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How Blockchain Technology Can Improve the Music Industry

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Blockchain is a revolutionary technology that has great potential to solve many of the fundamental challenges facing the music industry today. In fact, this technology is uniquely suited to address issues across the various industry sectors, including rights management, licensing, copyright ownership, royalty tracking and reporting and the primary and secondary ticketing markets for live events. Likely, however, its adoption will be incremental and more evolutionary than revolutionary-- impacting the music industry in a segmented fashion, as opposed to a global transformation.

While still somewhat early in its adoption, now is the time for the music industry to focus on blockchain, how it may disrupt the music industry and how participants can leverage that disruption. As many formerly dominant companies have learned the hard way, **when it comes to disruptive technology you have two choices - be the disruptor or be disrupted!**

This article

- provides an overview of blockchain technology (including crypto assets and smart contracts);
- identifies some of the problems in the music industry and how blockchain can solve these problems;
- provides examples of companies already offering these technologies; and
- concludes with an overview of legal considerations when applying blockchain technology to the music industry.

What is blockchain technology?

At its core, a blockchain is a distributed ledger for recording transaction data and value transfers. A ledger is merely a list of transactions. Traditional paper-based ledgers include consecutive pages where each line records a transaction and when the page is full, the process repeats on the next page. With many blockchains, each block is like a page. Transactions are verified via a consensus mechanism and transaction

data is written into a data block, in a serial, time-stamped manner. When the block is filled, a new block is created. Unlike traditional ledgers, when a block is filled, the system creates a hash value, which is a unique and random number that is generated by the chain's algorithm and identifies the contents of the previous block.

This hash value is then written as the first entry in the new block. This process "chains" blocks together, hence the term "blockchain." The first entry of each new block must correspond to the last entry in the previous block. Thus, if someone attempts to change an entry in a prior block, the hash value would no longer match what was written to the following block and that altered block would be deemed invalid. In part, this is how blockchain creates immutable records.

Many types of blockchains exist, including public and private blockchains. With public blockchains, the ledger is copied to and stored on multiple nodes (or computers) across a network – resulting in a distributed system where the data is stored in many locations and, subject to privacy controls, is transparent to all network participants. The system is decentralized because the system itself enforces rules that prevent a single entity from controlling the verification and storage of transaction data. This avoids the "data silos" problem that exists today. With public blockchains, anyone can run a node or view the transaction data. With private blockchains, only users with permission can view the transaction data. This can help address privacy concerns.

What are smart contracts?

Smart contracts are an important and powerful tool enabled by blockchain technology. A smart contract is not necessarily a legal contract. It is self-executing computer code that includes the operational terms of an agreement, between two or more parties, where the operational terms are written into and executed by the lines of code. The code can be stored across a distributed, decentralized blockchain network. Smart contracts can automatically receive data from various sources (*e.g.*, IoT sensors) and programmatically implement a series of "if-then" rules with little or no human interaction. The way smart contracts work is that "if" certain conditions (programmed into the smart contract code) exist, "then" the smart contract causes certain action(s) to occur. Smart contracts can be used to automate various processes, but in a very flexible and adaptable way. Smart contracts increase efficiency and reduce costs by removing middlemen who add little value and by automating tasks that are typically performed manually. As detailed below, smart contracts can be used in the music industry to automate royalty payments, to manage ownership rights, to enforce copyrights and to license musical works and sound recordings, among other things. For more information on smart contracts, see the Chamber of Digital Commerce's white paper on the topic.

What are crypto currencies and tokens?

A cryptocurrency is a digital currency that uses cryptography for security and for which transactions are typically recorded to a blockchain or other distributed ledger technology. Crypto tokens can be a digital currency and can be programmed to include additional functionality, such as ownership of title, interests, voting rights, distribution rights, and other functionality. Recordation of ownership of currencies and tokens occurs via a blockchain. Typically this is implemented using public key/private key encryption. The "keys" are long strings of numbers and letters linked through the mathematical encryption algorithm that was used to create them. The public key (comparable to a bank account number) serves as the address which is disclosed to others and to which others may send currencies and tokens. The private key (comparable to an ATM PIN) is meant to be a guarded secret, and only used to authorize transfers or transmissions associated with the currencies or tokens. Crypto currencies and tokens can be bought and sold (or traded)

via exchanges and can be transferred in a peer-to peer manner. Transfers can occur via a software "wallet," which is associated with a user or device, has a unique alphanumeric identifier and can transfer and receive crypto currencies and tokens. One use for crypto currencies is to facilitate a payment mechanism on a blockchain network. Tokens can have many uses. For example, a token can be used to represent title to or an interest in some object and transfer of the token can effect transfer of title to or the interest in that object

Blockchain technology can leverage various types of crypto assets. Two such crypto assets relevant to music are crypto currencies (a digital currency to enable payment) and crypto tokens which can represent ownership of a digital item (*e.g.*, a copy of a musical composition, a digital ticket, an interest in a musical composition or royalties) among other assets.

