

ETLA Working Papers

No. 48

6 February 2017

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DIGITAL MUSIC INDUSTRY – BACKGROUND SYNTHESIS

Suggested citation: Sellin, Derek & Seppälä, Timo (6.2.2017). "Digital Music Industry – Background Synthesis".
ETLA Working Papers No 48. <http://pub.etla.fi/ETLA-Working-Papers-48.pdf>

Digital Music Industry

Background Synthesis

Derek Sellin*) and Timo Seppälä**)

Abstract

After 15 years of decline, music industry revenues appear finally to have turned a corner with the growth of paid streaming services. However, the industry as a whole may not be equipped to handle the changes brought on by new technology: with affordable home recording equipment, independent artists can release music directly to online platforms; with streaming services, massive per-play consumption reports are generated daily; and with low artist payments reflecting consumer expectations that music should be free, there is growing pressure for the industry to be more transparent with royalty calculations and faster with their payments. In this paper, we describe the state of the global music industry today, and present historical and systemic factors which have led to the industry's lack of transparency and complexity. We summarize the primary copyrights and licenses involved in music, and present a simplified value web as a basis for future research into possible global solutions. We identify three process layers for infrastructure related to managing assets, rights, reporting, and payments, regardless of physical format: (1) rights ownership, (2) consumption data, and (3) payment systems. Focusing on rights ownership, we summarize the major issues with today's infrastructure, metadata, and protocols, highlighting causes for industry "black boxes," the blockages in the system causing creators' royalty payments to get stuck in the system. Finally, we look at past collaborative initiatives, primarily the Global Repertoire Database (GRD), in order to gain key learnings, and we acknowledge nascent blockchain-related efforts. With the digital music industry thus synthesized, we outline further research to arrive at a future industry architecture and to understand the impacts of the likely music supply chain transformation, and the related managerial implications.

Key words: digital platforms, music industry, value web, global rights database, black boxes, metadata, blockchain

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Acknowledgements

The authors would like to thank Juri Mattila, from the Research Institute of the Finnish Economy; Turo Pekari of Teosto, a copyright organization for composers, lyricists, arrangers and music publishers; Tuomas Ilmavirta of Music Finland; Christy Crawl, Founder and CEO of ProMusicDB, for providing the artists' perspective; and Dae Bogan, Co-founder & CEO of TuneRegistry for insight into industry black boxes.

This research is a part of the iPlate research project that considers integrating platform competences toward network effects, with funding from Tekes, the Finnish Funding Agency for Innovation. Timo Seppälä has received support for his work from the Digital Disruption of Industry research project, funded by the Academy of Finland.

Introduction: Industry Overview and Challenges

Music industry revenues started a long decline around the turn of the millennium, due in large part to the advent of broadband Internet access and peer-to-peer file sharing via Napster¹. An oft-cited measure of the health of the music industry is the aggregate revenue for recorded music in the United States², which peaked at \$14.6B in 1999. Just 10 years later, this figure stood at \$6.3B³. Apple's iTunes store, launched in 2003, helped slow this trend by making download and purchase easier than piracy, and established a consumer price point of \$0.99/song^{4,5}.

Following the launch of streaming services such as Pandora, Spotify, Apple Music, and even YouTube, paid downloads have been in steady decline, again threatening industry revenues⁶. In 2014, United States revenues reached their lowest point since the start of the decline, as shown in Chart 1 from the Recording Industry Association of America (RIAA)⁷. RIAA records reveal the growth of the industry over four decades, highlighting both the positive impact of the introduction of the CD and the extent to which CD sales have plummeted since the turn of the millennium. Also visible in the chart is the fact that four areas are currently growing in the US: paid subscriptions, SoundExchange (the US royalty-collection entity for digital radio), synchronization (the licensing of music into audiovisual works), and on-demand streaming.

¹ For more on peer to peer file sharing see Alderman, 2001; Alexander, 2002; and on-line music distribution see McCourt & Burkart, 2003

² Here we present historical US revenues as a proxy for global trends, since the RIAA publishes detailed records as far back as 1973, and because the US is the largest music market in the world, representing approximately \$7B in 2015 recorded music revenues (www.riaa.com), out of global revenues of approximately \$15B (www.ifpi.org).

³ "Music's Lost Decade: Sales Cut in Half", February 3, 2010, http://money.cnn.com/2010/02/02/news/companies/napster_music_industry/

⁴ For more on piracy in the music industry see Rob and Waldfogel, 2006; Zentner, 2006; Bustinza and Vendrell-Herrero, 2013

⁵ For more information on iTunes see Volda, Grinter, Ducheneault, Edwards and Newman, 2005; Williamson and Cloonan, 2007; Waldfogel, 2010; Vacarro and Cohn, 2011

⁶ See also Luka and McFadden, 2016

⁷ "News and Notes on 2015 RIAA Shipment and Revenue Statistics", March 22, 2016, <http://www.riaa.com/wp-content/uploads/2016/03/RIAA-2015-Year-End-shipments-memo.pdf>

