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**COMP5206 Information Systems and Technology**

**A Disruptive Technology for the Music Streaming  
Industry Using Blockchain**

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# 1 Executive Summary

This venture proposed to introduce a peer-to-peer decentralised network to facilitate the purchase, distribution and consumption of music between listeners and artists. It aims to use blockchain technology to automate the roles of intermediaries in the current value network. To ensure the needs of all parties are served this venture also aims to provide a platform for external developers to develop applications on top of the network to extend its functionality over time.

## 2 Problem Statement

The main problem this venture aims to solve are issues relating to the fair compensation for musicians in the current fast-growing streaming music market. Price (2015) argues a systemic problem exists with current platforms where current providers collect more revenue from subscriptions and offer less money per stream to artists, songwriters, publishers and labels.

A second issue arises where additional intermediaries are added to the value network which further decreases the earnings of artists on music streaming platforms. These include distributors, publishers, performance rights organizations, labels, lawyers, and producers (see Dolister 2015). These parties reduce artists' overall share of revenue and reduce the control they have over their work. Overall, artists receive less than 17% of the total streaming revenue for their work (Masnick 2015).

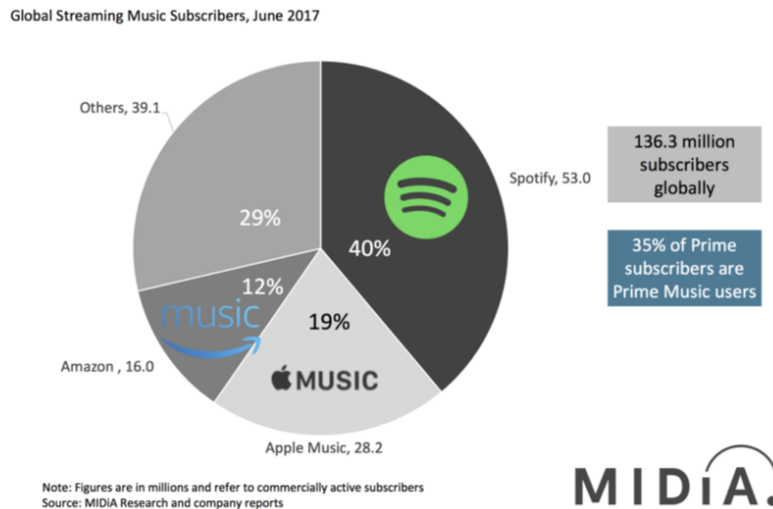


Figure 1: Market Share of Major Music Streaming Providers

Other issues also exist relating to data availability. Artists rely on record labels for reports documenting the performance of their work. These are only generated quarterly and normally outdated. Without real-time data on the number of downloads and plays, types of listeners and the location of listeners it is difficult for the artists to develop popular works to improve their income and engage their listeners. Thus, the transparency of data plays a crucial role in an artist's music career (Guez 2015).

## **3 Proposed Service**

### **3.1 Enabling Technology and Product**

The enabling technology behind this venture is blockchain which is a shared, programmable, transparent, decentralised, cryptographically secure ledger. This venture will be based upon the Ethereum protocol - an open source blockchain implementation featuring smart-contract functionality. Basing the venture of Ethereum is beneficial since it will reduce development time and provide access to an existing ecosystem of resources including APIs, programming languages, and talent pools.

Smart contracts are designed to contribute, verify or implement the negotiation or performance of the contract based on a set of rules and facilitate transactions without intervention from third-parties (Tar 2017). Smart contracts will be used on our platform in order to automate the storage, sharing and purchase of music, management of copyrights, and recoding of key information. By using web APIs, applications can be developed to allow users to interact with smart contracts without the need for technical knowledge.

Currently, the closest available products in the market are music streaming applications such as Spotify, Apple Music and Amazon Music – collectively accounting for 71% of global subscribers (Mulligan 2017). Many of these platforms operate with freemium service and connect artists, record labels, advertisers and listeners.

This venture targets consumers through a peer-to-peer decentralised network through a collection of related applications (including those designed by the company) in order to facilitate the purchase, distribution and consumption of music. This is distinctly different from the product offering of main market participants which all offer a centralised service with a single application. Our service primarily competes with the streaming and storage of music services offered by current market participants.

### **3.2 Unique Value Proposition**

Using blockchain technology eliminates the need for intermediaries and brings the music directly to consumers from its creators and therefore this solution provides artists with a greater share of revenue from their works. Smart contract functionality helps the artists to manage digital rights and ensures the revenue is distributed fairly among all contributors of the product, according to the terms stated in the contract. This empowers artists by allowing them to closely manage their work and ensures users only have access to content which they have purchased. This allows artists to better identify and control unauthorized access, copying and redistribution of their intellectual property.

Since blockchain is a distributed digital ledger that provides an encrypted list of peer-to-peer transactions a wealth of information can be generated without compromising the privacy of users. This data is generated in real-time and therefore artists can receive instant feedback on the performance of their works such as total revenue, number of listeners and a description of their listeners. This knowledge allows artists to learn more about their customers and allows them to adjust prices more easily by removing the

intermediaries present in the current value network.

Furthermore, due to the distributed nature of blockchain, anyone is free to interact with the network. This enables third-parties to develop distributed applications (dApps) with innovative services to facilitate the consumption of music. This approach not only generates income to the developers but also offers the customers with a wide variety of music streaming applications to optimize their listening experience.

