#MTFLabs: Blockchain

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Abstract

In late May of 2016, a diverse group of experts met at #MTFBerlin, to participate in a laboratory in which they would experiment, test ideas and explore how blockchain technology could be developed and applied in ways that might improve the music industries. It soon became apparent that before improvements could be attempted, first there must be agreement what would constitute an "improvement". After many long discussions and disagreements, the group arrived at a number of more specific and fundamental questions, as well as a clearer picture of blockchain technology and its limitations, and a mapping of the benefits and drawbacks that an actual implementation would mean among industry players, stakeholders and participants.

http://musictechfest.net

Contents

1. Introduction

For **#MTFLabs: Blockchain** - a five day event leading up to #MTFBerlin at the end of May 2016, the lab's organisers were tasked with a seemingly simple proposal: get the smart people in the room to hash out ideas about using the blockchain to make the music industry more transparent and fair. Experts and professionals were gathered from a diverse cross-spectrum of the industry, known to be well intentioned and seemingly focused on the same goals.

Perhaps unsurprisingly, the complications were under- rather than overestimated. Within the first few hours of day one, the sheer magnitude and complexity of the issue started becoming clear.

In large part due to the inherent fault lines within the topic itself, the lab turned away from seeking "solutions" to discussing concepts such as "copyright", "ownership" and "security", as such words can take on very different meanings based on one's professional background and personal frames. Differences in perception revealed seemingly intractable disagreements that were unlikely to be resolved in a weeklong discussion about an incredibly complex technology.

In some sense, the conflicts that arose almost instantly revealed some of the core issues facing the wider industry as a whole: frustration over the ways in which digital technologies have been implicated in decimating livelihoods, fears that those trends could worsen, the seeming 'theft' of artist income through either direct means or simple inefficiencies and the protectiveness inherent in certain sectors. Nearly every sphere was represented – digital service providers, labels, collection societies, technologists, academics, startups and an all-too-frequently excluded group: musicians themselves. As tensions grew over fundamental differences in perception and the complexity of the issue expanded the more its core limitations were revealed, the effort to arrive at even the most basic conclusions nearly collapsed.

Fortunately, some interesting resolutions emerge – ideas that met at a strange crossroads of the blockchain's inherent limitations and struggles to get an industry that is used to operating in a an opaque environment to transition to total openness. The basic strategy that emerged? To accept the difficulties, and develop a modular approach moving along a path of least resistance.

We'll explore these ideas (and many more) but first, the backstory.

2. Background

The music industry faces intense challenges.

Not only have revenues from recorded music diminished greatly since the advent of the internet, but new business models have imposed new models, new exceptions, and new complications into the existing ecosystem. Meanwhile, the possibilities and new ways for musicians to distribute and release music seem endless, though the particulars often get murky once an international audience is found, and especially once the recorded music escapes the narrow confines of the initial distributor and gets syndicated, perhaps played in venues and on the radio, or covered by a more well-known artist in a different country.

While technological innovation and business information moves nearly instantaneously in many other industries, the music world functions with bottlenecks that often results in delayed (or outright missing) payments and pockets of bureaucratic inefficiency resulting in too much waste. Moreover, the widely felt decline in income, and extensive expertise in existing systems both engenders a conservatism and resistance to change, where "we know what we have, but not what we get" rules supreme. Additional factors that tend to encourage this kind of technological inertia lies in more structural factors, such as lack of in-house resources to create the new models directly (for labels) or fear that new technologies would lead to large scale redundancies in their own workforce. In that context, a new technology emerged that many hope could be a long-awaited savior: the blockchain.

Riding on waves of hype thanks to Bitcoin and the massive investments being poured into this new technology by Wall Street[1], the blockchain is often described as the last-best-hope to revive a sagging industry.

Despite that hype, there are some fundamental benefits that directly correlate with basic problems facing the industry.

[1] http://www.ibtimes.co.uk/blockchain-investment-database-chainhq-tracks-1bn-funding-distributed-ledger-technology-1537765

Industry problem	Blockchain solution
Lack of common standards	Ability to aggregate in a single database
Lack of trust in any one actor	Distributed trust based in cryptography
Long delays in payments from consumer to artist	Near-instant payments recorded in the blockchain
Confusing and contradictory licensing and payment information	Smart contracts that unambiguously define terms

Now that we've identified a general sense of hope for the blockchain, let us take a deeper look at this technology and what it can and cannot do.

3. Blockchain primer

In 2010, Satoshi Nakamoto said ‘let there be bitcoin’.

More specically, he published the initial whitepaper describing the communication protocol that defines the cryptocurrency network, how anyone could join it and contribute, and what security guarantees it provided. In short: a distributed network of mutually distrustful computers, who nevertheless agree on a shared view of which accounts has such-and-such amount of a new currency of exchange: Bitcoin, which can not be created or traded outside of the network and its security guarantees.

Since then, there have been frauds, hacks, bubbles, crashes, splits and political decisions, discussions, disputes and all manner of intrigue surrounding the concept of a global currency not under government or bank control, but instead backed by computer power and cryptography.

The success of the Bitcoin experiment may be debated endlessly (and is, both on and off the internet), but the basic technology that is used to secure the currency has been decoupled from it, and implemented for use in other applications, notably domain names (in the case of NameCoin) and generic secure computation through smart contracts (such as those enabled by Ethereum).

3.1. What is it?

The very, very short version: Lots of computers all over the world working very, very hard to agree on what is true.