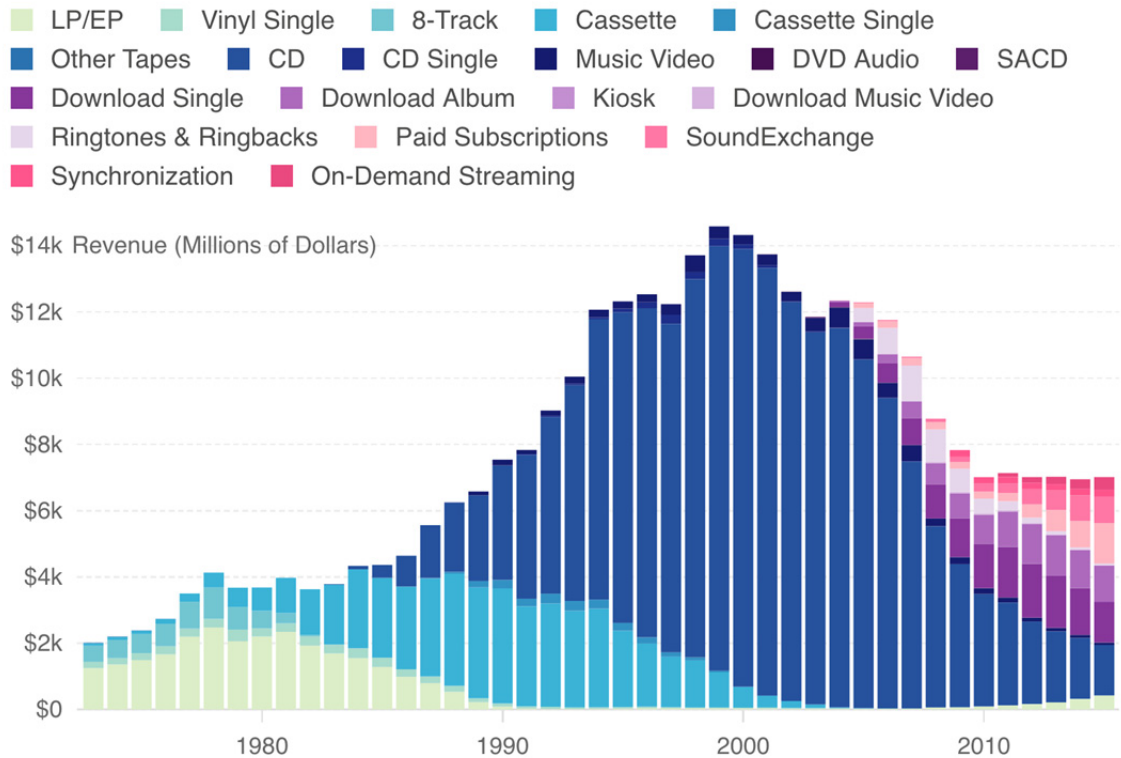


Chart 1: Historical US Recorded Music Revenue (Source: RIAA US Sales Database)⁸

As more and more consumers are subscribing to paid plans at the industry-standard \$9.99/month, revenues have at long last turned a corner. In fact, looking at an even broader measure of the music industry, the entire global recorded music industry including both recording and songwriting revenues, the market actually grew by almost \$1B in 2015, to \$24.4B⁹. This is promising, given that the total number of paying subscribers stood at just over 100 million at the end of 2016¹⁰.

Despite the positive upturn in the digital music industry¹¹, there is growing concern within the artist community that income from streaming is far too small. Royalty payments have moved from pennies-per-purchase to micro-pennies-per-stream. Streaming services do not publish actual payments per stream, and estimates from analysts vary. In a comprehensive report on transparency and payment flows by

⁸ It should be noted that consumption by format varies greatly by region. Sweden, where Spotify was founded and is still headquartered, shows the potential of streaming to dominate as a consumption model. In fact, streaming represented a full 85% of recorded music revenues in Sweden in the first half of 2016. "Musikförsäljningen växer i Sverige och nu även globalt" IFPI Sverige, <http://www.ifpi.se/dokument-och-statistik?cat=2016>, accessed February 1, 2017

⁹ "\$25 Billion: The Best Number to Happen to the Global Music Industry In A Very Long Time" December 6, 2016, <http://www.musicbusinessworldwide.com/25-billion-the-best-number-to-happen-to-the-music-business/>

¹⁰ "Music Subscriptions Passed 100 Million In December. Has The World Changed?" January 6, 2016, <https://musicindustryblog.wordpress.com/2017/01/06/music-subscriptions-passed-100-million-in-december-has-the-world-changed/>

¹¹ We define "digital music industry" as all commercial and industrial aspects of the music business in the digital age; as such the term is not limited to digital sound recordings and their delivery to consumers—rather, the term addresses industry processes and platforms for managing assets, rights, reporting, and payments, regardless of physical format.

Berklee College of Music's Rethink Music project¹², the per-stream royalties are estimated to be as low as \$0.00111 for YouTube (by far the largest music streaming provider, albeit ad-supported^{13,14}). Spotify, with the highest number of paid subscribers, pays an estimated \$0.00653 per subscription stream (less per ad-supported stream)¹⁵. Furthermore, Spotify, for example, pays approximately 69% of its revenues simply for the music licenses required to run their business¹⁶. With such low royalties, accurate and complete accounting becomes ever more important.

