

Blockchain in the music business: preventing the threat of disruption

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Abstract

The evidence is that blockchain has the power to start a disruptive process. If blockchain has uses for the music industry a framework will need to be defined to prevent damage. A collaborative approach, agile methods, and transition management are identified and suggested as a toolset to successfully shape the impact of the disrupted processes. In particular, transition management is recommended as an approach via research. Blockchain concepts are matched to the music industry through examples.

Keywords: Blockchain, music industry, disruption, transition management, metadata

1 Introduction

Since 2015, the music industry has witnessed a growing 'hype' (Silver 2016: 9) within discussions about blockchain concepts². There is hardly a field in the music business that is not considering blockchain or variations thereof as part of their current projects: Projects range from ticketing (Membran Entertainment (Healy 2017)) to streaming (Resonate³), from ID solutions for band names (Music Business Worldwide 2016a) to distribution (Imogen Heap (Perez 2016) and RAC (Oberhaus 2017)) and global licensing platforms (DotBlockchain Media⁴).

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² This article intentionally does not refer to blockchain "technology" because there is no one specific technology. Instead, it is the concept of combining several approved technologies such as cryptology, swarm intelligence, peer-to-peer networks, hashes and more to form a unique and new kind architecture (Schütte et al. 2017: 11).

³ <https://www.resonate.is>

⁴ <http://dotblockchainmusic.com>

The focus on specific solutions and their feasibility relies on proof of concept (PoC). What the discussions omit or at least circumvent is evaluation and integration management. A few projects, like Alan Graham's and Rupert Hine's OneClickLicense (OCL)⁵, started out by evaluating blockchain but even so they discarded it later, due to performance issues as well as the general risks associated with blockchain.⁶

A non-biased investigation into blockchain is necessary due to its short history and, by way of comparison, a few approved applications, especially as experience of the practical use of blockchain and theoretical research in any industry has only been around for at most nine years. This is not just a problem about the music industry, nor indeed for blockchain. Increasingly shortened innovation cycles have led to broader scientific and academic interest in dealing with disruption. In the music sector, blockchain is the one example that stands out currently when investigating how to cope with the future changes caused by disruption.

The objective here is to identify one or more approaches to employ blockchain in the music industry and to sketch a path towards managing its evolution. It is an attempt to find a way to solving the paradox of bridging the disruption gap. It is assumed that any scheme to accomplish this should involve the entire industry, as it will be a concern for all stakeholders. To achieve this, collaborative methods and a new research approach, called transition research, represent the core hypothetical toolset under consideration.

However, one challenge for this paper is that neither, blockchain and transition management, have been explored as yet in detail; indeed, the scientific basis from extant articles is limited. Hence, interviews with music business, technology, and research experts serve as a source of additional evidence and these were conducted earlier in 2017 as part of another article (Senges 2017b: 49). In addition to previous work on blockchain architectures, analytical reports and more current magazine

⁵ OCL (<https://what.ocl.is>) is sometimes also referred to as "Totem". Meanwhile, the service is established under the name of "Origen".

⁶ Source: Alan Graham, during personal talks and his keynote at Vienna Music Business Research Days in September 2017.

and newspaper articles, this paper builds on the work of the Blockchain Working Group Germany, formed in November 2016 (Senges 2017a).

The first chapter explains which other tasks are needed to prepare for blockchain and why; thus setting up the framework for the core questions. Chapter 3.1 discusses the disruptive power of blockchain and chapter 3.2 looks at previous (disruptive) changes that the music industry has not dealt with successfully. While chapter 3.3 summarises the learnings from the previous chapters' results, chapter 3.4 explores blockchain and its disruptive potential in the music industry. The subsequent chapter investigates if and how disruption might be managed and whether it is possible to define a specific set of requirements to succeed. The required tools, methods, and framework are identified in chapter 4.1 and 4.2 and these are investigated in chapter 4.3. To round-up chapter 5, the article takes a look at the opportunities and the impact of applying transition management and the above toolset, while integrating a disruptive concept.