In slightly longer form, there are a few overarching concepts, and a number of important details to cover. Let us begin with defining who to trust: ourselves, and our own computers. Apart from that, we trust that certain mathematical formulas hold, and that a number of assumptions cryptographers have made are correct. Finally, we trust that both our own copy of the program is correct, and that we can communicate somehow with the other participants in the network. If communication is shut off or disrupted, this obviously impacts how the blockchain operates, but, crucially, not its correctness.

There are two main types of blockchain: public, or permissionless blockchains like Bitcoin, Ethereum and similar initiatives, where any computer may start (or stop) participating in the blockchain at any point in time; and private, or “permissioned” blockchains, which have been investigated mostly in the world of financial software as a way to keep various trusted databases in sync. Crucially, all computers in a private blockchain are assumed to act honestly to the best of their ability, whereas no such thing is assumed for the participants in a public blockchain.

So, with this groundwork, what does the blockchain give us? In short: a view of truth that is (eventually) shared among all participants in the network. To fully understand this requires a bit more background (given

in the ‘technical details’ section below), but for now, let us answer some specific questions on what the blockchain (currently) does and does not do.

3.2. What can the blockchain do?

With a (public) blockchain, what is most clearly gained are two things: transparency, and open participation. We can guarantee a common view for all participants of what has been asserted, and in what order, and what those assertions mean. Moreover, the history of each assertion is publicly available - there are no secret ‘ninja edits’ on the blockchain. Once something is in there, it stays.

Specific to a public blockchain is the extremely open architecture that allows any networked computer to start downloading the database from any participant in the network. This can be done in chunks, in the same manner as Bittorrent handles a download of large files. (Although less efficient, the standard practice is to download the majority of the ‘current’ blockchain database using actual Bittorrent in a process known as ‘boot-strapping’).

Both of the previous paragraphs describe well-known properties of generic distributed databases. What sets blockchain systems apart is the ability to do this without a central authority, instead publicly disseminating a ‘genesis block’, or initial empty state of the database, and using cryptography to ‘chain’ the next state of the database inexorably to the previous state. This, combined with some computational monkey-puzzles to ensure that a certain (high) amount of computer power is expended to add data to the database, makes the whole system honest as long as no more than half of the assembled computers agree on a specific way of being dishonest. That is, in order to include an invalid transaction (or exclude a valid one), over half of the computer power involved in the system would need to agree to do so. Though this may sound trivial, it allows for some very powerful collaborations that may not be possible without such a trusted and almost completely impartial ‘third’ party.[2]

3.3. What can the blockchain definitely *not* do?

In terms of the music industry, the most definite thing that the blockchain can not be used for is the classic DRM use case: that is, to stop people from playing a piece of music that they have not acquired the right to play. This is not a lack in the blockchain as much as it is a characteristic of any computer-based system, however, so it is mentioned here mostly as a starting point. In short, there is no way to prevent anyone from recording the actual sound data coming out from a speaker

[2] The ’almost’ part comes from the rare instances where a majority of the participant computers agree to validate an invalid transaction, or invalidate a valid one, such as seems to be the chosen course of action of the majority of computer power in the Ethereum blockchain as a reaction to the exploitation of a bug in the massive TheDAO smart contract.

(or, more likely, the digital sound data itself) and saving it to an unrestricted format. Or rather, the only way to do so would involve total and complete access to every computer system on the planet for a third party, which seems unlikely to be acceptable.

Moreover, the blockchain itself is not suitable for storing large amounts of data, owing to the fact that anything properly on the blockchain will be replicated across all participant computers. A more likely way forward is to use a distributed data store with limited replication for the majority of the data and to reference that from the blockchain. (Another possibility is Big Chain Database which is starting with federated distribution among key partners, creating an opportunity to avoid the problems with fully distributed, large data sets.)

Another thing that needs to be taken into consideration for any blockchain-based system is the cost - in terms of electricity, computer power and hardware, in terms of the basic cryptocurrency, and in terms of increased network traffic. Unfortunately, if the per-use cost is too low, the system will likely be spammed and/or shutdown with massive amounts of requests as soon as any aspiring troll gets their eye on it. Furthermore, it is not likely to be possible to make geographic distinctions on the size of this fee, and as such it may be hard to find a suitable cost level where poor artists in low-income countries can make use of the system, while spam and malicious behaviour is, if not stopped, then at least kept to a minimum.

Related to the above, but ultimately separate, is the issue of the basic cryptocurrency of the system (Bitcoin for the bitcoin blockchain, Ether for Ethereum, and so on). It turns out that in order for a public blockchain system to stay secure, there is a need for some sort of cryptocurrency, see e.g. https://www.linkedin.com/pulse/why-you-cannot-have-trustless-blockchain-without-juan-manini and http://www.multichain.com/blog/2015/07/bitcoin-vs-blockchain-debate/

As is mentioned in the second of these articles, private or semi-private blockchains[3] do still have value, and may even have value in the context of the music industry, and can also exist without a generic cryptocurrency, but if all participants of the entire music industry ecosystem are expected to be able to contribute to the security by mining, then a cryptocurrency is a must. It should be noted, however, that participants need not be heavily invested in that cryptocurrency, though the economics are somewhat complex.

[3] E.g. blockchains where only trusted participants can add certain types of transactions, but all participants can read the contents and perform certain types of transactions.

3.4. Technical details

3.4.1. Tokens

There are several meaning of the word token in computer security and cryptography, and even just in the context of blockchain.