A well-known issue in the music industry is that royalty payments for composers are often made at the end of the following year, or even later. Rights societies (also known as Performing Rights Organizations, Collective Management Organizations, or collecting societies) may make actual payments more frequently, but these payments may reflect sales or performances from up to two years earlier^{17, 18}. Another generally recognized issue is that royalties which cannot be attributed to the correct rights holder are usually held in escrow, and eventually distributed arbitrarily, according to the market share of known rights holders. Thus, when payments are finally made, they may even be paid to the wrong songwriter.

In industry parlance, entities that hold unpaid royalties due to a lack of information or transparency in calculation methods are known as "black boxes"¹⁹. Black boxes materialize for many reasons, including but not limited to: the inability to identify rights holders despite payments made for the use of their compositions; the lengthy time required for filing domestic and ultimately international copyrights, often begun only when a recording is actually released; multiple claims for the same rights exceeding 100% of ownership, resulting in indefinite disputes; international collaborations with less than all creators asserting their rights; international legal inconsistencies regarding what type of performances result in payments (most visible in the fact that radio play does not generate royalties for recording artists in the United States); and the slow and often manual processes to report usage and clear payments under international reciprocal agreements²⁰. The amount held globally in these black boxes at any given time is very hard to estimate²¹. Without an accurate

¹² "Fair Music: Transparency and Payment Flows in the Music Industry", July 14, 2015, <http://www.rethink-music.com/research/fair-music-transparency-and-payment-flows-in-the-music-industry>

¹³ For more information on YouTube effects in Music Industry see Latta and Thompson, 2011

¹⁴ "Celebrating YouTube's Influence on Music", February 11, 2011, <http://www.thembj.org/2011/02/celebrating-you-tubes-influence-on-music/>

¹⁵ It should be noted that streaming services do not pay a set rate: they pay record labels an agreed percentage of their overall revenue, and they pay a fixed percentage set by statute to songwriters and their publishers.

¹⁶ "How much in royalties does Spotify pay to artists every time a user listens to the artist's music?" January 28, 2015, Mattias Petter Johansson, Spotify, <https://www.quora.com/How-much-in-royalties-does-Spotify-pay-to-artists-every-time-a-user-listens-to-the-artists-music>

¹⁷ About platform complexity in the music industry see Tilson, Sørensen and Lyytinen, 2013

¹⁸ For more on the impact of the Internet on the supply chain for music see Alexander, 1994a, 1994b; Lam and Tan, 2001; Graham, Burnes, Lewis and Langer, 2004; Fox, 2004; Leyshon, Webb, French, Thrift and Crewe, 2005; Rabinovich, 2007; Hracks, 2012

¹⁹ "Fair Music: Transparency and Payment Flows in the Music Industry", page 8, July 14, 2015, <http://www.rethink-music.com/research/fair-music-transparency-and-payment-flows-in-the-music-industry>

²⁰ Interview with Dae Bogan, Co-founder & CEO of music metadata and rights management platform TuneRegistry and adjunct professor at the UCLA Herb Alpert School of Music and CSUN Music Industry Administration where he teaches music business and entrepreneurship, January 25, 2017.

²¹ "Inside The Black Box: A Deep Dive Into Music's Monetization Mystery", April 15, 2015, <http://www.forbes.com/sites/nickmessitte/2015/04/15/inside-the-black-box-a-deep-dive-into-musics-monetization-mystery>

figure for these un-attributable funds, it is difficult to perform a fact-based cost-benefit analysis for any solution²².

The confluence of these issues results in artists, especially songwriters, receiving delayed royalty payments, which are often incomplete. Technology might one day permit real-time micropayments, but today, daily, weekly, or even monthly clearance cycles would be an improvement. We can state with confidence that better methods for documenting and sharing authoritative rights ownership data, and mapping this data with real-time consumption reporting, would result in faster and more complete payments to creators.

This paper continues as follows: in the second chapter, we provide a scope for our paper. In the third chapter, we describe the sources of complexity for the music industry. In the fourth and fifth chapters, we present a generalized music industry value web, followed by a simplified model of current infrastructure, protocols, and processes. In the sixth chapter, we examine collaborative attempts to solve underlying issues and what we can learn from them. We end the paper with a discussion and recommendations for further research.

Scope

Given the complexity of the music industry from both a legal and structural perspective, any study or recommendation must be bounded to some identifiable and addressable domain, and tied to some achievable goal. First, let us establish a layered approach to addressing the challenges:

1. **Layer 1, Ownership Data:** Better methods are required for storing, sharing, and updating information regarding “historical musical events,”²³ factual information regarding credits for creators (e.g. who wrote or recorded a piece of music) as well as history of ownership of the copyrights.
2. **Layer 2, Consumption Data:** Improved methods are also needed for sharing consumption data between companies and organizations across the industry, enabling faster and more efficient payment to artists.
3. **Layer 3, Payment Systems:** With reliable, shared data around ownership, and accurate consumption reporting, it should be expected that modern payment systems can ensure much faster, even real-time, payment to artists.