What are some of the key advantages of blockchain technology?

Some of the many advantages of blockchain technology are that it is:

- ***Immutable*** – hashing the block contents and "chaining" the blocks, by writing the hash to the next block, renders the recorded data immutable
- ***Distributed*** – storing copies of the ledger on multiple nodes, under control of multiple entities, avoids data silos and single points of failure
- ***Decentralized*** – validating the transactions via a trusted consensus mechanism avoids the need to rely on and trust any single (central) authority
- ***Transparent*** – subject to privacy controls, the data on a blockchain can be visible to all parties, which for example, can create greater end-to-end transparency in supply chains
- ***Secure*** – using cryptography, including digital signatures via public key infrastructure (PKI) encryption, provides state of the art security
- ***Automated*** – using smart contracts to automatically enforce business rules enables a greater level of automation
- ***Cost-effective*** – eliminating unnecessary middlemen who add little if any value, reducing or eliminating manual processes and reducing fraud can all reduce operational costs and increase efficiency
- ***Auditable*** – storing the verified transaction data in a serial, time-stamped, immutable manner facilitates auditing and regulatory reporting

How can blockchain technology be used to enable rights management and support the Music Modernization Act?

The endless divisibility of a copyright in a composition, the lack of a centralized database that records ownership of those rights, and the advent of user-generated content and streaming has made it increasingly difficult for parties that control, distribute, and wish to exploit rights associated with musical works to license such rights and to ensure the accuracy and payments of royalties. The use of disparate standards to identify ownership and the control of musical works across jurisdictions further complicates these issues. After being

unanimously approved by both chambers of Congress, the Music Modernization Act ("MMA") currently is before the President for signature. The MMA, a bill 10-years in the making, among other things, seeks to address the many problems that are prevalent as a result of having a decentralized database of copyright information. In fact, one of the MMA's primary purposes is the creation of a publicly-accessible database of song copyright information to permit the efficient licensing, payment and reporting of mechanical royalties. Certainly blockchain technology can support the MMA's efforts to create and maintain this centralized database, simplify standards, establish chain of title, and track and manage the exploitation of musical works and payment of royalties.

Rights Identification and Maintenance. Blockchain technology and the use of smart contracts have an array of applications in the context of rights management. They can capture the complete copyright ownership history associated with a given song, establish and maintain chain of title and seamlessly transfer rights. While the technologies may not solve the "input" issue of collecting all of the information and placing it into one database, they simplify the process of adding, confirming, maintaining and updating ownership information in one centralized location, in one standard format. Smart contracts can be used to instantly transfer ownership or administrative rights in music. Once ownership information is added to the blockchain and confirmed, any unauthorized modifications or duplicative information will be rejected. Any modifications or rights transfers that are confirmed by administrators of rights on the blockchain are instant and public, which creates a clear and complete copyright picture for any licensee that wishes to exploit music.

Copyright Protection. United States law affords exclusive rights to creators and authors who fix their original works of authorship in a tangible medium of expression. The exclusive rights allow the copyright owner to reproduce, distribute and, in relation to music, perform the works. Copyright infringement through piracy has plagued the music industry since the digitization of music. Peer-to-peer file-sharing services like Napster and LimeWire allowed users to share and play audio files without paying royalties to the copyright holders. While evidence suggests that streaming services have cannibalized such illegal activity, the problem persists. The use of tokens, the immutability of a blockchain and the use of smart contracts provide mechanisms to record copyright ownership, authenticate ownership to police unauthorized licensing, distribute and exploit musical works and sound recordings. Some companies have already created a distributed ledger technology that polices and enforces their copyright owners' rights. For example, COPYTRACK, allows users to upload their original images to the platform, perform global searches to detect infringing uses and enforce copyright ownership when it detects infringing uses. The same policing technique can be applied to music.