Firstly, a token can mean a cryptographic representation of an object (i.e. a song, a domain name, etc.). In particular, finding the token given the object would be easy, but going from token to object would be near impossible. Going further, it possible to define a tokenization system such that only parts of the original object need to be divulged, rather than the complete object. Furthermore, in most interesting application on the blockchain, we exchange tokens of value. Either monetary value, or use value (domain names, IP use rights).

3.4.2. Identity

The concept of identity, strictly in computing, is generally either extremely straightforward or quite difficult. Usually, a username/ password combination is enough to provide a decent approximation, but if you lose your password, how is the website/forum to know that you are you? This is usually handled through some e-mail, but if that also has been lost? In most cases, this means “game over” in terms of access to your account, but if the website/forum/game/system has an active administrator reachable through some reasonable means, then you can, at least in some cases, use regular old human contact to somehow reestablish who you are, overriding the computer systems to regain access to your identity.

Naturally, this is generally not possible on the blockchain, where no human administrator exists to contact. Thus, on the blockchain identity means nothing more and nothing less than access to a specific cryptographic key. Funds, accounts, contracts and transactions are all connected to keys, and keys only. If someone else gains access to that key, they will not impersonate you on the blockchain, they will, for all intents and purposes, *be* you. Losing access to the key, you will have no recourse to regain access short of convincing more than half of the blockchain to support your claim.

3.4.3. Transactions

A transaction is the basic unit that is actually recorded on the blockchain. It is a cryptographically verified transfer of tokens from one identity to another. In particular, it is a non-repudiable proof by one identity that they relinquish control of the token, and enough information for a second party to prove that they possess it. In terms of metadata and rights information storage, the token could, for example, be (a representation) of a song ID, and ‘control’ of the token would confer the ability to link that ID to rights information and metadata.

4. What is already happening

A number of projects are underway, seeking to provide blockchain-based solutions for the music industry. Some are focused on niche sectors, while others seek to be all-encompassing solutions. There are more initiatives coming on line all the time, and this list is unable to be comprehensive. However, at the time of writing, these projects were considered to be significant developments in this space.

4.1. Open Music Initiative

Organized through Berklee Music and MIT Media Labs in the US, this initiative has gathered a great deal of support from across the industry. Many of the other projects listed below are members, so there is hope that some cross-platform standards might be achieved, although exact methodologies are still unclear at this point. Their goals are to provide fundamental building blocks for a larger system that could be developed and maintained by many separate third-parties.

http://openmusicinitiative.org

4.2. Mycelia

Led by artist, engineer, producer and technologist Imogen Heap, the Mycelia project is working on concepts and prototypes from an artist-centric perspective. Quarterly hackathons in London are aimed at creating workable prototypes and explore fundamental issues.

http://myceliaformusic.org

4.3. Dot Blockchain

Spearheaded by Benji Rogers of PledgeMusic, this project intends to approach the established music industry through its use of a new “wrapper” of Minimum Viable Data and more, connecting with the explosion of VR via what some see as a potentially locked format: dotBC.

http://dotblockchain.info

4.4. MediaChain

Not strictly blockchain based, this distributed/decentralized technology will potentially provide the industry with a place to store massive data.

http://www.mediachain.io

4.5. UJO

Conducted the first consumer-facing prototype last year. No news or status updates since that launch.

http://ujomusic.com

4.6. Blokur

A new company recently established by the founder of Ujo, intended to bring the benefits of blockchain tech, including smart contracts, to all creative rights.

http://blokur.com

4.7. Muse

Muse is the blockchain for Peer Tracks, a peer to peer artist support and investment system.

http://museblockchain.com

http://peertracks.com

4.8. Stem

Stem recently raised 4.5 million USD in seed funding, and aims to act as a distributor to existing services, using cryptocurrencies to pay out the artists, and for general accounting services.

http://stem.is

4.9. Jaak

Jaak aims to change the way we discover and consume music in the digital age using P2P and blockchain technology, specifically through leveraging deep knowledge of the Ethereum blockchain.

http://jaakme.in

There are numerous other music blockchain projects in development that serve niche communities. Many of these services deal with licensing and collections for specific ecosystems and as such are not all-encompassing solutions.

5. Basic music industry map

The movement of a single piece of music across the world is incredibly complicated: streamed through apps, broadcast on radio, synced in various media, played in clubs and cafes, covered by other artists and performed in a variety of other venues. All of these use types come with different rules, royalty payment percentages and distributions which can vary territory by territory. With this level of complexity involved, it is helpful to isolate three different types of flows in order to find clarification – data, rights and money.

5.1. Data flows

Data attached to a work has different needs in different contexts. A streaming service or radio station might require basic title and artist information, while a film or television show may be required to provide performer, author, publisher and copyright credits. Music played in venues may require songwriter credits for making royalty payments, while an artist covering someone else's work needs to know who originally wrote the song, not who performed the version they're familiar with. Fans and academics may be interested in a variety of supporting data such as recording equipment used, studio location and other arcane details. Flows also move in the other direction, informing labels, rights organisations and musicians of where, how, and when the music has been played. A rather simplified illustration of the data and money flows through the music industry in general was produced during the lab, and is shown in figure 1.