This industry overview will focus on the challenges related to *Layer 1, Ownership Data*. Let us define the scope more precisely:

²² It is worth noting that the black box problem is most acute for composers and songwriters, and their publishers. Recording artists are usually paid by record labels, who deliver their sound recordings in the form of physical or digital products. In the case of physical products, labels can track volumes manufactured and distributed, and invoice distributors and retailers accordingly. With digital distribution, labels or aggregators know to whom they have released the product, and can invoice against consumption reports from these digital stores & streaming services. Labels know who was in the studio, and are well placed to make accurate payments to their recording artists. Where the system generally breaks down, however, is in the identification of the rights holder(s) of the underlying composition.

²³ Interview with Christy Crowl, Founder and CEO of ProMusicDB, January 9, 2017.

- **Future Music:** The challenges with existing databases and legacy contracts are sizeable. However, more new music is being released each year. As such, this study focuses on systems built for new music introduced *in the future*. Historical databases will be considered to the extent that any solution for future music requires access to them. Once new platforms prove their viability and value, existing catalogs may be ported to the new systems due to their inherent benefits.
- **All Formats:** Although possibly regarded as legacy formats, both CD and vinyl sales continue to this day, even for new music releases. As such, this study will address underlying ownership, consumption and payment issues for *all formats* of recorded music, whether physical or digital.
- **Royalty Rates:** We will not address whether current royalty rates are fair to the artist. These are generally set by governments and in some cases negotiated directly. However, we do believe *efficiency will increase payments* to artists. Additionally, solutions to these existing problems may enable more direct licensing, where both parties are free to agree mutually satisfactory rates.

Sources of Industry Complexity

The music ecosystem presents a very complex intellectual property landscape, the result of copyright laws responding to a steady stream of technological innovations over the last 100+ years. It is also the result of regulation responding to perceived historical market abuses. It is worth considering the illicit businesses that set up and ran parts of the industry, at least in the United States, for many years. For example, the mafia was instrumental in bringing jazz music to the mainstream: in fact, Louis Armstrong played his first paid performance at a mafia-owned brothel in 1917 in New Orleans²⁴. Subsequently, the mafia controlled the jukebox business in the United States in the 1930s and 1940s, using it as a means of money laundering²⁵. In an effort to control an even greater portion of the industry, the mafia inserted itself into the record distribution and even the record pressing business²⁶. When striving to understand complexity of the music industry, it is both amusing and informative to keep these origins in mind.

Historically, the music business was a publishing business: if one wanted to hear a piece of music at home, one bought the notation and played the piece at home. The first technological innovation to threaten the music industry was the player piano: piano rolls were essentially the first recorded music available for purchase. In the United States, the Copyright Act of 1909 addressed the business challenges posed by this new mechanical means of music reproduction by creating a compulsory

²⁴ "Organized Crime History: Did the Mafia Turn the United States into a Better Country?", December 31, 2010, <http://gangstersinc.ning.com/profiles/blogs/organized-crime-history-did>

²⁵ "Organized Crime: Challenge to the American Legal System", 1962, Footnote 41, page 462, <http://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=5118&context=jclc>

²⁶ "7 Businesses You Probably Didn't Know Were Controlled By the Mob", Kelly Bryant, <http://mentalfloss.com/article/65365/7-businesses-you-probably-didnt-know-were-controlled-mob>

mechanical license, allowing anyone to record, distribute, and sell a recording of a musical composition without the explicit consent of the copyright owner.

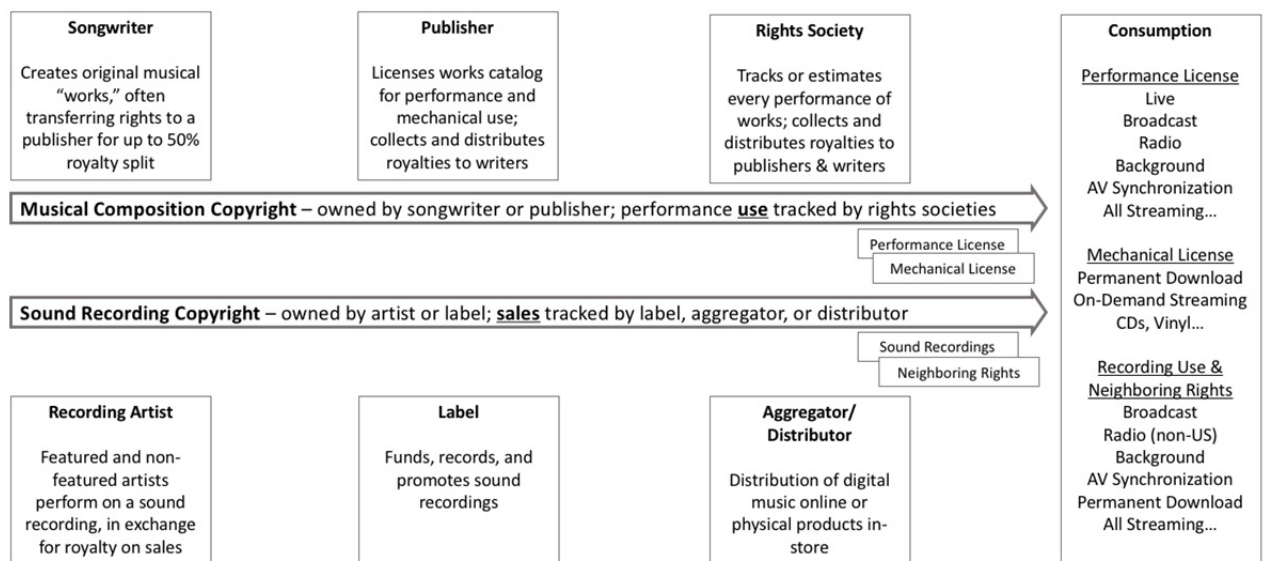
During the decades that followed, trade organizations were formed to ensure that composers would get paid when their works were performed publicly. The first such Performing Rights Organization (PRO) in the United States was the American Society of Composers, Authors, and Publishers (ASCAP). In 1941, in an attempt to reduce the market control exerted by the two major PROs at the time—ASCAP and Broadcast Music, Inc. (BMI)—the US Department of Justice issued consent decrees governing how these organizations operate and compete, and also what royalty rates they can charge.