### **3.3 Solution**

The solution provides a decentralised store of music and the ability to create tools that facilitate the access of this music. We aim to allow our community of music-lovers to host and access data in a way that connects them more directly to their data, at an increased income to creators. On top of this, the openness of our platform allows a number of third parties to offer applications that can access and manipulate the data on our platform (e.g. someone may wish to clone the aesthetic and functionality of Spotify using our backend).

As per a conventional blockchain, miners will assist in securing the validity of transactions. This includes executing code that facilitates user's access to the data (e.g. a playlist function). In addition to miners providing computational security, our network will support a distributed store of data whereby members of the network will be paid for hosting encrypted segments of music files.

In terms of key features, our product provides a fully distributed store of music with no central body governing access. This means that revenue can be shared more directly with the artist removing the middleman. It also allows for applications to be built upon this network, allowing third parties to create services that cater for a wide variety of needs. The best features of different third-party applications can be combined by other developers. It also offers the ability for people with excess hard drive space or computing power to join the network and earn money whilst providing value to the service in order to store music on the network.

In terms of a minimum viable product, the solution will be distributed across a number of nodes and provide a pool of hosting capabilities. The solution will provide some applications and interfaces that allow users to begin amassing and enjoying a rich music library and provide access to web APIs to allow developers to interact with the network easily.

### **3.4 Customer Segments**

Using Porter's generic strategies this venture best aligns with a niche differentiation strategy (Porter, 1996). Our service is primarily differentiated from the customers point-of-view by allowing them to directly connect with artists and support their works directly. Overall, this venture has five distinct customer segments: music fans, independent self-releasing artists, application developers, advertisers and miners.

Music fans are the segment of music listeners who crave a deeper connection with music content and typically spend more than average on their content, illustrated by their role in the resurgence of vinyl

record sales in 2017 (Nielsen 2017). Music fans have three major advantages of using our platform. The first advantage is direct and transparent monetary support to the artist. Bandcamp attracts music fans with their artist-centric model: allowing artists to control the pricing of their work, however, 15% is cut from the artist's payout. Our platform permits complete profit of direct sales for the artist when a music fan purchases their content, on top of the artist's control over pricing.

The second advantage is a higher level of control for customising their listening experience with the availability of dApps which specialise in recommendation, organisation and streaming, compared to Bandcamp and Spotify's standardised streaming and recommendation interface. The third advantage is the type of music selection available, which has been shown to be the major consideration for a consumer of choosing and switching to a streaming platform (Riesewijk 2017). Our platform's selection is diverse and permits accessibility of vast niche music content. The availability of dApps allows music fans to easily navigate across diverse and niche music genres.

Independent self-releasing artists benefit from our platform due to the complete profit from their music sales. On average, an unsigned artist on Spotify receives \$0.014 per stream while on Bandcamp they receive 85% of the named price. On our platform, artists receive the full earning from sales, as determined by their pricing choices.

The third segment involves application developers who wish to specialise in music streaming applications. The threat of new entrants for the digital music industry is strongly tied to the difficulties and costs of accumulating contracts with record labels and organisations in order to provide a substantially sized music library (Riesewijk 2017). This barrier is removed as developers have access to an already existing music library and user base. Developers can charge a price for the use of their applications and gain a monetary return.

Advertisers targeting music fans benefit from the varied choice of partnerships with developers. Advertisers do not have to settle with a standardised model governed by the platform provider, such as Spotify's model where advertising is not shown to premium subscribers who accounted for 90% of its users in 2013 (Peoples 2014).

Lastly, miners benefit from the ability to gain revenue in exchange for their computing power. In the case of Bitcoin, miners tend to be profit-driven and the key drivers for mining include access to low-cost electricity and fast internet connection (Hileman & Rauchs 2017).

### **3.5 Channels**

The strategy to reach music fans and artists will be through social media word of mouth (eWOM). eWOM is shown to be more effective than traditional print advertising in customer's decision to switch brands. As blockchain is yet an emerging technology, eWOM is effective in building the trust of music fans as they would view their favourite artists, fellow music fans and friends as credible sources for driving the decision to participate in the network.

In order to magnify the potential of eWOM in reaching music fans and artists, a focus is placed on

identifying and recruiting influential artists who exhibit high levels of engagement in social media and who have a high Customer Influence Effect (CIE) (Kumar & Mirchandani 2012). The benefit of recruiting artists is that eWOM can be directly spread from the artist to their already existing fan base.

Incentivisation of the influencers to spread positive WOM can be further extended through partnerships with the influencer in order to incentivise their fans. For example, a partnership with an influencer to release exclusive tracks on our platform further incentivises their fans to join the network due to exclusivity. Social media WOM is aligned with the finding that WOM was the second most used method of discovering music (Nielsen 2017). Moreover, independent artists rely heavily on WOM for self-promotion (Pontes & Silva 2017) and the user base of our platform ensures a greater opportunity for exposure to new music fans. This benefit enables WOM to be spread amongst artist to artist.

A company website is utilised as a channel for fans, artists, miners and developers to view our service offerings and mission statement and to register to join the platform. This is a holistic strategy to drive WOM interests towards the website and encourage customer interest and interaction. The website includes specialised sections to address the distinctive value proposals for each customer segment (Weinberg et. al. 2007).

The reason to target developers through the website stems from findings of smartphone freelance developers that greater affective commitment of the developer to the platform owner, leads to greater relationship-maintenance with the platform owner (Hsieh & Hsieh 2013). Prospective developers with specialised interests in music streaming can easily identify with the company through the mission statement, enabling them to partake in the network. In order to capture this niche developer community, our presence in developer conferences and music technology trade shows ensure a physical channel to reach developers whose interests are at the intersection of blockchain technology and music. An example of a physical channel would be the SXSW Trade Show and Music Conference which showcases companies with converging interests in music and technological innovation.