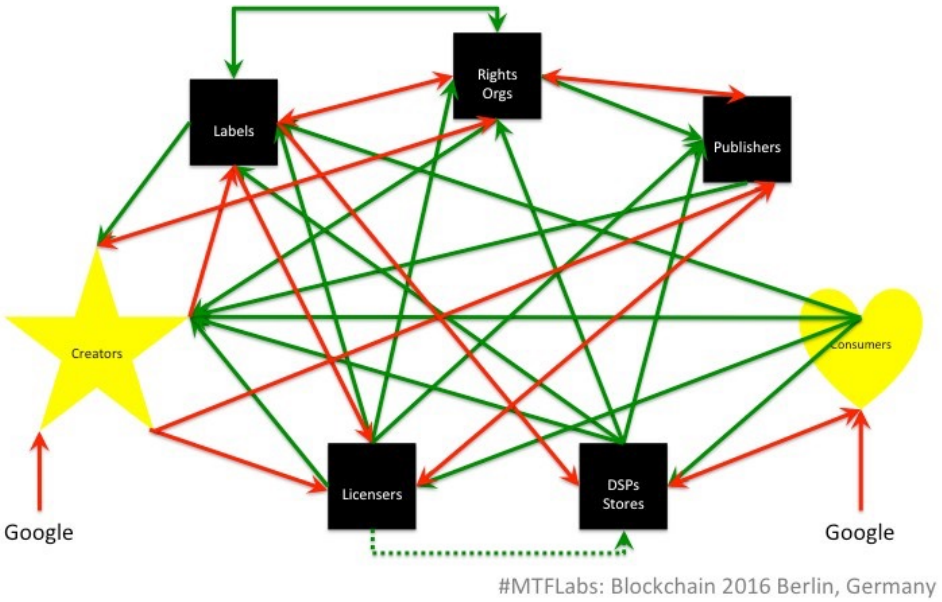


Figure 1: Data (red) and money (green) flows through the music industry.

5.2. Rights flows

The flow of rights varies by context, and include both how the actual rights flow (i.e. licensing information) and information about where to go to apply for rights in a certain context (i.e. 'for this usage, who do I contact for licensing?'). An illustrative image of the complexities of rights flows, figure 2, has been kindly provided by Songspace[4], showing the various stakeholders involved in the song 'Uptown Funk'.

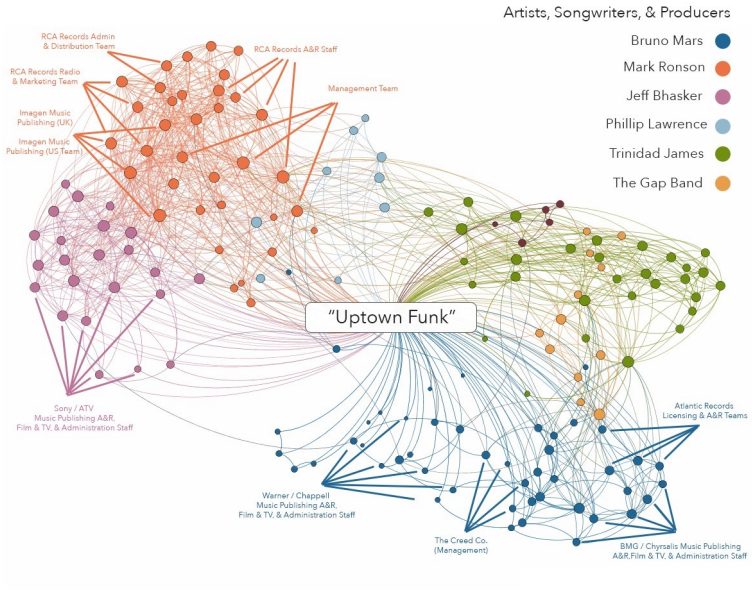


Figure 2: The stakeholders involved in 'Uptown Funk', image credit: Robert Clement, Songspace.

5.3. Money flows

Payments for music often go through a variety of different gatekeepers – digital stores, distributors, aggregators, services, labels, publishers, collection societies and more. Which gatekeepers are able to claim authority varies greatly on how the music is used and in what territory the exchange took place.

The complexities of money flows can best be visualized with the graphics give in appendix A, provided courtesy Berklee Online. (Note that these flows represent the US industry only. Different rules apply in other territories.)

[4] Robert Clement, CEO, http://www.songspace.com

5.4. Standards

Numerous standards already exist within the music industry and it is clear that those formats should be integrated into any new blockchain system. Providing interoperability with existing systems (DDEX, CWR, ISRC, ISWC, etc.) would help a variety of participants to eventually adapt and adopt any proposed system. An important prerequisite for wide adoption, however, is clear and unambiguous licenses that allow for free and open use, including of reference implementations.

6. Stakeholder map

As we keep in mind the three broad categories (metadata, licensing and payments) we discussed previously, we further investigated various stakeholders and their varied willingness to adopt a transparent, blockchain based system. Each of the stakeholder groups have varying levels of attraction and impediments for adopting a blockchain solution, but even within the categories we identify, differences in opinion are legion. However, we anticipate that for the most part, our descriptions tend to hold some truth.

Though a blockchain-based system would impact more than just data sharing, that is perhaps the most important and obviously difficult topic to address, as radical transparency is both a basic function of a blockchain system and a challenge to the core working of many players' business practices.

A general consensus among the participants of the blockchain lab was the feeling that trying to convince those who have historically resisted transparency and openness to integrate into a new system may be hard, while focusing on those with a natural inclination towards new models would serve as more effective early adopters.

A broad list includes:

Digital Service Providers	Venues
Radio Stations	Management
Sync (licensees)	Applications
Digital Distributors	Publishing Companies
Major Record Labels	Promoters
Indie Record Labels	NGOs and Non-Profits
Collecting Societies	Portals

When looking at a broad list of sectors in the industry, we can find varying positive reasons to implement a blockchain system improved efficiency, potential reduction in lawsuits, cost reductions and new revenue opportunities to name a few. In some sectors we find just as many negative reasons to participate new forms of competition, threats to existing business models, risk of sharing contract details, loss of roles as financial middlemen, etc.