2 Structuring the challenge

2.1 What is blockchain?

In its basic model, blockchain presents an approach to database solutions in which data is not spread across multiple tables but stored as a chain of blocks in one single ledger. It is a decentralised model, administering an identical copy of the ledger in each node of the decentralised peer-to-peer network.⁷ Theoretically, each block can hold the data itself (here: audio), the metadata (e.g. information necessary for licensing), plus a smart contract (a set of rules to be applied to the data). Another feature is the fact that new data is written into the blockchain only after a validation process confirms its correctness. The network's nodes are involved in the process; hence, the reference to swarm intelligence.

⁷ There are numerous variations, including hybrid architectures (partially decentralised, partially centralised), as well as those where not each but particular or most nodes hold a copy of the blockchain.

Finally, all the blocks are encrypted, and neither the data nor the concatenation of blocks can be manipulated or deleted. However, as mentioned above, there are risks to blockchain. Describing them all here would exceed this articles' topic.

2.2 The metadata chaos

Quoting Benji Roger's metaphor, the change from today's music business towards integrating the blockchain concept is like inventing new "rails" (Rogers 2016). It is not about changing objects, and it is not about replacing the stakeholders. It is comparable to inventing an internet protocol. The problem is that new rails will not alter or change the existing system failures. If the engines used in every rail-train have technical design faults, then simply replacing the rail tracks will not help. The one problem that has paralysed the music industry for decades is the "metadata chaos". Correct and complete metadata is the foundations and basis of licensing and generating revenues.

Current metadata models and workflows can be made to fit into new technologies and new technology concepts. Nevertheless, the current shortcomings of metadata models including errors within them will continue unless there are steps taken and effort is dedicated to clean them up. Essentially metadata define the value of content and as such they form the core of the music economy (Senges 2017b: 36–38). This means a remodelling of metadata structures and workflows is needed, although, due to their nature, this is a major challenge, but it is one requirement to enable blockchain's full scope of advantages.

2.3 Evaluation of the blockchain concept mapped on to music

Current blockchain projects in the music industry focus on a proof-of-concept approach for specific market sectors and solutions. These projects are still in the experimental and nascent stage and do not provide a solid basis for mapping the blockchain concept on the music industry's daily workflows and demands. Bettina Schasse de Araujo⁸: "[...] a poten-

⁸ Innovation Strategies & Community Manager, Institute for Applied Informatics (InfAI) e. V.

tial integration of blockchain can only be successful after a thorough analysis of integration with upstream and downstream processes." It is necessary to launch and establish a "dialogue with relevant stakeholders ... – an intensive multi-stakeholder dialogue" (Senges 2017b: 39).⁹

A multi-stakeholder dialogue combines work on issues such as the metadata challenge with a mapping of the concept to the music industry. At first sight, the primary objective is the requirements specific for the music industry and the system implementation. However, this approach goes beyond these elements. As Matthias Hornschuh¹⁰ states in his interview: "... structural [and] systematic problems of [the music industry] as well as those of adjacent, respectively intersecting industry sectors (in particular media/broadcast/IT)" that are in demand to be included to draft "a comprehensive and sustainable requirements specification" (Senges 2017b: 39).

The synergy in establishing a multi-stakeholder dialogue is more important than solving the challenge itself. It brings together parties that have been in conflict with each other for a decade or more (Senges 2017: 4). This multi-stakeholder dialogue is the technical and infrastructural basis for considering blockchain as an integral foundation for the music industry.

2.4 How to integrate blockchain?

Intrinsically linked to blockchain research is the challenge of how to introduce and integrate blockchain, or any other disruptive concept, into the music industry. With blockchain, there is the rare opportunity, of which stakeholders are acutely aware, for an idea that might develop a significant and disruptive impact; and, as the following chapter suggests, a disruptive power. However, it is neither possible to accurately predict the degree of influence, nor can we estimate the time available for preparation as the momentum is fast developing. More significantly, the hype around blockchain may see some stakeholders or innovators taking

⁹ Quotation translated by the author.

