst of the lockdown, supported by the Ivors Academy and different members of UK music. It advocates for artists and songwriters and aims to achieve equitable remuneration in music streaming. The collective is currently the leading force representing creators in a government inquiry by the Department for Culture, Media and Sports (DCMS)

My primary research focused on witnesses for the DCMS inquiry through a phone interview with Kwame Kwaten and notes taken during a talk with Fiona Bevan. My secondary research is based on recent publications about music streaming and reports about the music industry as well as the latest news on blockchain and its competitors. Combining those sources, I will be explaining how this technology can be applied to the music industry and whether it can or can't be a solution to achieve an equitable remuneration for music creators in the foreseeable future. Can blockchain fix streaming?

II. What is Blockchain?

Blockchain is a kind of distributed ledger network. It allows data to be stored in a transparent, decentralised and secure way, building trust between the users by having each interaction authenticated by the rest of the network.

Blockchain was conceptualised in 1991 by Stuart Haber and W. Scott Stornetta. In *How to Time-Stamp a Digital Document* they express a concern on how to certify when a document was created or last changed, mostly in the context of Intellectual Property (IP), realising that the Copyright, Design and Patents act, released three years prior was not enough to ensure the protection of ownership of digital data.

Haber and Stornetta describe a system using data encrypted by hash functions, backed by unique digital signatures and secured by simultaneous copies in an immutable closed system.

The current version of Blockchain is very close to this original vision, substituting the Time Stamp by a full array of metadata and the simple collision-free hash functions to a more elaborate SHA-256 cryptographic algorithm.

Blockchain was essentially invented to ensure the ability to prove precedence on a piece of intellectual property, but as of today, has not been used for this purpose on a large scale. How could this technology be applied to the music industry today?

III. Case study - blockchain in healthcare

Blockchain has the potential to revolutionise industries and if used in an appropriate way, can drastically improve processes and solve crucial problems

Data exchange amongst healthcare organisations has been a challenge since the implementation of digital records. The crucial nature of healthcare information should make its quality of transmission a priority. Using a secure blockchain as a private ledger between the different actors of the health system would enable this data to be protected, transferred and therefore utilised more efficiently.

In most healthcare systems in the United States, patients don't have a universal identifier - equivalent to the National Insurance Number in the UK. According to Centre for Biomedical Informatics director Shaun Grannis, "up to one in five patient records are not

accurately matched even within the same health care system. As many as half of patient records are mismatched when data is transferred between health care systems”.

Interoperability is the key word for most healthcare systems and it constantly needs to be improved. For countries not equipped with a Health Information Exchange database, the ability to share and search medical records would reduce the amount of insurance fraud, claim errors or identity theft, and more importantly improve the health outcomes by reducing the risk of misinformed medical professionals.

A token based healthcare system would reduce the risk of human error in the processing of data, such as typographical errors. It would also allow users to create an inalterable but updateable digital record, making it easier to match a patient to their records in case their information changes.

Blockchain could also solve many issues regarding data protection, especially sensitive data such as medical records. In the countries that are not subject to the General Data Protection Regulation, individuals may not be able to choose who has access to their data and how to restrict this access. Thanks to blockchain, each request to access someone’s personal data could be tracked and authenticated by the individual and the transfer of this data would create a digital trail, which would allow full transparency as to how and where this data has been processed, monitored or even stored.

In addition to this level of transparency on data processing, the information would be completely encrypted, allowing patients to have full control over the access to their personal file.

Blockchain could also allow to identify patients who have been vaccinated against a certain disease by way of creating an international database. This network would be independent from local governments and based on safe, transparent and authenticated data transfer.

On November 11th 2020, in the context of the Covid-19 pandemic, the European Commission discussed the importance of an European Health Data Space, and underlined the importance of a cross-country framework. “It will allow access to health data under a trusted governance and clear rules and support the free movement of digital health services. By 2025, patients from all Member States should be able to share their data with healthcare professionals of their choice when traveling abroad.” said Stella Kyriakides, European Commissioner for Health and Food Safety. The exact details on how this database will function have not been disclosed yet, however blockchain technology seems like the ideal solution in order to get the level of confidentiality, security and reliability the commission is looking for.

In conclusion, blockchain’s unique approach to data transfer and protection could improve systems in various fields. I will now explore the ways blockchain can be applied

to the music industry, especially in the context of the Covid-19 lockdown which forced the industry to reconsider some of the flaws of its business model.