### **3.6 Revenue Streams**

The revenue model of our platform will be two-fold. The first revenue stream we will utilize is in the minting of new coins and the execution of blockchain code through the process of mining. As our miners secure the network, a small portion of each coin created will be invested back into our company, with the rest of the block reward going to the miner. This method of mining reward distribution is already in place in some of the largest players in the cryptocurrency space such as Zcash (see section 3.6). The purpose of this revenue stream is to ensure that a full-time team of dedicated developers can work to maintain and further the capabilities of the network.

The second revenue stream for our service is to take a portion of the file hosting cost to also build our platform. Since files will be hosted in a decentralised fashion, there will be a cost associated with hosting them that will be accrued by members of the network who host them in spare space on their hard drive. Each file is encrypted and distributed across many hosts such that no one host has more than some fragment of the file. Artists pay for their content to be hosted, with a portion of this cost going back to

our company to fund the development and furthering of the network. This process already exists by way of Storj and a handful of other distributed hosting providers that utilize the blockchain (see section 3.6).

It's important to note that customers do not pay us when they make a purchase. This process is entirely peer-to-peer. Rather, our revenue comes from maintenance of the network since it is here we provide a continuing source of value.

In a similar light to BandCamp, we'll allow artists to set their own prices for songs (see section 3.4). We may not explicitly impose a minimum price for songs, but the game-theoretic nature of the network will ensure there is some minimum song price (embedded in the incentive structures of mining and hosting). If we look at the recommended pricing structure for BandCamp and across music-distribution platforms, we find \$0.99USD is the standard price for a piece of music.

### **3.7 Cost Structure**

The cost structure associated with this venture is divided into four major segments that include resourcing for development, cloud storage, project management and marketing. Apart from these costs that are anticipated for our business model, there will also exist a separate contingency item to account for the unforeseeable.

Resourcing developers for creating the music streaming platform is the most expensive resource for this project. This involves developing infrastructure such as web APIs, software development kits (SDKs), and documentation to allow developers to build front-end user-interfaces for web and mobile to facilitate market penetration. Much of these costs will be incurred by recruiting and maintaining a full-time team of dedicated developers who work to further the capabilities of the blockchain network before a vibrant community can develop to support the open source project.

Cloud storage and blockchain technology underpin the platform. It is spread over a distributed network and one of the biggest advantages of using a blockchain is to avoid the cost of owning servers or renting cloud servers for storing music data. However, to offer music for sale and for streaming cloud storage will be needed to host music until a community can be developed to take up hosting.

Project management is a critical part of developing a successful project and most importantly the delivery of a quality product. The project management methodology that will be used for the development of this project is Agile. The blockchain technology development for music industry requires constant inputs from all variables, in this case- stakeholder, developers, end users, both listeners and artists and to integrate the requirements of each and every one in a planned and strategic manner.

Marketing is a critical expense that is required in order to develop a trusted and widespread network in order to develop a large customer base. Marketing and advertising of the platform is, therefore, a critical and expensive part of this project. It is assumed that mainstream customers will be hesitant at first to switch to a blockchain network, therefore, investing in marketing strategies to acquire customers and handle their switching cost will be the major focus.



### 3.8 Unfair Advantage

By creating a platform which connects artists and music lovers through company created and third-party applications multiple comparative advantages are developed. These include having a greater pool of music by offering artists a greater share of revenues, allowing developers to develop a third-party platform on the network, and having a secure store preventing piracy.

Since this platform is based on the Ethereum network and backed with a new cryptocurrency for secure payments between buyers and sellers are easily facilitated. This can support a new way of offering on-demand music services. Composers and artists will no longer be required to go through purchasing platforms and intermediaries. This can be very beneficial to solo artists as it increases their share of revenue. This structure will attract artists and then listeners and lead to the development of development of effects which will reduce the incidence of users' switching to other similar platforms.

One of the major value propositions of this business model is that it provides a wide platform for developers to build applications using the APIs that we provide them to integrate their work with the blockchain network. Developers use our blockchain network to offer services to their customers. The major advantage is that it addresses the choice of niche customers that earlier relied on mainstream applications for mainstream music but can now choose from a wider variety of application that suits their taste.

By using the network all data will be securely stored on the network. A record of each artist's work, dates, and additional details will be stored on the network and therefore can be used to manage copyrights. The richness of data will allow artists to gain rich insights to their listeners and help manage piracy through smart contracts. These benefits all stem from the availability of data which is tied to the blockchain. These benefits are lost if users move to another network and therefore high switching costs exist for users of this platform.

The combination of network effects, high switching costs, and abundance of choice are a key source of a sustainable competitive advantage. It is difficult to replicate this service because of lock-in effects using blockchain. All data and contracts are built on the network and can't be easily separated from it to move to another similar network. It is also a sustainable advantage because the protocol guarantees that the company makes 5% of all fees earned by miners for transaction or requests processed on the network. This will ensure that company has resources required to see the project reach its full potential through constant development efforts.

For new entrants who will try to copy the model, the biggest difficulty for them is to acquire the customer base and abundance of data. Listeners and artists would have all their data stored on the network and will be reluctant to switch to a new network.