Monetizing Rights Associated with Musical Works. One complete, uniform and centralized database tied to an immutable ledger also simplifies licensing and can allow for royalty disbursements to be made directly to rightsholders. Recording rights holders' interests on the blockchain also increases transparency and provides a simplified means for licensees to contact all rights holders. Music providers who seek to license songs can manage licenses directly via the blockchain by executing a smart contract. Smart contracts can also be used to trigger automatic royalty payments to each rightsholder when a song is licensed or play. Notably, the MMA's centralized database and licensing purview applies only to mechanical licenses. A centralized database tied to an immutable ledger, coupled with the use of smart contracts, would complete the centralization of the music licensing scheme – including, without limitation, for synchronization licenses in audio-visual content.

The practical applications are infinite and some platforms and artists have relied on this technology to deliver music directly to fans on a pay-per-play basis and to incentivize listeners to share music in exchange for a fraction of a royalty payment or incentives. Björk recently partnered with Blockpool for the release of her album, *Utopia*, and gave buyers digital coins in addition to the album. Purchasers have the opportunity to collect more coins by interacting with the artist on social media and then to redeem the coins for merchandise.

What role can blockchain technology play in addressing concert ticketing issues?

Companies like Ticketmaster and Ticketfly have invested enormous sums and have implemented technological measures to prevent computer bots from purchasing tickets and sales from unverified sellers on secondary markets. While bots and similar methodologies have been undermined to an extent, ticket scalping, counterfeit tickets and the secondary ticket market as a whole continues at an significant cost to the industry. The combined use of blockchain and token technology and smart contracts can address this issue and numerous other issues that arise with ticketing events including, scalping, bot purchases, unauthorized ticket sales on secondary markets and counterfeiting.

Each ticket to an event could be represented by a single, non-fungible token. The concert-goer that holds the token, can attend the show. By creating and storing these tokens via blockchain technology, they can be managed in a decentralized, distributed database. That database can identify the initial purchaser and manage the resale and venue admission process. If a token is programmed for resale, a smart contract can be used to add "programmable logic" to the ticket, which could limit the price of resale or require that some or all of the "premium" is transferred to the artist. Due to cryptography, the token representing a ticket can be transferred freely, but cannot be replicated. This solves the counterfeit ticket problem.

Some blockchain technology companies have emerged in the ticketing space including: (1) Crypto.Tickets, which offers a decentralized platform for selling and purchasing tickets and allows the event holder to limit the resale price of tickets; (2) Lava, a peer-to-peer platform that allows individuals to sell Ethereum-based tickets held in their smart-phone wallets to other individuals for face value prices; (3) Blockets, which uses smart contracts to manage the ticket process and provide users with more control over the secondary market and payout process; (4) Aventus, which allows promotors, venues and agents to define rules surrounding ticket sales.

How can blockchain technology be used to allow artists to share and sell music?

Reports are released regularly that music revenues are up year after year, but only a fraction of those amounts are received by artists.[1] Blockchain technology has the potential to disrupt the way music is distributed by enabling artists to offer their music and other media directly to fans thereby creating more personal and robust artist-fan relationships.

[1] Citigroup released a report in August 2018 that said the music industry generated $43 billion in revenue in the United States alone, but only 12% of that revenue went to artists. Citigroup attributed the rise in revenue to the concert business and the rise of subscription music services.

Cryptocurrencies or tokens can be used to purchase or evidence the purchase and download of a song. In 2015, the Grammy award-winning singer and songwriter Imogen Heap made her song "Tiny Human" available for direct download for $0.60 (or the equivalent amount of Ether cryptocurrency) per download, using the Ethereum blockchain-based Ujo Music platform. After the song was purchased, a smart contract that split revenues between Heap and other rights holders was executed. Smart contracts can also help minimize fees payable to labels, publishers, distributors and administrators that artists owe in connection with the administration and distribution of their music catalogs.

In addition to Ujo Music, another streaming platform known as Musicoin allows artists to publish their music on the platform in exchange for compensation on a per play basis. Users can listen to music for free and ad-free, but Musicoin encourages users to tip their favorite artists. Underlying the Musicoin system is share-ism. It is the belief that the content creator should be rewarded the most for creating and sharing his or her work. That compensation should increase in proportion to their activity on the platform. The platform also employs its own cryptocurrency, known as $MUSIC currency, by which users can also purchase tickets and merchandise.

What are some legal issues to consider with the use of blockchain technology in the music industry?
As noted above, the music industry is fraught with various rights management and copyright issues. While blockchain technology can provide impactful solutions, careful consideration should be employed before its implementation; especially their legal implications.