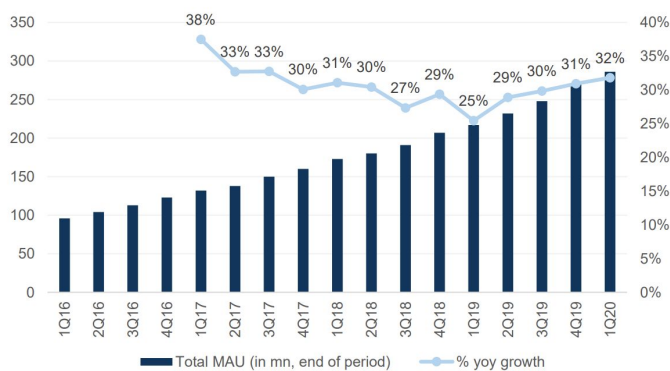
IV. The music industry in 2020

A. How streaming works

Music streaming is the fastest growing form of entertainment, with an extremely competitive value proposition - £9.99 for unlimited access to an almost infinite music catalogue. Grossing three times more than physical sales in 2019, streaming is the new norm for music distribution. It currently accounts for 75% of recorded music revenue in the UK.

Major labels like Sony Music or Universal have reported more than \$1bn of revenue in streaming in Q1 2020 while the rest of the music industry saw almost all of their revenue disappear. The 2020 edition of *Music By Numbers* published by UK Music shows the recorded music industry contributed a GVA of £613,000,000 to the UK economy, which is a 9% increase from 2018 and the Goldman Sachs, *Music in the Air*, reports that Spotify's monthly users kept growing steadily despite the impact of Covid-19. It is therefore fair to say that there is money in streaming, however streaming only represents 4 to 6% of an artist's income.

Fig. 2: Spotify's Monthly Active Users' growth



The #BrokenRecord Campaign recommends to “Amend UK legislation by extending the right to ‘Equitable Remuneration’ that already exists for ‘Communication to the Public’ (broadcasting) to cover the ‘Making Available’ right, so that artists can earn from On Demand streaming in the same way they have long earned from radio and TV transmissions.”

In order to understand this statement, we have to circle back to the basics of Intellectual Property and copyright. Each musical work is subject to two kinds of copyright that translate as two different royalties: the sound recording and the publishing. The recording rights are linked to the recording itself while the publishing rights are linked to the idea of the song: the lyrics or the musical composition.

In the UK, royalty collection is split between two entities, the Performing Rights Society (PRS) and the Phonographic Performance Limited (PPL).

When a song gets performed in public or on the radio, PRS will collect the publishing royalties while PPL will collect the master recording royalties. Those two organisations licence music registered to them using a blanket contract - TheMusicLicence.

PRS then redistributes 50% of the publishing royalty to the publisher and 50% to the songwriter(s). PPL collects the other half of the royalties and distributes 50% to the label and 50% to the featured and non-featured artists on the recording.

Music streaming rights utilise the same entities but the percentages differ depending on the contract the artist/songwriter is under. In the case of Spotify, according to Fiona Bevan, the Recording rights are 55%, the Publishing represent 15% and the platform is entitled to 15%. Depending on their contract, the artist is more likely to receive an average of 20% of those 55%, and the songwriters an even smaller percentage of the publishers 15%.

Bevan disclosed that she only earned £100 from the streaming of a song she co-wrote on the fastest selling solo artist album of 2020.

During her testimony to the DCMS, Maria Forte recommends transparency on the financial side of streaming, between the label and the artist and between the label and the DSP as all of the agreements between those three parties are under strict NDAs. The streaming business model as it exists today is not sustainable for the creatives who are the fuel of the whole industry.

B. Blockchain in the music industry

The tokenisation of digital items using immutable metadata is an invaluable asset to the music industry. Practically this translates as a digital footprint tracing the ownership of any recorded material directly to its creator(s). This would considerably streamline the royalties collection process, which is one of the biggest challenges the music industry faces today.

By using a blockchain database for music streaming, each actor of the creative process would be able to follow their digital property and bypass the collection societies by way of having immediate micropayments in cryptocurrency, which could then be automatically transferred to their bank accounts.

This digital footprint would also limit the amount of misinformation, voluntary or not, around who owns which material. For instance, it would not be possible to have incomplete data, one of the challenges PROs are constantly facing especially when dealing with foreign CMOs. Depending on the territories, some collecting societies will put in more or less effort into completing their metadata which sometimes results in the songwriters not getting paid their royalties. The same commission revealed £2.5bn in

black boxes in the UK alone which represents money that can't be attributed to the right holders.