Although the United States presents an interesting example of legal and business complexity, the industry complexity is truly global. Other territories have also set up organizations to ensure that composers and artists get paid. In fact, in 1850, almost a century before ASCAP was formed, SACEM (Société des Auteurs, Compositeurs et Éditeurs de Musique) was established in France. Some of the structures in the United States are unique compared to norms in the rest of the world. That said, the single US market represents approximately half of the global industry, with the other half fractured across several hundred countries, each with its own institutions and organizations. Thus, despite the complexities of licensing music in the United States, the common market of Europe can be seen as even more challenging, as there are currently 28 member countries, each with its own rights societies, in addition to multiple collaborative licensing hubs and other pan-European arrangements.

Generalized Value Web

It is impossible to generalize the complex global music business with a single, simple model. However, for the purposes of this study, two copyrights (the musical composition and the sound recording), three licenses (performance, mechanical, and sound recording/neighborhood rights), and the functional roles described in the value web described below are considered universal.

Picture 1 reflects the primary roles within licensing and distribution, yet there are very few firm lines between them: some artists write and record their own music, while others specialize; some writers self-publish, and some recording artists act as their own label; many labels own publishing businesses; some users require direct licenses with the publisher, bypassing rights societies altogether; and new blended or specialized business models continue to emerge, especially driven by technology. Again, implementation varies regionally, but this picture attempts to provide a single, simplified model.



Picture 1: Generalized Value Web (Simplified)

Now let us expand on these generalized functions, following each of the two copyrights as they move from the creator to the consumer.

Musical Composition or Work: This is the creative output of songwriters, lyricists, composers, and arrangers. Copyright laws vary territorially, but for the purposes of this study we assume that the copyright is fixed in a tangible medium and registered as required by law. We leave open the possibility of future claims of ownership, changes in percent ownership (“splits”), as well as transfers of ownership.

- **Songwriter:** As mentioned above, the songwriter²⁷ creates and copyrights the composition, lyrics, and/or arrangement of a song. The songwriter grants two separate licenses for the use of a work: a *performance license* allowing the music to be played in public, and a *mechanical license*, allowing recordings of the work to be distributed and sold in physical form.
- **Publisher:** Standard practice for songwriters is to transfer ownership of their copyright to a publisher, whose role it is to promote use of the composition by as many recording or performing artists as possible. In exchange, the songwriter foregoes up to 50% of licensing revenues to the publisher. The use of a publisher is optional, and some songwriters are self-published. The largest publishers are actually subsidiaries of three largest record labels: Sony/ATV Music Publishing, Universal Music Publishing, and Warner/Chappell Music. However, there are thousands of smaller independent or specialized publishers.

²⁷ We shall refer to the person who creates a musical composition as a songwriter. The term “composer” is often used interchangeably, although in some circles, “composer” refers exclusively to classical music.

- **Rights Society:** Also known as a Performing Rights Organization (PRO), Collective Management Organization (CMO), or collecting society, a rights society performs the laborious task of pursuing royalty payments for every performance, anywhere in the world, of a musical composition, whether in a live concert, on the radio, as background music, in a film or advertisement, etc. Some governments allow direct competition within their countries, such as the United States and Brazil, which have multiple PROs. Most countries only have one PRO, which historically enjoyed a monopoly within their own territories, although under government oversight. However, PROs have begun to operate in a competitive situation with the emergence of strong commercial entities such as Kobalt Music Group, Ltd., and even compete against royalty-free music. Europe is in the midst of a significant competitive transition: effective April 2016, any EU resident is able to bypass their home country PRO and register directly with a foreign PRO for the collection of international royalties. The largest PROs in the United States are ASCAP, BMI, SESAC, and GMR. The largest CMOs in Europe are PRS in the UK, GEMA in Germany, and SACEM in France.