¹⁰ Matthias Hornschuh is a composer for film and television.

action too quickly or too soon, leading to deployments that are not rationally founded.

The primary objective of this paper is to identify the tools, guidance and research basis to allow for integration rather than a clash between blockchain supported initiatives and a music industry yet to embrace blockchain.

The integration of disruption means actively shaping change, aiming to distil the opportunities from a new technology, as well as identifying the associated threats and misconceptions, even if they might improve the ecosystem. This is sensitive because preventing damage does not equate to preserving the status quo so any framework for integration must balance existing workflows principles as well as the newly created ones. As such the relevant structure must be conceived first in a non-biased way.

3 Blockchain and the power of disruption

3.1 Evidence of disruption

The title of this paper implies that blockchain has by definition a disruptive power. Unfortunately, innovations that cause radical changes in a market are often called "disruptive" even when they are not, and it is difficult currently to describe blockchain as disruptive. Disruption is more complex as Christensen et al. (Christensen, Raynor & McDonald 2015) explain in arguing that products, services, or technologies should not be labelled as "disruptive" in themselves, rather it is the process they initiate through innovation that is disruptive.

When investigating whether blockchain is capable of initiating a disruptive process or not, it is important to firstly separate two facets. On the one hand, blockchain may represent an integral part of a product, e.g. Bitcoin but on the other hand, blockchain as an abstract concept may serve as an underlying infrastructure for many industries or products.

In conjunction with Bitcoin, blockchain helped challenge finance industries through an innovative way of combining security, transparency, and control within distributed peer-to-peer networks. This is an example of *low-end footholds* disruption (Christensen, Raynor & McDonald 2015) targeting a particular group of customers at the low end. Blockchain for Bitcoin launched into a new phase when financial industries explored the added values of the blockchain concept. Far from being mainstream and still hardly tested, the conceptual approach became separated from Bitcoin and went upmarket from the original innovators; more importantly, it spread to other industries within a few years.

Separated from Bitcoin, blockchain now appears to have launched into a *new-market footholds* disruption process. Start-ups like Ethereum¹¹, ConsenSys¹², JAAK¹³, BigchainDB¹⁴ and many others have established services as providers of concepts, infrastructure, development, and technology. Blockchain itself created a new market with incumbents including enterprise software providers like IBM looking to implement their own blockchain infrastructures.

While still in the evaluation phase for other industries, blockchain arrived in the music business which raised the immediate question of whether blockchain could initiate a disruptive process when applied to it. However, blockchain only entered the music sector in 2015 so it is still too soon to be certain of what it can do. Looking at previous evaluations for various industries (McWaters et al. 2015; Allianz 2016; Schütte et al. 2017) one can only agree it has the potential to start a disruptive process. How blockchain can eventually perform in the music industry will be dealt with in chapter 3.4. The challenge yet to be solved is how to cope with the accompanying changes that would arise if disruption is started.

¹¹ <https://www.ethereum.org>

¹² <https://consensys.net>

¹³ <http://jaak.io>

¹⁴ <https://www.bigchaindb.com>

3.2 Disruption in music: failed approaches in dealing with disruption

In the past the impact of disruptive technologies led to a predominance of fear, mainly caused by the pressure to respond if an organisation is not able, or not willing to act, or not capable of responding appropriately (Mulligan 2015: 19, 60) resulting in a fear of being overrun and outperformed. The negative consequences tend to overshadow any benefits and improvements the radical changes may lead (and have led) to, meaning potential opportunities can be perceived as threats. The negative impact of radical change for incumbent players appears to define disruption where the consequences of disruption equate to financial loss and a reduced status, mainly due to not having anticipated the change nor being able to adapt as fast as necessary.

Example 1: Napster: Napster (1999–2001), in its first incarnation, and other platforms like Kazaa or Mule did not change the paradigm of a product. It was a one-to-one transfer of a physical to a digital product and it was free. The peer-to-peer networks, the technology that empowered distribution, the ease of use and being free launched a disruptive process. It changed users' behaviour instantly and ultimately. There was no chance to change it back (Mulligan 2015: 19).