Each track sent to a Digital Service Provider such as Spotify or Apple Music includes three elements: the artwork, the audio file and the metadata embedded in those files. In November 2020, Maria Forte explained that "labels don't acknowledge composers and so they're not added to the metadata". Since the labels are the ones owning the sound recording, they are the ones submitting the material to the different distributors. Having incomplete metadata incidentally forces the DSPs to have to identify the composers and songwriters through the publishing side of the label, when possible, however those two sides of the same digital coin are not fusing their data.

Blockchain as a data network would solve this issue by creating an international chain of ownership that cannot be altered, from the split sheet to the latest stream of a song. Blockchain is the most reliable way to track the ownership of a file.

Ujo is an alternative DSP based on Concensys' Blockchain financial infrastructure and using the cryptocurrency Ethereum to pay artists. The platform's business model is a direct to consumer approach. Each transaction for a stream or a download goes directly to the artist. Each stream on Ujo costs the equivalent of \$0.01 - much better than Spotify's \$0.003 - and bypasses the PROs by appearing directly in the artist's digital wallet. However, EtherScan who manages the Ether cryptocurrency still takes a "gas fee" of a few cents, which is a transaction fee to use Ethereum, contradicting the "no middleman" approach of the platform.

Ujo's purpose being to eliminate intermediaries, the platform itself doesn't even take a commission on the different transactions. There are no fees to join Ujo and no commission, the sustainability of the platform is therefore fragile. The decentralised nature of the platform is a considerable obstacle to actually building up its reputation. The average consumer approaches streaming platforms based on their catalogue, not their business model, which means that Ujo is currently unable to attract a mainstream audience. Even after 10 years in the market and 130,000,000 monthly subscribers and twice as many users, Spotify still isn't a beneficial endeavour. It is fair to assume that Ujo can't possibly be financially self-sustainable due to its limited exposure and its business model, and therefore will not be able to significantly impact the market.

V. Challenges of blockchain

Despite its fairly long lifespan relative to other technologies, blockchain still has not been implemented widely, after a conversation with Quentin Verlhac, a software engineer working for a cloud hosting company, it appears that blockchain has multiple weaknesses, aside from the ones inherent to the music industry.

Fig 3. SWOT analysis of blockchain for royalty collection

Strengths - Innovative product - Big problem solving potential - Micropayments - Forces transparency between the different actors - common register publicly owned	Weaknesses - Very expensive to put in place as it requires a lot of computing power on several locations - Not environment friendly due to its need for large infrastructure - High barrier for utilisation as there is no user friendly interface yet. - Highly volatile cryptocurrencies in play
Opportunities - Streaming and royalty collection are at the center of attention in 2020 - government acknowledges that a new model might be required - Music streaming is a billion users industry and is still growing	Threats - Alternative technologies - IOTA's Tangle - The current gatekeepers and capital holders don't have any interest to implement this new technology

One of blockchain's challenges is its scalability. Visa can currently process an average of 1,700 transactions per seconds, while according to blockchain.com, Bitcoin operates at 4.5 transactions per second, since the 1mb blocks are also limited in frequency. This makes it extremely difficult to scale up to a multi-million user market such as music streaming. One of Bitcoin's competitors, IOTA, processes 182 transactions per seconds, using another variation of a decentralised distribution ledger.

IOTA's Tangle is an alternative to blockchain. It doesn't require any data miners, therefore does not incur any fees but still uses a ledger network to provide a secure authentication of transactions. Thanks to the principle of cumulative weight, the Tangle's transactions transfer their level of trust and authenticate subsequent interactions faster than a linear system.

There are thousands of new unconfirmed cryptocurrencies transactions every second. Data miners are being paid a transaction fee and choose to authenticate the most profitable transactions. On the other hand, the Tangle relies on the amount of users on the platform to increase the speed of the service - each transaction authenticates the next two.

Since the Tangle is still in its early stages, it requires a central server to ensure its security as there are not enough users to share the hashing power required to shield the network, which does contradict the decentralised nature of the system, however the technology

behind the Tangle should, in the long term, make it more efficient and more secure than blockchain.

VI. Conclusion

Blockchain technology does not seem like a viable ideal solution to fix streaming. It would indeed allow a much more efficient royalty collection and a more streamlined way to run payments. According to Kwaten, the very fact that the actors with the most leverage have no interest in changing the way this system is operated means that the way forward is a cultural shift, that will then be able to be empowered by innovative technology.

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