Sound Recording or Master: This is the creative output of musicians recording their performance of a work. Ownership usually resides with whoever paid for the recording (usually a record label), with royalty payments made to the performing artists and producer. The underlying musical composition for any given sound recording will be attributable to one or more rights holders. Similarly, there may be multiple sound recordings of a single composition by the same or different performing artists; each is considered a unique, licensable product.

- **Recording Artist:** The performers on a recording can consist of featured artists and non-featured artists (including session musicians). As producers also contribute to the recording, they may share in recording royalties. Often the recording artists do not actually own the recordings, although they receive royalty payments from the owner.
- **Label:** Sound recordings are usually owned by record labels, except when independent artists play this role themselves. Labels bear the risk of recording multiple acts, not all of whom will be commercially successful. They also manage the sales channel and promotion of their recordings. Labels have traditionally been inconsistent with recordkeeping relating to composition ownership; as such, many songs have been released without accurate metadata identifying all the rights holders. Labels pay sound recording royalties directly to the recording artists and producer, and they pay composition royalties to rights societies. As a result of continued consolidation, there are only three major labels today: Sony Music Entertainment, Universal Music Group, and Warner Music Group.
- **Distributor/Aggregator:** The logistics surrounding physical products (e.g. CDs and vinyl) is usually handled by a third-party distributor on behalf of labels. The term “aggregator” can have many meanings but in digital distribution, companies like CD Baby and TuneCore aggregate recordings by independent and Do-It-Yourself (DIY) artists and labels, streamlining delivery to Digital

Service Providers (DSPs) such as Spotify, Amazon Music, iTunes, Apple Music, Deezer, etc.

Consumption of properly licensed music occurs in many ways across many different media. The required licenses depend on the form of consumption. Key examples include:

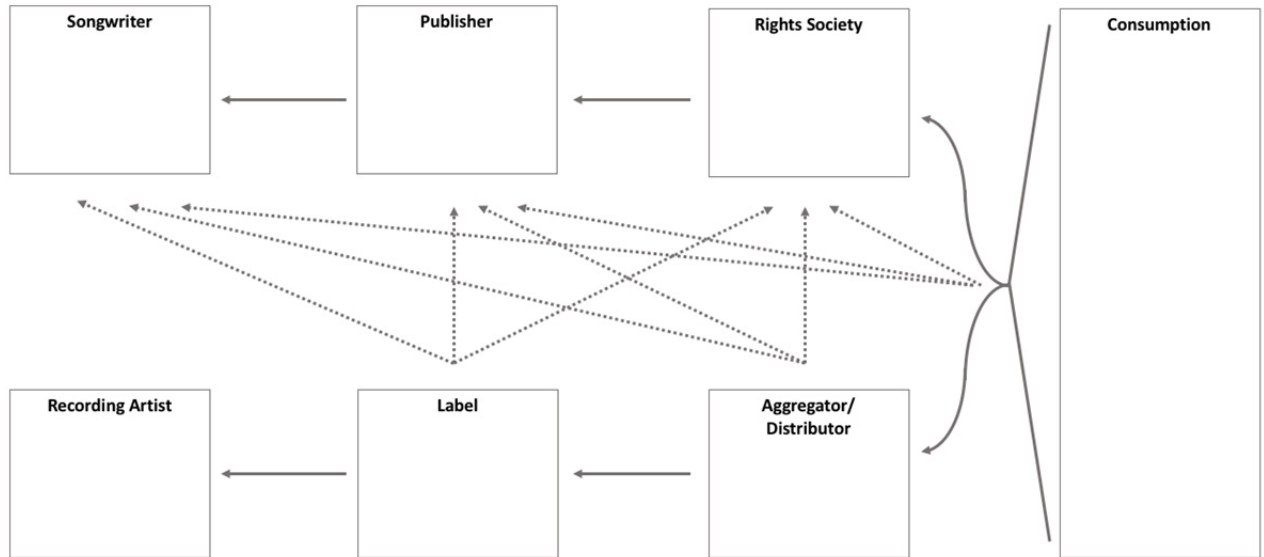
- **Performance Use:** A performance license from the composer (or publisher, or PRO) is generally required for any situation where music is broadcast or consumed in a public forum. This includes broadcast TV, radio, sports events, background music, etc. This also includes live performance in concert. Additionally, in most regions, a performance license is required for streaming services, whether interactive or non-interactive. This can be a lucrative license: for example, Finnish royalty collections for television and radio exceed total Finnish revenues for recorded music.
- **Mechanical Use:** A mechanical license from the composer (or publisher, or PRO) is required when a music recording is made available for purchase. This includes physical media such as CD and vinyl. Also, a permanent download, such as those from iTunes, requires a mechanical license.
- **Sound Recordings/Neighboring Rights:** Whenever a sound recording is used commercially, a license for its use is required from the recording artist or the label. Thus, almost every use of a sound recording requires at least two licenses, as seen in Picture 1. A commonly cited exception is terrestrial radio in the United States, which only pays performance royalties, stemming from the 1970s industry perspective that radio play primarily drove record sales. *Neighboring Rights* are similar to copyrights, although they are distinct from the rights of the actual author (songwriter) of the work. The organizations chartered with administering these licenses and pursuing payments vary greatly by region. It should be noted that the term “Neighboring Rights” is not commonly used in the United States, although royalty payments are pursued for these uses nonetheless²⁸.