As the implementation of a modular system of standards and databases (some blockchain-based) continues, we hope and expect that the benefits will eventually outweigh the drawbacks of participating for all parties. In appendix B, we have summarised the wins and drawbacks for various parties in the music industry, in regards to heightened transparency and lower frictions and turnaround times in the administration of metadata, rights information, and payments.

7. A road forward

With the problem space, stakeholders and technology all roughly mapped out in the above sections, what do we propose should happen next? Although, as noted, there was nothing resembling a complete consensus, the very divisiveness seemed to indicate that trying to make a one-size-fits-all complete solution would be a project doomed to fail. Instead, we propose a modular approach, where specific problems are solved incrementally, building up an open and transparent meta-system by ensuring the individual systems that address the sub-problems use open standards and globally acceptable and accessible data, for example residing in one or more blockchain-based systems.

Another point in favour of using a modular approach is to make the completed system more robust by avoiding single points of failure, as well as single points of contention. In addition, making a modular and easily-re-configurable system makes it significantly more easy to handle new business and legal models as they appear, rather than after the fact.

7.1. Conflict resolution

One key aspect that the result of our discussions was on the topic of conflict resolution - that is, how should the (single, global) system handle if multiple parties claim ownership on a single piece of data? Our conclusion is simple: the system, if it is decentralised through, for example, a blockchain, need not concern itself with resolution as long as it is clear to all users that the conflict exists. That is, searching the system for information concerning a piece of music would return all the relevant assertions made against it. Once the conflict is made visible, it is far more likely that the rights holder (or equivalent) will take further action outside of the system, getting the opposing party to withdraw their assertion of ownership, whether through direct communication or legal action or some other form of conflict resolution.

This also neatly ties into the question of data accuracy, that is, how do we keep the system accurate? In the model described above, the system is, in some sense, agnostic towards correctness, which may be a problem, but may be less so than it might seem since, again, inconsistencies and errors are made visible for correction, if nothing else.

7.2. Subproblems

In outlining the components of the modular system, we continue using the three general areas outlined in Section 5, though here we dig further into each category, posing specific questions that need or want solving in order to reach the system we envision. In Appendix C we have laid out these questions and challenges in more detail. To reiterate, the categories we refer to are:

7.2.1. Metadata

- Defines all those involved in the creation and consumption of the content
- Provides background info and context (dates, lyrics, genres)
- Could be extended in the future to provide additional details (production equipment, recording location, inspiration, etc.)

7.2.2. Rights and Distribution

- Rights and licensing information associated with a track: outlines ownership and sub-licensing rights for various types of distribution and usage across services, territories, etc.

7.2.3. Financial Transactions

- Information about and facilitation of payments for the usage of a track.

Our list of questions and challenges is by no means exhaustive, and neither is it certain that the questions presented there will endure the rapidly changing landscape for very long. Furthermore, it is clear that some of the questions will be solved by standards bodies, others by private initiatives, and still others via industry-defined standards and workflows. Startups also form an important part of the solution, expanding the realm of the possible and driving innovation using the existing tools and data.

A generic approach to the questions and challenges in the appendix is as follows:

- Which aspect of the supply chain does this challenge relate to?
- Does this challenge require discussions/agreements or tools?
- What events can be held to address this challenge?
- Which organisations/companies/persons should be present at this event?

8. Conclusion

The results and findings of the **#MTFLabs: Blockchain** 5-day event were presented at Music Tech Fest Berlin (#MTFBerlin) on the weekend of the 29-31 May 2016. The proposal of the modular system described above was key, however the main message and discovery of the week's collaboration between such a diverse range of actors is precisely that to bring those stakeholders together is both a difficult and crucial process.