### 3.9 Key Metrics

The key metrics which will be used to measure our success are both in the network usage and user retention. In terms of users, this venture aims looking for continual engagement by way of purchases and music uploads. This venture aims to see the same users coming back to the service to download more

music, and additionally looking towards artists to continually use the service to promote their latest releases. Paul Graham’s famous quote “startup=growth” also comes into consideration here, where this venture looking to retain our current users whilst adopting a growing user-base. This venture will also monitor qualitative user feedback to ensure our product is successful in its goal to create a better music distribution platform.

In terms of network success, this venture will be successful when it can move the entirety of the network off company-owned infrastructure such that it is hosted in a decentralised manner. It is here that the true value proposition of the network will be fully realised. This venture can then also monitor third party adoption of the network in developing apps and interfaces to ensure that our goal of providing a platform with diverse potential is fully realised. Finally, from a business perspective this venture will need to ensure the cash-flow from our revenue streams exceeds the costs associated with developing and marketing the service.

## 4 Potential Disruption

Two main types of innovations exist – disruptive or sustaining innovations. Sustaining innovations are those which do not significantly affect existing markets and involve enhancing the capabilities of existing products as opposed to introducing a new set of characteristics. Conversely, disruptive innovations are those that introduce a different collection of attributes compared to these historically valued by mainstream customers and generally occur in low-end or new-market footholds (Christensen 2015).

This section aims to categorise this venture as a disruptive or sustaining innovation and the potential consequences it could have on the current state of the music streaming industry and determine the current shortfalls which need to be overcome in order for this solution to be successfully adopted in the market.

### 4.1 Type of Innovation

Before categorising this venture as either disruptive or sustaining innovation the current products in the music streaming industry (the industry whose offerings best align with the product described in section 3) will be reviewed at a high level in terms of their characteristics for each customer segment. In the music streaming industry, the largest 3 providers are Amazon Music, Apple Music and Spotify – collectively controlling 75% of the market. Each provider operates under a freemium business model – a free service aimed at low-end consumers and a premium service offered to high-end consumers. It is important to note that each segment of the market generally listens to mainstream music offerings (see Stewart 2018). A summary of the product attributes of each market segment is below:

Christensen et. al. (2000) state four key characteristics of disruptive innovations (cited in Schmidt and Druehl 2008):

- Targets customers in new ways
- Generally lowers gross margins

Low-End Consumers	High-End Consumers
Free service Required to listen to advertisements Ability to stream to music only when connected to the internet	Low-price paid service Advertisement free service Ability to listen to music offline  Higher quality audio

Table 1: Product Attribute of Current Market Offerings

- Generally does not improve performance along with a trajectory traditionally valued by mainstream customers
- Introduces a new performance trajectory and improves along parameters different from those traditionally viewed by mainstream customers

The proposed venture addresses each of these points and therefore fits a criterion defined by Christenson as a disruptive innovation.

This venture targets consumers through a peer-to-peer decentralised network through a collection of related applications (including those designed by the company) in order to facilitate the purchase, distribution and consumption of music. This is distinctly different from the product offering of main market participants which all offer a centralised service with a single application designed to facilitate the purchase, distribution and consumption of music.

This venture’s principal source of revenue is earned from transaction fees when utilising the network (earned directly by verifying transactions or indirectly as a maintenance fee) and offering distinct applications to facilitate interactions with the network. The revenue is offset by computing infrastructure required to host applications or verify transactions on the network. According to the CryptoCompare Cryptocurrency Mining Profitability Calculator (2018), the gross margin of mining Ethereum is 19% over a 5-year period. This best represents income earned from maintaining transactions on the network and the costs associated with the computational infrastructure to operate the network. This excludes marketing relating expenses and profits earned by proving other paid application services. For comparison, Ovide (2018) state Spotify’s (the market leader) gross margin of 21%. This illustrates that gross margins in the proposed venture are somewhat lower to market leaders excluding marketing and other operating expenses – once factoring these expenses in the gross revenue is likely to be lower.

Mainstream customers of music streaming services are shown to value the free service offering and availability of a large variety of mainstream tracks for consumption (see Stewart 2018). The proposed venture does not attempt to improve performance along this dimension. It is likely early offering of this venture would fall short of this since consumers would likely be charged for engaging in the network (due to the design of the Ethereum blockchain protocol), albeit at a very low cost. In addition, it is likely that early offerings of this venture will not incorporate mainstream music offerings instead focusing on indie artists. Both these fail to satisfy the core attributes valued by mainstream customers in this market.

Unlike current market offerings, the proposed venture is based on a peer-to-peer decentralised network. This allows users to purchase music directly from artists and allows artists to place restrictions on

purchases all facilitated through smart contracts. This venture removes large record companies as key intermediaries and therefore ensures consumers can pass all proceeds of their music purchase to artists. This benefit both artists and consumers. Likewise, this venture encourages the development of alternate applications to be built on top of the blockchain network to facilitate the development of new and novel ways for consumers to browse, listen, and purchase music. Both these core performance offerings of the proposed venture are absent from the service offering of market incumbents.

Therefore, the proposed venture is likely to be classified as a disruptive innovation according to the criterion defined in Christensen et. al. (2000). Moreover, Christensen and Bower (1995) assert that disruptive innovations tend to introduce a very different package of attributes from the ones valued by mainstream customers. The main differentiating factors of the proposed solution (discussed above) are also separate and distinct from those offered by current industry participants.

## 4.2 Type of Disruption

Disruptive innovations originate in either low-end or new-market footholds. According to Christensen et. al. (2004), low-end disruptive innovations address over-served business customers with a lower-cost business model, where new-market disruptive innovations compete against non-consumption by offering a different measure of performance attracting non-consumers.