Berklee College of Music’s Rethink Music project documented the payment flows from user to rights holder for multiple digital services, with approximate royalty percentages, based on various business models (e.g. major label vs. independent vs. aggregator), resulting in eight (8) unique scenarios for the United States alone²⁹. Rather than try to depict a detailed model which is globally accurate and all-encompassing, it is useful for our purposes to abstract the payment models. By doing so, we can see that royalty payments may take many different paths to get back to the copyright holder. Each of these paths embodies its own delays, its own information & reporting standards, and its own commissions. With the multitude of possible agreements and revenue flows throughout the industry, it must be acknowledged that

²⁸ “Neighboring Rights: What They Are & Why They Matter”, George Howard, July 19, 2012, <http://www.tunecore.com/blog/2012/07/neighboring-rights-what-they-are-why-they-matter.html>

²⁹ “Fair Music: Transparency and Payment Flows in the Music Industry”, page 8, July 14, 2015, <http://www.rethink-music.com/research/fair-music-transparency-and-payment-flows-in-the-music-industry>

an almost endless set of permutations is possible. Picture 2 presents a simplified, high-level representation of these royalty flows, without attempting to specify royalty splits or percentage commissions, given how much these may vary.

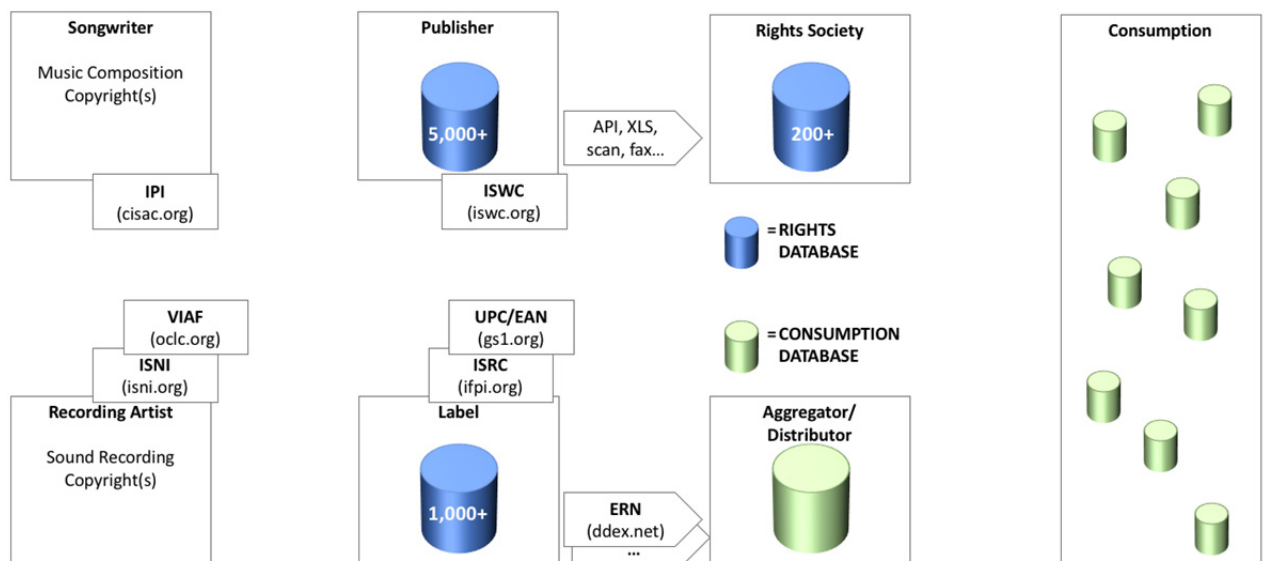


Picture 2: Simplified Revenue Flow (Endless Permutations)

Current Infrastructure, Protocols, and Processes

The complexity of the music value web is amplified by inefficiencies stemming from thousands of incompatible databases often replicating the same rights data; incomplete or poorly implemented standards for metadata describing the music output, as well as for the transmission of this metadata; a sea of identifiers (for people, works, recordings, releases...) issued by separate entities and not systematically linked to each other; and error-prone and labor-intensive human processes. Exacerbating the complexity is the many-to-many relationship between sound recordings and their underlying compositions, each of which may have multiple contributors. Additionally, although metadata standards exist to identify a writer, a recording artist, a composition, and a sound recording, there is neither uniform use of these codes, nor an authoritative database mapping them to each other.

Picture 3 abstracts the current state of infrastructure, highlighting its scale and including a sampling of key identification codes and metadata standards.



Picture 3: Thousands of Incompatible Databases, Multiple ID and Metadata Standards

A closer look at the current infrastructure above reveals some of the causes for the black boxes and for slow payments to artists. One set of reasons for the difficulty in identifying rightful recipients of royalties lies in **database replication** and **manual matching** of these database records. For example:

- Each publisher maintains its own records of the copyrights it owns, its contract details and royalty percentages (splits), its licensees, etc. Rights data is transferred downstream by thousands of publishers to hundreds of rights societies in the absence of standard protocols or data sets. Similarly, labels maintain their own records of song ownership, and in most cases, they try to attribute the sound recording to the correct society or publisher.
- In order to collect international performance royalties for their members, rights societies must be able to identify, for every recording, the relevant international peer society. This requires database synchronization across all these societies, which requires much manual work. This process is one of the main contributors to the one- to two-year delay in making payments to songwriters.