The effects were unprecedented and unexpected despite later legal actions to prevent or stop similar services. Although the industry was shaken and already damaged, it was not able to transfer to and adopt the digital model as the key players were too slow to change (Mulligan 2015: 60). They did not try to embrace it in a way that might have benefited the music industry and the artists, despite which the new user experience was here to stay, indeed it was users' behaviour that led to the pressure to change. Eventually with the arrival of iTunes, the music industry started to react (Mulligan 2015: 129). This disruption also paved the way for Apple as the new dominant partner. Apple adapted digital distribution in a reasonable and legal way, shifting disruption to the end of the disruptive process to mainstream acceptance.

It took more than a decade to close most of the illegal download platforms. The aftermath of the *low-end footholds* disruption was severe damage to monetising downloads. (Mulligan 2015: 291).

Example 2: User Generated Content: While Napster drew attention to the illegal sharing of music, YouTube focused on creation of music content. This time, the music industry tried to stop illicit use (and thereby sharing) immediately, either through negotiating contracts as the US major labels did and later by taking YouTube to court (Music Business Worldwide 2016b). However, by focusing on those elements aspects known to cause damage the industry ignored another phenomenon altogether, namely User Generated Content (UGC).

The use of existing "shared" content is one aspect of UGC, but its impact extends that. Innovators such as SoundCloud¹⁵ established the concept as the advent of UGC again changed users' behaviour, in treating users as consumers and simultaneously as producers. The result was another *new-market foothold* disruption that drew audiences' attention from professional artists. Some UGC creators even circumvented the traditional artist development route from the creative industries to successfully enter the commercial market.

3.3 Learnings

The structure and workflows of an organisation should react flexibly or adapt quickly to changes and trends from the surrounding environment, regardless of whether the source of the change comes from the market (e.g. a new player) or from the external world (social trends or politics). The most critical challenge is to first identify any causes of disruptive change. Innovations and concepts, whether new or resurfacing, must be monitored continuously and evaluated in relation to potential upcoming developments. With essential and evolutionary events in technology, early efforts help prevent damage and encourage the building of new and improved infrastructures as well as workflows. Instead of standing by watching innovation (and disruption) happen to then harvest the resulting financial benefit later, it is more beneficial to shape and improve the market to increase revenues and market value.

¹⁵ <http://soundcloud.com>

This requires a joint effort by all stakeholders even in a competitive market, where it makes sense to work collaboratively on the potential of new concepts and this is exemplified by the coordinated development of the WorldWideWeb Consortium (W3C)¹⁶. Any new technology or concept in the market (let alone the music industry) should be considered and evaluated in detail. Innovation cycles have significantly accelerated so the best way to prevent an incumbent being overrun is to examine innovations in advance in their nascent steps.

3.4 How blockchain might disrupt the music industry

The most likely use cases of blockchain that can develop a disruptive potential are licensing and "structure as a service".

Licensing: Licensing is the basis of the monetisation of music and other intellectual property. As soon as workflows around licensing are affected by innovation, there is an immediate impact on the music industry. To a large extent, revenues depend on the existence and quality of metadata connected to musical works (Senges 2017: 36–8). Matthias Hornschuh: *"The economic core of business with content that is not physical lies in the data"* (Senges 2017b: 36).

Blockchain may allow for a significant rise in revenues by easier licensing processes, the correct identification of creators, and accelerating transactions provided the metadata problems are solved. In a market dominated by low value purchases and miniscule payments for single plays, lowered transaction costs lead to increased margins which supports independent and non-established artists as well as smaller labels and publishers. Improvements in time-to-market and increasing revenues lead to an increased presence in the music industry of blockchain supported companies. Those stakeholders avoiding blockchain and not participating in a new shared metadata model could suffer from the disruptive fall-out.