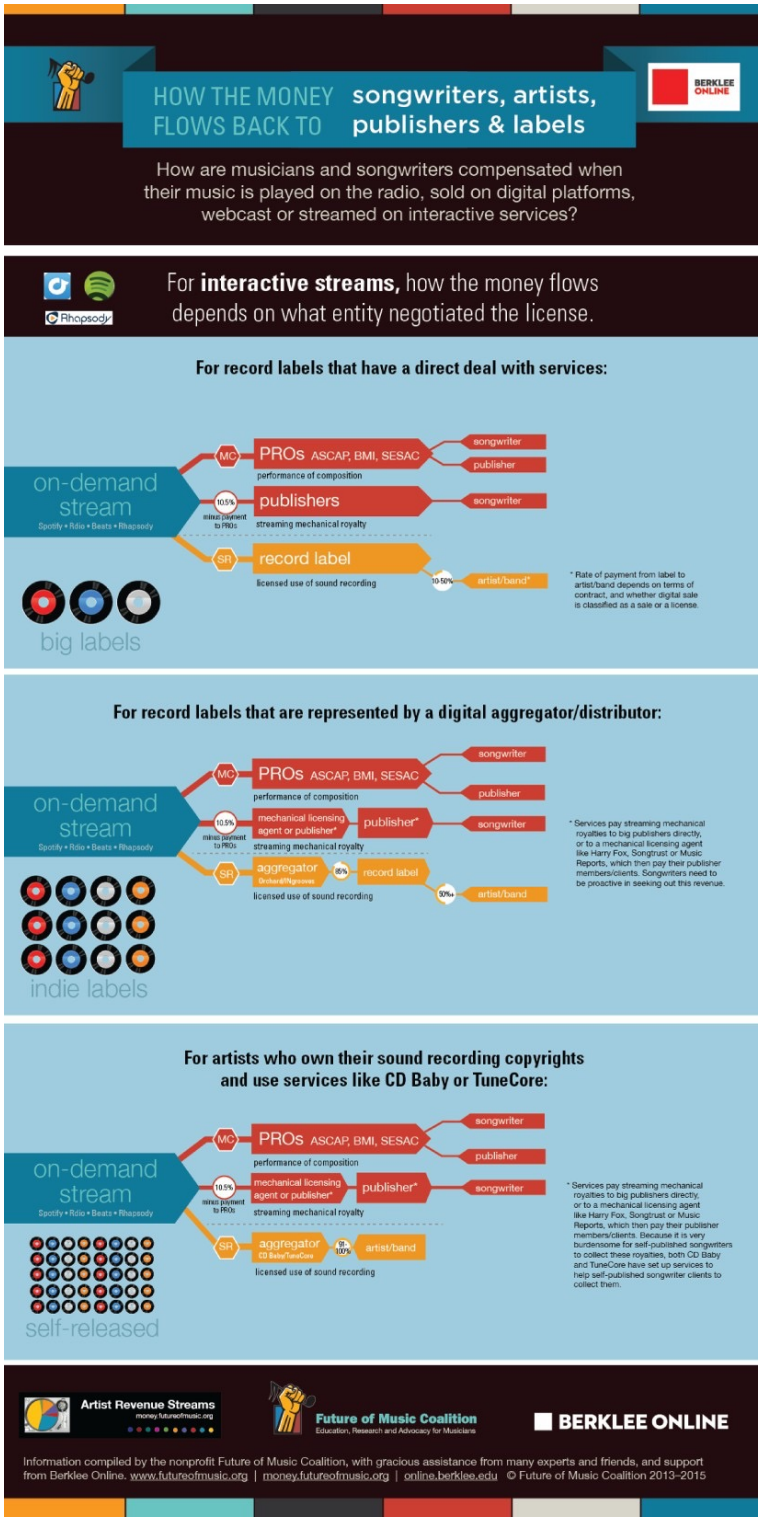
Simply starting from a technical perspective and inventing solutions in search of problems would not have provided the foundational work achieved in the lab. Bringing together some of the world's leading experts in blockchain technology, cryptography, metadata, music business, songwriting rights and royalties - representing artists, online music services, financial tech and other interests shaped the nature and quality of the conversation, and brought the group collectively to new insights about both the music recorded music sector and the technologies that support and enable it.

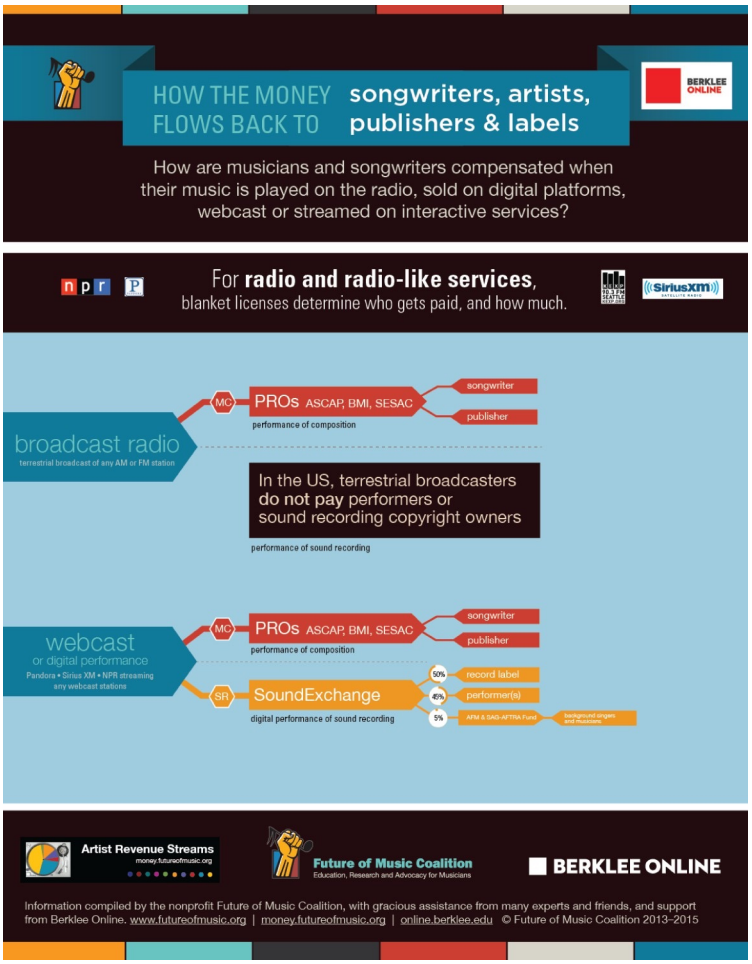
Blockchain proves itself to be both a powerful tool and a problematic

proposition for the use case of the recorded music industries (of which there are many). It was apparent that before technological improvements could be made to the industry, first there must be agreement what would constitute an “improvement”. The many long discussions ranged from the technical to the philosophical, focusing on how technologies might apply within the ecosystem of music as both a cultural force and an economic commodity. Over the course of the week, the group arrived at the specific questions outlined in this document, and the fuller and clearer picture of blockchain technology and its limitations we present here.