As described above, the proposed venture is associated with the music streaming industry but offers a very different product offering. The venture does not target low-end consumers of current market incumbents with a lower-cost service – the proposed venture is likely to cost consumers more than the current free service provided by market incumbents. However, the proposed venture aims to attract users by allowing them to directly support artists, provide listeners with increased choice, increase data availability, and allow third-party applications to be developed to increase the way consumers interact with the music on the network. This is a very different package offered from current market incumbents and therefore is more consistent with a new market disruption.

To better understand why the proposed venture is consistent with a new market innovation the encroachment framework proposed by Schmidt and Druehl (2008) will be used. Encroachment refers to the tendency of a new product to take market space from an existing product. This framework complements Christenson’s work and focuses on the diffusion pattern of the new technology. According to Schmidt and Druehl (2008), an innovation diffuses from the low end upward toward the high end (low-end encroachment) or the high end to the low end (high-end encroachment). Schmidt and Druehl (2008) state high-end encroachment has an immediate impact on the current market and is associated with sustaining innovations. In contrast, low-end encroachment is associated with disruptive innovations. Schmidt and Druehl (2008) outline three types of low-end encroachment (LEE) and relate the rate of diffusion of the new product to either new-market or low-end disruptive innovations. These are:

- 1) Fringe-market LEE (new-market disruptive innovation): new product opens up a fringe market where customer needs are incrementally different from those of current low-end customers when encroachment begins.

- 2) Detached LEE (new-market disruptive innovation): new product opens up a fringe market where customer needs are dramatically different from those of current low-end customers when encroachment begins.
- 3) Immediate LEE (low-market disruptive innovation): LEE begins immediately upon introduction of the new product.

Schmidt and Druehl (2008) state the key driver behind immediate LEE is cost, which encourages low-end consumers of the current to purchase the new product. Due to the vast differences between the products offered by market incumbents and the different offering of the proposed venture (see above) the proposed venture is unlikely to immediately take customers from incumbents. Therefore, it is not consistent with immediate LEE or low-market disruptive innovations.

Since the target customer segment of the proposed venture is listeners of niche music offerings (i.e. indie music) it is likely to originate in a fringe market – separate from the market served by market incumbents. However, this service also focuses on a very different offering – the ability to directly support artists and a collection of applications built on top of the blockchain network for consumers to interact with. For this reason, the customers of the proposed venture are likely to value a very different service compared to customers of the current market. Hence, the proposed venture is consistent with detached LEE and a new-market disruptive innovation according to the framework proposed by Schmidt and Druehl (2008) and consistent with Christensen’s definition of a new-market disruptive innovations.

### 4.3 Consequences of Disruptive Innovation

According to Kim (2018), there are several typical results of disruption to a market. These include changes to:

- i) the value network
- ii) the product categories
- iii) the types of companies involved in the market
- iv) the actual companies involved in the market
- v) the types of business models used in the market
- vi) the relationship between companies in the market
- vii) changes to the power dynamics in the market

This venture has the potential to influence the market for music streaming along each of these dimensions contributing to its disruptive potential. This will be explored in detail in the following sections.

#### 4.3.1 Changes to the Value Network

Over time the proposed venture is likely to have a significant effect on the value network of the music streaming industry as its product offering matures and moves upmarket. A value network is a “collection of upstream suppliers, downstream channels to market, and ancillary providers that support a common

business model within an industry” (Christensen 2003). This venture primarily changes the industry’s value network through disintermediation and reintermediation.

The venture removes the needs for artists to distribute their songs via large record companies by allowing them to directly interact with customers via smart contract to facilitate the management of trademarks, distribution, and enforcement of copyright – all core services provided by record companies. The disintermediation of record labels will hence allow artists to directly interact with the platform.

The proposed venture also allows developers to develop additional applications to interact with the blockchain to facilitate the purchase, distribution and consumption of music in different ways. This is similar to the way the Apple App Store provides a platform which allows developers to develop new content for iPhone users, providing them with new ways to use their device. This addition of developers into the value chain (reintermediation) currently does not appear in the value chain of the current industry.

The following two figures illustrate the changes to the value network comparing the services of current market incumbents in the industry to the proposed venture.