- ***Smart Contracts*** – Structuring smart contracts in a way to ensure enforceability will be important. The term itself is a misnomer as they are not necessarily contracts. Rather, they are the code that implements the operational/business logic of a contract. Often, there will be a separate legal agreement between the parties. This is similar to online services such as auto bill pay, where a user enters into a terms of service and the code actually implements the transaction. Other issues governing the smart contract (*e.g.*, governing law, warranties, dispute resolution, *etc.*) may be addressed in a standard contract. The administration of smart contracts can be more complex and sophisticated. They typically include territory-based rights management and collection terms, royalty splits, data sharing and additional rights that may not be easily captured by a string of code. Smart contracts can be self-enforcing in that they can implement in code certain actions to happen upon the default by a party. Often smart contracts are dependent on one or more data sources (often referred to as oracles). The parties may wish to contractually deal with scenarios where the data is bad or the smart contract code does not actually execute what the parties intended. International law, rights management and jurisdictional issues also may come into play. Many other issues will arise with smart contracts. A number of projects are underway to develop smart contract templates to address these and other issues.

- ***Obtaining Proper Licenses*** – Companies that wish to use or exploit musical works that they do not control must obtain a specific license for the specific use of both compositions and sounds recordings from all rightsholders. It is often difficult to determine what license is needed (*e.g.*, public performance, synchronization, master use, *etc.*) and where to go to obtain the license (*e.g.*, performance rights organization, label, publisher, artist, *etc.*). The lack of a centralized database that employs one standard to identify ownership of musical works further complicates this issue.

- ***Jurisdictional Issue*** – Failing to obtain a proper license to use, reproduce, synchronize, publicly perform or exploit a musical work may lead to a copyright infringement claim. Knowing where to go to obtain the license often is more difficult that acquiring the license. Licenses to use musical works and sound recordings are administered on a jurisdictional basis and often times, the type of rights a licensee obtains from one administrator in one jurisdiction differ from the type of rights obtained from the same type of administrator in another jurisdiction. For instance in the United States, public performance rights in a musical work are administered by performance rights organizations. In the United Kingdom, collection societies can grant mechanical and performance rights.

- ***Securities Laws*** – Token sales or initial coin offerings ("ICOs") have become a common means of raising capital and recording ownership in a new venture. This has led to greater scrutiny from the U.S. Securities and Exchange Commission ("SEC") in evaluating whether an ICO is a securities offering. Other token issues can also implicate securities laws. If the offering is a securities offering, it must be registered with the SEC or be subject to an exemption. The determination of whether an ICO or other token issuance is an investment contract, and thus subject to SEC regulation, primarily relies on the *Howey Test*. An offering will be considered an investment contract if: (1) there is an investment of money, (2) the investor has an expectation of profits, (3) the investment is in a common enterprise (e.g., investors are combining their money to invest or develop one common project), and (4) the success and profits of the enterprise come from actions largely outside of the investor's control. If one wishes to launch an ICO or issues tokens, a securities lawyer who understands blockchain should be consulted for these and other issues.[2]

- ***Data Privacy*** – Depending on how the blockchain is structured, the identity of the parties to a transaction are not always disclosed. Anonymity and pseudonymity are hallmarks of the technology, which can act as data privacy buffers. However, the immutability of the blockchain poses separate data privacy and personal information concerns. The General Data Protection Regulation ("GDPR") requires companies that process the personal data of European Union data subjects to offer certain rights to those data subjects. One right under the GDPR is the right to be forgotten. Another right, is the right to modify or update your information. Once information is recorded in the ledger, it is hard to remove the information, which poses problems for data controllers who must comply with privacy laws, like the GDPR. For this reason, some companies use private or permissioned blockchains, where users maintain control over their data. In other cases, a hybrid approach is used, employing two or more different types of blockchains that can communicate directly or through a bridge.

- ***Patents*** – As with any new technology or new application of existing technology, patents will play a role. There has been a surge in patent filings for blockchain-related technology. For an overview on patentable aspects of blockchain technology please see our recent papers on Patent Strategies for Cryptocurrencies and Blockchain Technology and Drafting Effective Blockchain Patents.

[2] Some musicians and music platforms have embraced the recent ICO trend and launched their own offerings. At the end of 2017, electronic artist, Gramatik, created the "GRMTK" token and raised just under $2.5 million by offering 25 percent (25%) of the tokens on the public market. Anyone holding a GRMTK token has the right to share in royalties generated from Gramatik's music. As of today, this offering has not been challenged by the SEC, but it is likely that this would be considered a securities offering.

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