Many of the **#MTFLabs: Blockchain** participants have expressed interest in participating and contributing to future events, and we hope that, building on this foundation document, such meetings, hackathons and labs will have more immediate and concrete results.

A. Money flows




HOW THE MONEY FLOWS BACK TO songwriters, artists, publishers & labels
BERKLEE ONLINE
How are musicians and songwriters compensated when their music is played on the radio, sold on digital platforms, webcast or streamed on interactive services?
npr
For radio and radio-like services, blanket licenses determine who gets paid, and how much.
SiriusXM
broadcast radio
terrestrial broadcast of any AM or FM station
MC
PROs ASCAP, BMI, SESAC
performance of composition
songwriter
publisher
In the US, terrestrial broadcasters do not pay performers or sound recording copyright owners
performance of sound recording
webcast
or digital performance
Pandora • Sirius XM • NPR streaming any webcast stations
MC
PROs ASCAP, BMI, SESAC
performance of composition
songwriter
publisher
SR
SoundExchange
digital performance of sound recording
50%
record label
45%
performer(s)
5%
AFM & SAG-AFTRA Fund
background singers and musicians
Artist Revenue Streams
money.futureofmusic.org
Future of Music Coalition
Education, Research and Advocacy for Musicians
BERKLEE ONLINE
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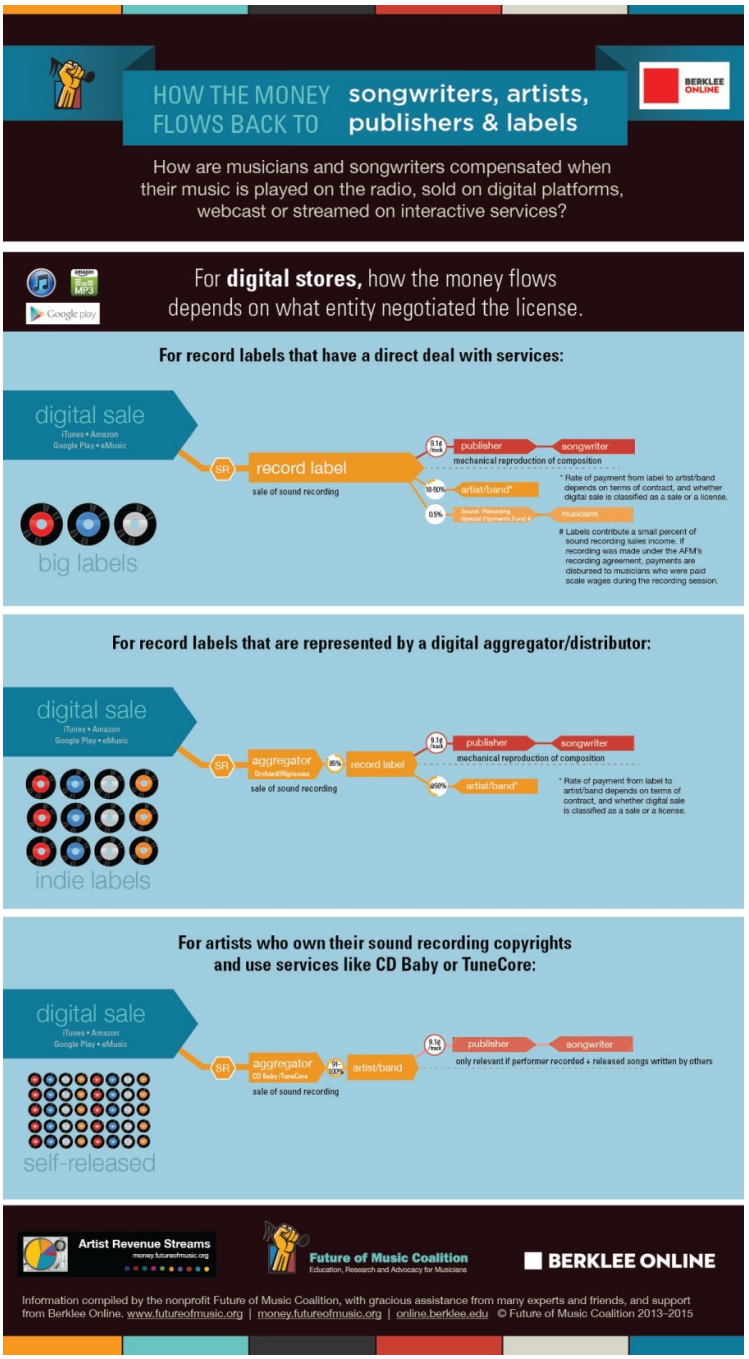
HOW THE MONEY FLOWS BACK TO songwriters, artists, publishers & labels
BERKLEE ONLINE
How are musicians and songwriters compensated when their music is played on the radio, sold on digital platforms, webcast or streamed on interactive services?
For digital stores, how the money flows depends on what entity negotiated the license.
For record labels that have a direct deal with services:
digital sale
iTunes • Amazon
Google Play • eMusic
SR
record label
sale of sound recording
publisher
songwriter
mechanical reproduction of composition
artist/band*
musicians
* Rate of payment from label to artist/band depends on terms of contract, and whether digital sale is classified as a sale or a license.
# Labels contribute a small percent of sound recording sales income. If recording was made under the AFM's recording agreement, payments are disbursed to musicians who were paid scale wages during the recording session.
big labels
For record labels that are represented by a digital aggregator/distributor:
digital sale
iTunes • Amazon
Google Play • eMusic
SR
aggregator
Orchard/Nprooves
sale of sound recording
record label
publisher
songwriter
mechanical reproduction of composition
artist/band*
* Rate of payment from label to artist/band depends on terms of contract, and whether digital sale is classified as a sale or a license.
indie labels
For artists who own their sound recording copyrights and use services like CD Baby or TuneCore:
digital sale
iTunes • Amazon
Google Play • eMusic
SR
aggregator
CD Baby /TuneCore
sale of sound recording
artist/band
publisher
songwriter
only relevant if performer recorded + released songs written by others
self-released
Artist Revenue Streams
money.futureofmusic.org
Future of Music Coalition
Education, Research and Advocacy for Musicians
BERKLEE ONLINE
Information compiled by the nonprofit Future of Music Coalition, with gracious assistance from many experts and friends, and support from Berklee Online. www.futureofmusic.org | money.futureofmusic.org | online.berklee.edu © Future of Music Coalition 2013-2015