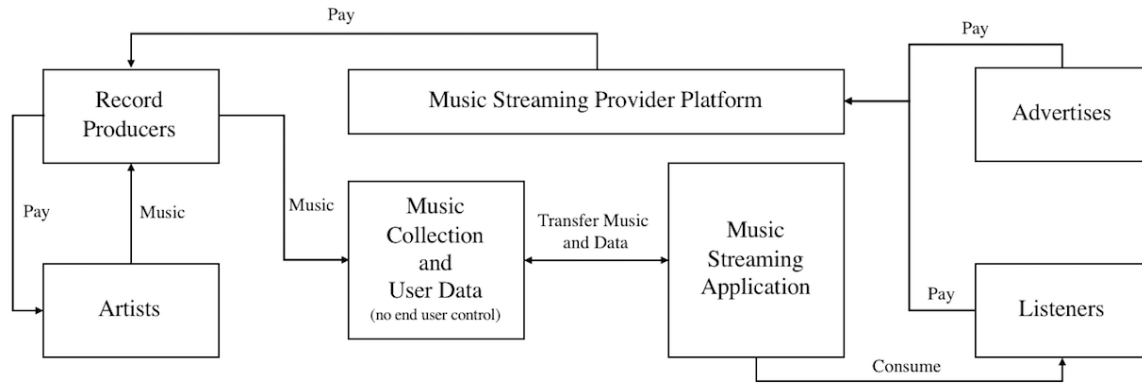


Figure 2: Value Network of Industry Based on Market Incumbents

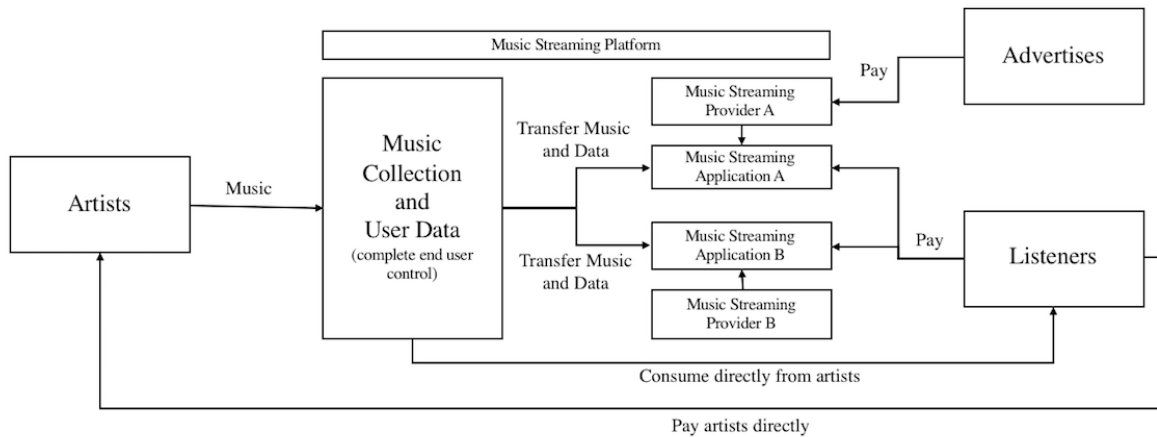


Figure 3: Value Network of Industry Based on Proposed Venture

#### **4.3.2 Changes to Product Categories**

The current product categories set by the market incumbents such as Spotify, Apple Music, etc. consist of Free, Premium and Pay-per-play. When it comes to the new proposed venture, the Free and Premium tiers no longer exist. This is to ensure fair compensation and transparency for the right owners of products. Once the artists realise the benefits of using our platform, they will move their music offerings to the new platform in order to extract more value from their products and subsequently, the listeners will follow.

As for the types of music offered, while Spotify, Apple Music, etc. generally target mainstream markets, our platform also focuses on the niche markets by utilising different applications to target different specific market segments. Thus, the consumers will have more choices over what types of music they want to listen to.

#### **4.3.3 Changes to the Types of Companies in the Market**

The venture will affect production houses that have acted as middlemen between artists and consumers of music. Solo artists who do not have the backing of record companies will be able to reach customers. Also, famous artists and artists of different music genres will earn better instead of having to give away a big commission to record companies. Advertising companies will find more applications they can use as a medium to market their product to niche consumers.

#### **4.3.4 Changes to the Actual Companies in the Market**

The incumbents have focused on the needs of their mainstream customer and provide music that is wide and popular. Solo artists have to struggle to enter the market and niche consumers of music with different choice are neglected and not serviced. The actual companies in the market are incumbents such as Apple Music (iTunes), Amazon Music, Spotify, Google Play that will be affected by the blockchain music streaming platform. Creating a platform that allows hosting of multiple applications would mean the individual market that addresses to the taste of all customer segments

It is important to note that this venture will enable the creation of many different front-end applications for users to interact with. This will considerably lower the barrier of creating music streaming applications for developers. Therefore, it is likely that more music streaming providers will occupy the market each focusing on a niche group of consumers.

#### **4.3.5 Changes to the Business Models**

To characterise how this venture will affect the current business models in the industry the business model canvas will be used. Each area of the business model canvas and a description of potential changes are listed below:

- Cost structure: by allowing third parties to verify transactions and offer storage for music this venture will have significantly lower storage and compute costs.
- Revenue streams: money will be earned from verifying blockchain transactions and a commission on all blockchain transactions – unlike current ventures.
- Channels: social media, desktop and mobile application channels will be retained like current business models. However, applications will be responsible for much less value generation in this venture. The main enabler of value in this venture is the blockchain network (since it the centralised store of all data on the network).
- Customer segments: developers, listeners and artist will become the key customer segments as opposed to listeners and advertisers. Artists will be responsible for offering a large pool of music and developers will be responsible for providing new ways to interact with music.
- Customer Relationships: like current services this venture will use an automated self-service model.
- Value proposition: will move from a low-cost/free music service to a service that allows listeners to directly support a large pool of artists. Additional sources of value will be generated by allowing developers to create applications enhancing the value of the network and providing artists with the means to manage piracy and copyrights.
- Key activates: like incumbents these will remain similar spanning platform maintenance and increasing content on the network.
- Key resources: like incumbents these will be data, the music library and the delivery platform. Albeit being a decentralised platform the company will exhibit less control over the data and the music library.
- Key partners: record labels will no longer be a key partner like incumbents and advertises will carry much less importance. Artist will remain a key partner and developers and an open source community of maintainers will be introduced as key partners.

#### **4.3.6 Changes to the Relationship Between Companies in the Market**

In the present scenario, there is a relationship between artists who sign up with production companies and production companies that sell music to businesses such as Spotify, iTunes Google Play etc that offer music to their end customers. These customers are subscribed to the services offered by these companies and advertisers use this platform as a method to reach end users.

Our business model changes the ongoing relationship between record companies, music streaming services and advertising companies by adding developers as an entity to create applications and sell over the platform and eliminate the production/record house from the equation. A direct relation between artists, developers, consumers of music and advertisers is formed using this venture.