Structure-as-a-service: Compared to licensing, bundling various services into one might lead to further negative disruptive changes. Already

¹⁶ <https://www.w3.org>

some players are offering on-demand artists services: label services, marketing, and most of all digital distribution. With blockchain as the backbone connecting smaller services, there is an immediate opportunity in the music industry for new players. Just as with Uber, Airbnb, Facebook and Amazon, these new players can be categorised as enterprises that do not produce, own, or offer services themselves. Business models like these are fast to build and cost-efficient to maintain.

A "structure-as-a-service" bundle offer that includes transactions, distribution, one-stop profiles, administration, and APIs to synchronise catalogues could potentially render Collection Management Organisations (CMOs) obsolete. While today's unsigned artists would benefit from much better access-to-market than currently exists, the possible demise of CMOs would damage the majority of professional and semi-professional artists without the CMO's legal support and representation of these artists. Scenarios like these might explain the resistance towards blockchain by specific stakeholders like CMOs, even though they might well benefit from blockchain (Senges 2017b: 31–34). Despite resistance to blockchain based on ignorance, those stakeholders who oppose it will most likely merely delay rather than stop it. It is strategically more constructive to investigate if and how organisations can or should deploy blockchain.

Balancing access-to-market for all artists: Instead of shifting benefit from one group of creators to the other, the challenge is to generate advantages for all. Therefore, the music business has to tackle a fundamental problem namely how to integrate genuinely independent music to the commercial market. The term "independent" here refers to artists who are not CMO members nor are they signed to labels or music publishers. This group also relates in part to other topics like Creative Commons licensing and User Generated Content (UGC), that is described in chapter 3.2, example 2. It has already created disruption which could be amplified by blockchain-based structure-as-a-service offerings.

Any serious approach employing blockchain should include an extended multi-perspective concept. It is supposed to bridge the gap between do-it-yourself (DIY) artists and the music industry. The objective

should be to define a concept embracing cultural diversity that helps aspiring artists move between both worlds.

If it is possible to eliminate failures and erase existing aberrations, it is an excellent start to shape disruptive evolutions. Of course, any approach like this demands broad communication across the market and between all stakeholders.

4 How to manage disruptive changes

Managing a disruptive change does not translate to strategically face or fight new and innovative competitors. Neither is it a form of "traditional" project management with clearly defined tasks, deadlines, or closed processes. It extends the impact on a single organisation, and it often extends beyond an industry because of the reciprocal effect between entities within an organisation and beyond.

4.1 Tools and methods

The goal is to first identify the requirements on how to describe the tasks and identify the challenges in actively dealing with and shaping radical changes that may affect the entire market or even larger systems.

The domains and aspects of work are as numerous and vast as is the challenge. The outcome of the process is unpredictable, elusive, and currently available knowledge is limited. Due to the project dynamics, the key requirement is to move gradually in repeated iterations to allow for continuous customisation of task lists and goals. Successive iterations also allow for early feedback of requirements, supported by regular communication starting with the first iterations. Similarly, teams may change to match the current tasks and requested skill sets. An approach that applies agile methods and tools seems most suitable (Beck et al. 2001; Agile Alliance d. u.).

Teams should include members of various stakeholder categories to enable a multi-stakeholder dialogue. Also, members representing diverse vertical levels of implementation have to be involved:

- users (artists, composers, producers, licensees such as broadcast services),
- manufacturers and service providers (CMOs, labels, publishers, distributors, manufacturers of musical instruments and software),
- implementation teams (system providers of blockchain services),
- researchers (institutes and universities).

Core to successful and collaborative work on the challenge is in-depth communication which again requires trust and transparency. As a precondition to trust, all participants have to:

- share the understanding of the demand,
- share their motivation to engage,
- support and promote transparency.

The tools and methods mentioned require open frameworks and an open infrastructure but not in the open source software sense. Here "open" refers to frameworks that are accessible to everyone, but not necessarily free to use. Since teams and tasks may change anytime, the choice of software must not be limited to either type or kind of tools. The equivalent in management structures is collaborative management ("wiki management") which also enables cooperation between a large number of participants and stakeholders at a relatively low cost (Collins 2014: 122–124).