B. Stakeholder map

Metadata		
	Wins	Losses
Digital service provider	New / improved product offerings (eg: recommendation engine)	
	Cost reduction	
PRO	Better accuracy	
	New revenue opportunities	
Label	Richer experiences for customers	More effort to submit?
	Reduced data admin	
Publisher		
Creator	Fair credit (more recognition leads to more work)	Workload (does it create more work / admin?)
	Potential for new revenue streams	Raises barrier to participation?
		Have to reveal “truth” (eg: ghostwriters / ghostproducers)

Rights		
	Wins	Losses
Digital service provider	Fewer disputes (lawsuits)	Can't 'hide' behind safe harbour
	Operational efficiency	Retroactive legal risk (eg transparency of past legal negligence
	Improve monetisation of "black box" content (in case of UGC platforms like YouTube)	
	Industry relations	
PRO	Easier resolution of disputes	Shines light on bad actors (eg corruption)
	Operational efficiency	Risk of redundancy
	Chance to stay relevant (eg as arbiter)	
Label	Clarity of ownership (fewer disputes)	Risk of sharing commercially sensitive information (contract terms / expiration)
	New licensing opportunities	
Publisher	Clarity of ownership (fewer disputes)	Risk of sharing commercially sensitive information (contract terms / expiration)
	Bypass societies	
	More effective monetisation of derivative works	
	Eliminate safe harbour effect	
	Better coordination with co-owners of rights	
Creator	New revenue opportunities	Less freedom (no excuse not to license / clear samples, remixes, etc.) - DRM
	Getting what you deserve, faster	More work / workload
	More creative possibilities (remix, etc.) from easier rights clearance	
	Less reliance on middlemen	
	More control / independence	

Payments		
	Wins	Losses
Digital service provider	Operational efficiency	Emergence of competing peer-to-peer models
	Cost reduction	Cashflow
		Threat to business model of key partners on whom they rely (eg If currently dependent on major labels, what are the implications for the relationship of adopting a system that might undermine them?)
PRO	Offer better value to creators by cutting costs (commission) and improving speed of payments	Job losses
		Threat to parts of their business model (would be left with lower margin activities)
Label	More revenue from increased efficiency, shorter chain, more accuracy	Loss of roles as financial middlemen
		Opens the black box
Publisher	Lower accounting costs	Some replacement of core royalties activities
Creator	Lower barrier to entry for getting paid	Tax / legal responsibilities
	Bypass middlemen (PROs, publishers, etc)	Privacy issues
	Bigger % of pot	Uncertainty in changing to “new world”
	Transparency (I know I am being paid what I’m due)	
	Faster payments	

C. Roadmap questions

C.1. METADATA QUESTIONS

- **What is the Minimum Viable Data (MVD) required?**
  - Who decides this?
  - How can it be integrated into the current music production process?
  - Will tracks be refused if they do not adhere to MVD?
  - What existing systems already deal with MVD? (CWR, DDEX, etc)
- **How to integrate assertions on a track?**
  - How can tracks be identified: are new identifiers required or is there a universal identifier that currently exists?
  - How can all systems using tracks integrate in such a way that they have access to/receive assertion updates?
- **What can an actor do to data?**
  - Can they amend, sign, rescind assertions?
  - What is the process if assertions clash?
  - How will resolved clashes be updated in the system?

Additional notes:

- Incentives must be created at the beginning of the supply chain to motivate (appropriate) data
- Varying levels of access to data may be necessary
- Operating cross-territory must be considered

C.2. RIGHTS + DISTRIBUTION QUESTIONS

- **What is the Minimum Viable Rights (MVR) information required?**
  - Who decides this?
  - How can this be attached tocontent?
  - How do you manage inadequate rights data?
- **How is rights data validated?**
  - Blockchain: what is the most appropriate structure?
- **How are rights + distribution accessed?**
  - How can this be integrated into current systems?
  - What tools can be made to provide data access?
- **How can rights be directly linked to the use and distribution of a track?**
  - How can this be integrated into current systems?
  - Where/how do smart contracts come into play: are there alternatives?

Additional notes:

- Do artists need to be better educated on rights + distribution systems?

C.3. FINANCIAL TRANSACTIONS QUESTIONS

- **How can payments be streamlined?**
  - Which technologies will help facilitate this?
  - How can accurate payment distribution be achieved?
  - What extent of granularity of payment can (blockchain) transactions reach?
- **Can payments be directly linked to the artist?**
- **What currencies can be used?**
  - Cryptocurrency vs. non-cryptocurrency?
- **How are payments validated?**
  - Blockchain: what is the most appropriate structure?

Additional notes:

- Layers of transparency and privacy