#### **4.3.7 Changes to the Power Dynamics in the Market**

The proposed venture significantly increases the power of artists and significantly reduces the power of record labels for reasons described above. This venture also reduces the power of the platform provider



since many third-party developers can develop applications to engage consumers.

#### 4.4 Potential Mainstream Customer Perception

Firstly, our potential customer base is not limited as there is something for everyone:

- For artists: they find a better platform to connect with their fans directly and gain control over payments and content by eliminating the middleman.
- For listeners: pay and join the network to consume music and create value for the network that they have full control on.
- For developers: they can build applications using the network and create or modify existing interface for better user experience.
- For advertisers: a platform to reach out users on the network and earn business Others- Offer computing power and earn through it.

However, it is assumed that customers using existing music applications will be hesitant at first to switch to a blockchain network and their initial rate of adoption will also be slow. The venture has to handle the switching cost of these customers by adopting marketing strategies and promotion to attract them towards the blockchain network.

#### 4.5 Shortfalls of Emerging Technology

Since this venture is proposing a business model built on the foundations of such emerging technology, there are a number of considerations that will need to be made. The first of which is the game-theoretic incentive structure that occurs in a large decentralised system of this type. More specifically, the fact that each person securing the network requires some sort of ‘incentive’ to continue putting storage or computational resources into the network. This means that things such as storing music or performing calculations need to be paid actions, ruling out the ‘free-tier’ pricing scheme that competitors such as spotify can offer via subsidising their hosting/server fees through advertisements.

Furthermore, the extreme volatility that the crypto market displays means that this venture will require trading to be performed against a more stable currency index (e.g. USD). This venture aims for the market to reach a more stable token price as it matures. Another key consideration is the speed of the network in its infancy. This venture ideally requires a large number of people hosting and securing content such that user access speeds are similar to that of contemporary services, but this may be a consideration in the initial phases of the network where files are distributed amongst a select few number of computers around the globe (forcing download speeds to be limited to the furthest packet available).

## 5 References

- Ben, D. (2016), 'How blockchain can change the music industry'. TechCrunch, accessed 30 April 2018, <https://techcrunch.com/2016/10/08/how-blockchain-can-change-the-music-industry>
- Christensen, C.M., Bower, J.L. (1995). 'Disruptive Technologies: Catching the Wave'. Harvard Business Review, accessed 6 May 2018, <https://hbr.org/1995/01/disruptive-technologies-catching-the-wave>
- Christensen, C.M. (2003). The innovator's dilemma: The revolutionary book that will change the way you do business. New York, NY: HarperBusiness Essentials.
- Christensen, C.M., Anthony, S.D., and Roth, E.A. (2004). Seeing What's Next. Boston: Harvard Business School Press.
- Christensen, C.M., Raynor, M.E., McDonald, R. (2015). 'What is Disruptive Innovation'. Harvard Business Review, accessed 6 May 2018, <https://hbr.org/2015/12/what-is-disruptive-innovation>
- Christensen, C.M. (2018). 'Clay Christensen'. Accessed 6 May 2018, <http://www.claytonchristensen.com/key-concepts>
- CoinDesk (2016). 'Understanding Ethereum', report.
- CryptoCompare (2018). 'Ethereum Cryptocurrency Mining Profitability Calculator', CryptoCompare, accessed 6 May 2018, <https://www.cryptocompare.com/mining/calculator/eth?HashingPower=20&HashingUnit=MH%2Fs&PowerConsumption=140&CostPerkWh=0.12&MiningPoolFee=1>
- Dash. (2018). 'Decentralized Governance System'. Dash, accessed 8 May 2018, <https://www.dash.org/governance/>
- Dolister, C. (2015), 'Is it time for musical artists to fire the middlemen?', Orbital, accessed 10 May 2018, <https://m.orbital.nyc/is-it-time-for-musical-artists-to-fire-the-middlemen-252b7fa62438>
- EtherScan. (2018). 'Ethereum Transaction Chart'. EtherScan, accessed 11 May 2018, <https://etherscan.io/chart/tx>
- Etherington, D. (2013). 'Charting The iTunes Store's Path To 25 Billion Songs Sold'. TechCrunch, accessed 10 May 2018, <https://techcrunch.com/2013/02/06/charting-the-itunes-stores-path-to-25-billion-songs-sold-40-billion-apps-downloaded-and-beyond/>
- Graham, P. (2015). 'Issues facing fair compensation for musicians in the era of streaming'. Music Australia, accessed 10 May 2018 <http://musicaustralia.org.au/2015/06/issues-facing-fair-compensation-for-musicians-in-the-era-of-streaming>
- Guez, B. (2015). 'Transparency is the Music Industry's Biggest Problem'. Medium, accessed 10 May 2018, <https://medium.com/@GetRevelator/transparency-is-the-music-industry-s-biggest-problem-2f5962fcf599>
- Happy (2017). 'How many songs are streamed each minute on Spotify?'. Happy, accessed 9 May 2018, <https://>

[//hhhhappy.com/lets-play-a-guessing-game-how-many-songs-are-streamed-each-minute-on-spotify/](http://hhhhappy.com/lets-play-a-guessing-game-how-many-songs-are-streamed-each-minute-on-spotify/)

Hillman, G., & Rauchs, M, (2017). Global Cryptocurrency Benchmarking Study.