The variety of teams and sub-tasks might be realised best by establishing a working group or a virtual platform to connect between all the participants. A hub or broker structure might be suitable.

4.2 Framework

Apart from a set of tools and methods, an approach to prevent the unexpected surfacing and fall-out from disruption requires a context. This framework, or research work, should support the strategy and provide a template. Stakeholders involved then can execute any analytical and steering efforts according to objectives and guidelines that are part of the model.

It is necessary to examine the process if it is one that either initiates a *low-end* or a *new-markets footholds* disruption. Both apply innovative technology, workflows, data models, concepts or similar approaches that share a capability to start a transforming process. Therefore, the framework must be able to map the changes induced on to a transforming scheme that allows for guidance and shaping.

Management approaches that spring to mind first are migration management and change management, but, neither of these fit. One can apply migration management to closed (sub) systems where a new (sub)system replaces either the entire, or parts of the original order. Typically, these are software products, services, or formats that require a change in workflows. Any blockchain architecture introduced to a single company within the music industry, or across the entire music industry will be highly specific. It requires innovative concepts to replace one part of the system. Either they are designed to change workflows, interfaces and more, or they may substitute the entire technical backbone. The implementation includes processes that generate innovation by integration. Multiple migrations may also be needed when a blockchain concept is integrated if the impact and challenges exceed those of migration.

Change management goes beyond migration and manages transformational processes. It represents the customisation of an existing system and its adaption of changes taking place in the surrounding ecosystem (Litke 2004: 259–260). The reaction to on-going changes ranges from technical systems to workflows, from personnel structures to job cuts or hirings. As with migration, all actions are planned and executed internally within the organisation or group of organisations. Coordina-

tion efforts are limited, and standard project management tools may be sufficient.

The multiple requirements of potential changes from disruptive processes do not fit the migration management or change management models. As described above, there is a predominant uncertainty in disruptive processes from their outset and it cannot be precisely estimated. Most important are the trends and impacts from the surrounding (eco)systems that can be either a stimulus for the disruptive process or vice versa (when innovation may have induced them). As with change management, the main focus should be on external impacts, but rather than reacting to the effects, it is more relevant to analyse, shape and steer trends from the external sources.

Transition management may serve as a matching framework although as a research topic, it is still new (Schneidewind & Scheck 2012)¹⁷. Transition management targets the demand for management approaches that fit accelerated innovation cycles.

Frequent changes in technology that are initiated by innovation lead to and promote disruption. The fact that external impact is heavily involved shows the demand for a new approach in management. As suggested above, transition management goes beyond managing a transformation of workflows; its main objective is not reacting to but actively shaping external trends and impact.

4.3 Transition management

To show that transition management is a suitable framework to manage a disruptive process in the music industry, this chapter analyses the summary by Schneidewind and Scheck (Schneidewind & Scheck 2012). After introducing the definition of the term "transition", the authors match the model to the music industry.

¹⁷ Schneidewind & Scheck are describing the deployment of transition research referring to recent changes in power economy.

4.3.1 Definition

Based on research from the Netherlands (Schneidewind & Scheck 2012: 45), the authors define transitions as a *"radical [and] structural change of a social system"*. This change is the *"consequence of co-evolutionary economical as well as cultural, technological, ecological and institutional trends on various levels"* (Schneidewind & Scheck 2012: 47–48).

4.3.2 Impact of co-evolutionary trends in the music industry

Like any other industry, the music business is part of the social system. Although the work by Schneidewind and Scheck refers to the power industry and the radical changes it is going through, it is possible to transfer the term "transition" to the landscape of disruptive processes in the music industry. There are various types of trends that lead to, or have an impact on disruptive processes in the music industry:

- **Economic:** If blockchain helps to increase revenue by improved licensing processes then, as a consequence, there is a positive economic trend. It leads to advantages for the music industry. However, other internal changes like that of user behaviour, caused by Napster and others, led to a trend of devaluation of intellectual property (externally) which in turn promoted unlicensed and non-remunerated usage.
- **Cultural:** In the 21st century, users have increasingly become producers and for the music industry, this meant the launch of do-it-yourself (DIY) artists. Recent articles described SoundCloud as a source of new genres (Caramanica 2017). In a reciprocal effect (co-evolution), the change of roles was fostered by economic changes like crowdfunding and by low prices for music and video production gear.
- **Technological:** Every change in recording and distribution technology has been radical in the music industry. Although,

most technologies unleashed their most disruptive potential when their costs fell below the threshold that private users could afford. Evolutionary moments like these connect financial and technological trends.

- Ecological: The availability of resources to manufacture physical media was of marginal relevance only. With the dominance of servers, power consumption and the disposal of hardware though, an external trend with impact for the music industry may gain more traction.
- Institutional: The evolution of CMOs and their representational power was and still is a potential source of institutional trends. Creative Commons is another example which propelled a new perspective on intellectual property. More precisely, it is not the introduction of Creative Commons licences that spawned an institutional trend. It is the impact of the existence of Creative Commons that led to its consideration. In the USA and the European Community, this developed into a legal demand for CMOs to adopt other licences and allow their members to register works under these licences.

4.3.3 Levels hosting trends

The description of transition research goes more into detail (Schneidewind & Scheck 2012: 48–49). The definition refers to "various levels" on which the evolutionary processes take place:

- the socio-technical niche,
- the socio-technical regime,
- the socio-technical landscape.

In the music industry, the *socio-technical* niche hosts start-ups and incubators of innovations. The Fraunhofer Institute introduced the co-dec of MP3 compression, whereas Blockchain is an innovation sourced from another market and developed by multiple start-ups like Ujo, Ethereum, BigchainDB and more. Again, this demonstrates the source of a disruptive impact can be external as most innovators and incubators are not necessarily part of the music industry. Some of today's dominant media corporations that shape the modern music and entertainment industry started off in other markets, e.g. Apple, Google, and Amazon.

The *socio-technical* regime in music industry comprises CMOs, major labels, major publishers, various industry trade associations¹⁸, and the legislative body. A system of rules built a framework that defined the market-power of these stakeholders. Transition research differentiates between normative, regulative, and cognitive rules and in this model the major players like the trade associations and corporations can define normative regulations, but the foundation for these are the legal regulations. CMOs are regulated by law for example, and they define normative rules of licensing. Cognitive rules result from the perspective of groups of stakeholders and participants in the music industry. The different perception of "sharing" content escalated after the arrival of Napster (in 1998) grew from a trend that became more threatening as the technology evolved. The cognitive notion of intellectual property from the creators' perspective differed immensely compared to that of users. One consequence was tough legal action on certain copyright infringement cases, evidencing a deployment of normative rules supported by the regulatory level.

The *socio-technical* landscape describes the third level and represents where the social system and all trends are embedded. This level includes the range of environmental influence, political developments and associated conditions. Trends and conditions within the socio-technical landscape have in common that they are hardly controllable.

¹⁸ These include Bundesverband Musikindustrie e.V. (BVMI), Dachorganisation der Musikschaffenden e.V. (DOMUS), and Verband unabhängiger Musikunternehmen e.V. (VUT) in Germany; examples worldwide include the International Federation of the Phonographic Industry (IFPI), the Featured Artists Coalition (FAC), The Worldwide Independent Network (WIN), and more.

One approach to enable at least some influence is lobbying by organisations, corporations, and associations.

A recent example is the vote in favour of an exit of the United Kingdom from the European Community, more commonly labelled as Brexit. Its future impact still is uncertain and almost impossible to influence from within the music industry. The potential consequences for the British and the European music industry have been compiled by Laura Snapes (Snapes 2016), prior to the vote, and she underlines the significance of this political decision for the music industry.

4.3.4 Patterns of change

The disruptive process has to be analysed based on the reciprocal impacts of trends, rules, and perspectives across various levels within one industry and beyond. A full analysis has to come up with a high degree of complexity, as the few examples featured above do show.