[https://www.jbs.cam.ac.uk/fileadmin/user\\_upload/research/centres/alternative-finance/downloads/2017-global-cryptocurrency-benchmarking-study.pdf](https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-global-cryptocurrency-benchmarking-study.pdf)

Hsieh, J., & Hsieh, Y. 2013. Appealing to Internet-based freelance developers in smartphone application marketplaces. *International Journal of Information Management*. 33(2). 308-317.

Kim, J. (2018). 'Disruptive Innovation', lecture notes. INFO5992: Understanding IT Innovations, University of Sydney, delivered 26 March 2018.

Kumar, V., & Mirchandani R. (2012). Increasing the ROI of social media marketing. *MIT Sloan Management Review*, 54(1), 55-61.

IFPI (2018). 'Global Music Report 2018', accessed 10 May 2018

<http://www.ifpi.org/downloads/GMR2018.pdf>

Laura, S. (2018), 'Executive's guide to implementing blockchain technology'. ZDNet, accessed 8 May 2018, <https://www.zdnet.com/article/executives-guide-to-blockchain>

Marco, I., Karim, R.L. (2017), 'The Truth About Blockchain'. *Harvard Business Review*, accessed 8 May 2018, <https://hbr.org/2017/01/the-truth-about-blockchain>

Masnick, M. (2015). 'Yes, Major Record Labels Are Keeping Nearly All The Money They Get From Spotify, Rather Than Giving It To Artists'. *Techdirt*, accessed 10 May 2018, <https://www.techdirt.com/articles/20150204/07310329906/yes-major-record-labels-are-keeping-nearly-all-money-they-get-spotify-rather-than-giving-it-to-artists.shtml>

Mulligan, M. (2017). 'Amazon Is Now The 3rd Biggest Music Subscription Service'. *Music Industry Blog*, accessed 10 May 2018, <https://musicindustryblog.wordpress.com/2017/07/14/amazon-is-now-the-3rd-biggest-music-subscription-service>

Nielsen, 2017. Nielsen music year-end report U.S. 2017.

Ovide, S. (2018). 'Spotify Was a Terrible Business. Then the Record Labels Stepped In.' *Bloomberg*, accessed 6 May 2018, <https://www.bloomberg.com/gadfly/articles/2018-02-28/spotify-found-its-footing-with-a-hand-from-r>

Peoples, G. (2014). 'Spotify's 2013 financials', *Billboard*, 25 November, available at <http://www.billboard.com/articles/business/6327762/spotify-2013-financial-report-what-you-need-to-know>

Pontes,A., & de Silva, R.V. 2017. Independent artists' access to communications channels: How hard is it out there? [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3096687](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3096687)

Price, J. (2015). 'The more money Spotify makes, the less artists get paid'. *Digital Music News*, accessed 10 May 2018, <http://www.digitalmusicnews.com/permalink/2015/06/11/the-more-money-spotify-makes-the-less-artists-get-paid>

- Riesewijk, M. The Future of Spotify: Assessing Spotify's Position by Analysing the Competition. <http://referaat.cs.utwente.nl/conference/27/paper/7638/the-future-of-spotify-assessing-spotify-s-position-by-analysing-the-competition.pdf>
- Takahashi, R. (2017). 'How can creative industries benefit from blockchain?'. McKinsey & Company, accessed 10 May 2018, <https://www.mckinsey.com/industries/media-and-entertainment/our-insights/how-can-creative-industries-benefit-from-blockchain>
- Tar, A. (2017). 'Smart Contracts, Explained'. Cointelegraph.com, accessed 10 May 2018 <https://cointelegraph.com/explained/smart-contracts-explained>
- Thompson, V. A. (1965). 'Bureaucracy and Innovation'. *Administrative Science Quarterly*, volume 10, issue 1, pages 1–20.
- Sammons, E. (2016). 'Incentives Drive Innovation: Examining ZCash's Block Reward Distribution'. Medium, accessed 4 May 2018, <https://medium.com/@EricRSammons/incentives-drive-innovation-examining-zcashs-block-reward-distribution-3ac151c14074>
- Schmidt, G. M. and Druehl, C. T. (2008). 'When Is a Disruptive Innovation Disruptive?'. *Journal of Product Innovation Management*, volume 25, pages 347-369.
- Stabell, C. B. and Fjeldstad, Ø. D. (1998). Configuring value for competitive advantage: on chains, shops, and networks. *Strategic Management Journal*, volume 19, pages 413-437.
- Storj Labs. (2018). 'What is Storj: The Storj Network'. Medium, accessed 6 May 2018, <https://medium.com/@storjproject/what-is-storj-part-1-of-3-the-storj-network-90fb1300112f>
- Stewart, A. (2018). 'What genres have benefited the most from the streaming era of music?', *Washington Post*, accessed on May 05 2018, [https://www.washingtonpost.com/lifestyle/what-genres-have-benefited-the-most-from-the-streaming-era-of-music/2018/04/03/950e99a8-3695-11e8-9c0a-85d477d9a226\\_story.html?noredirect=on&utm\\_term=.c8b81071d941ecord-labels>](https://www.washingtonpost.com/lifestyle/what-genres-have-benefited-the-most-from-the-streaming-era-of-music/2018/04/03/950e99a8-3695-11e8-9c0a-85d477d9a226_story.html?noredirect=on&utm_term=.c8b81071d941ecord-labels>)
- Weinberg, B., Parise, S., Guinan, P. 2007. *Multichannel Marketing: Mindset and program development*. <https://www.sciencedirect.com/science/article/pii/S0007681307000535>
- ZCash. (2018). 'ZCash Mining'. ZCashCommunity, accessed 8 May 2018, <https://www.zcashcommunity.com/mining/>