It is possible to reduce the complexity by identifying patterns of change in transition research (Schneidewind & Scheck 2012: 50). The summary of Schneidewind and Scheck refers to bottom-up, top-down, and hybrid models. There are indeed parallels with the types of disruptive processes described by Christensen et al. (Christensen et al. 2015) such as the bottom-up pattern matching the low-end footholds disruption. However, a detailed analysis of the relationship between transition patterns and types of disruption is still missing. Patterns can often not be precisely identified as one or the other type.

While Napster in 1998 certainly initiated a *bottom-up* model, it did not "dispossess" regime entities (Senges 2017b: 43) as the pattern implies. If transition research is applied in the context of integration of blockchain in the music industry, the hybrid pattern becomes important. If the objective is to jointly secure a smooth transition from a blockchain-less industry into one supported by blockchain architectures, any approach that offers a benefit for the majority of stakeholders demands a detailed investigation. Schneidewind and Scheck (Schneidewind & Scheck 2012: 50) refer to potential "*symbiotic relations between regimes*

[e.g. CMOs] and niche [e.g. innovators and start-ups]" which in an ideal world could pave the way for joint success.

4.4 Opportunities

Migration and change management, in particular, omit an option to shape the impact caused by processes from a macro environment. Transition management is supposed to shape "*the direction and [...] pace of transformational processes*" (Schneidewind & Scheck 2012: 51).

Blockchain is not just a concept for single players but one involving interactions. A transaction protocol based on blockchain may result in another layer on top of the internet protocol to handle any, financial and/or contractual transactions. As with the internet, its full effect is only realised when the disruptive process comes to an end, and when it reaches the mainstream so that it becomes ubiquitous and no longer perceptible.

Licensing in music as well as in any other IP based industry is built on contracts and fees. It is a model that matches the concept of blockchain perfectly. Nevertheless, implementation needs to be shaped and aligned for the industry, which is an enormous challenge that will require considerable effort. Transition management enables communities and markets to not just prepare for likely costs and required actions but also to allow for changes in social structures. In conjunction with agile methods and the tools described above, it is a promising framework. If research in transition management in any industry is successful, it can provide a useful template and guidance on how to cope with radical technological evolution.

5 Conclusion

With numerous industries investing heavily in evaluating and testing blockchain, it is safe to say that blockchain is on its way to establishing itself as a concept in tomorrow's technology – it is here to stay. It is uncertain when, or in which form it will succeed.

The likelihood of blockchain noticeably entering the market should alert stakeholders in the music industry to the need to prepare for the

new paradigm. It would be wrong to ignore blockchain, which even if it fails, provides an opportunity to cope with rising and possibly disruptive trends.

Therefore, an approach towards blockchain in the music industry should include three tiers:

- evaluating blockchain,
- solving the metadata chaos,
- drafting a guide on how to integrate new technologies.

While the evaluation of blockchain focuses on feasibility and proof of concept studies for various cases, a joint effort to improve metadata workflows is crucial before applying blockchain or other technologies, and any results will need to be analysed iteratively.

The premise for this is to build a framework based on transition research and this should start by establishing a working group or roundtable to coordinate the transition. It is the most valuable goal for the groundwork of an infrastructure to mitigate obstacles and conflicts. While competition is healthy, economic battles and lengthy legal disputes will only hurt the industry and more importantly, the creatives who are suffering most.

The most prominent feature of blockchain is that it motivates stakeholders from all sides to discuss not just the technology but also more pressing issues like the metadata chaos. A joint approach is essential since any implementation of methods from transition management builds upon co-operative work: open infrastructures, application programming interfaces (APIs), shared access and joint maintenance of standard data. Ironically, shared thinking presumably is the most suitable way to grow the market.

Beyond blockchain and the music industry, connecting transition research to disruption leads to a challenging question: Is it possible to avoid the implied rupture? Even more, if disruption loses its threat by managing the transition, can rupture be turned into rapture over new opportunities?

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