Another set of reasons is related to inconsistent use of **identification codes** and **metadata**:

- There are multiple standards for individual creators, including an IPI for songwriters/composers, an ISNI for performers and sometimes for songwriters, and possibly a VIAF and/or a MusicBrainz ID for performing artists. Additionally, many individuals have multiple codes, as they may use different names or variants over time, depending on their role or current affiliation.

- Significantly, many recordings are released with an identifier for the sound recording (ISRC), yet with no identifier for the underlying musical work (ISWC). Not only are files released like this, they are also accepted downstream by aggregators and DSPs in this condition. Without an ISWC, the songwriter cannot be easily identified, causing issues with licensing and payment.
- In the absence of “good metadata,” a comprehensive database mapping ISRCs to ISWCs would provide this information. Although commercial databases exist, they are voluntary, incomplete, and controlled by a single commercial (therefore possibly untrusted) entity.
- Finally, metadata is not locked to the music file, and can be modified downstream by any participant in the value web, or even by the final consumer.

In addition to yielding these negative functional impacts, the current infrastructure and processes are characterized by a high degree of inefficiency. With greater efficiency, more money would presumably pass through the chain to the creators.

In its current state the industry lacks:

- Efficient processes for sharing comprehensive rights data
- Systematic adherence to rich metadata standards
- Scalable systems for the growing pace of digital music releases and detailed per-stream reporting
- Willingness to share rights and reporting data openly with others in the industry

Collaborative Attempts

The industry has tried to come together in the past to address some of the underlying concerns outlined above. The most hopeful of these was the Global Repertoire Database (GRD), a 2008 attempt led by the EU with participation from organizations in other territories, aimed to create a singular, authoritative database of musical rights information. Although a shared database would not have guaranteed transparency in consumption reporting or royalty calculation, it would have facilitated the identification of rights holders, reducing or eliminating black boxes across the industry. This project failed in 2014, when it lost the backing of the two biggest participants, ASCAP in the United States and PRS in the United Kingdom, due to an escalating budget with no tangible end date. It is interesting to note that this project was initially supported by the rights societies, who, at least superficially, have the most to lose from more transparent record-keeping. As stated at the time by PRS, the UK’s rights society: *“We are disappointed the GRD cannot move forward as planned, though we remain committed to the principles of a single point of works registration and reconciliation of ownership shares under broad stakeholder governance. These principles remain key to the efficient processing of multi-territory licenses and accurate distribution of royalties across all*

*usages of creative works. We are actively studying alternative ways of achieving these goals, taking full advantage of the learning gained from the GRD project to date.”*³⁰

Possible reasons cited for the failure of these efforts include (1) cost vs. the possible gains in operational efficiency, (2) controversy over ownership of the data in a consolidated database, (3) the threat to the role of the rights societies as licensing intermediaries, (4) lack of common standards for metadata, data storage, and data exchange, and (5) the extreme complexity of differing legal frameworks for copyright, anti-trust, and even privacy³¹.

A quick financial analysis is in order. According to the GRD study phase final recommendations, *“In the ‘end state’ (medium-long term), when the GRD holds global repertoire and is used by the majority of Societies and Publishers, we expect operational efficiencies and financial savings to be achieved industry-wide – equivalent to 0.7-1% of global royalty collections annually.”*³² With global royalty revenues of approximately \$5.6B at the time³³, annual efficiencies on the order of \$50M would have been expected. However, the project failed with over \$13M in debt, and no line of sight to a global solution.

Here we need to examine the drivers for such an industry effort: is the intent to streamline the collection process to benefit the rights societies, or is it to ensure black box funds are disbursed to the rightful holders? The answer should be “both,” as these goals are not in conflict. This efficiency target is not simply self-serving for the rights societies: any reduction of cost in administration will increase the funds available to pass on to the songwriters. We must therefore keep in mind that any effort to ensure full and fair payment must not decrease the efficiency of existing operations.

There is another way in which rights societies would benefit from an authoritative database of rights information: increased revenue. Despite any threat to ongoing data collection and payment activities, visibility into copyright ownership would also ensure that the artists they themselves represent can be easily identified, and therefore paid. We will proceed on the principle that easily accessible information about rights ownership is a common goal for the industry.

The European Commission also recognized that increased competition between rights societies would benefit songwriters and composers. Thus, a directive³⁴ was enacted in 2014, which came into force in April 2016, requiring faster payment and greater transparency by rights societies, while also allowing composers and publishers resident in the EU to choose any society to collect their foreign royalties, rather than

³⁰ “Statement on the GRD”, July 9, 2014,

<http://www.prsformusic.com/aboutus/press/latestpressreleases/Pages/statement-on-the-grd.aspx>

³¹ “GRD’s Failure”, Music Business Journal, Berklee College of Music, August 2015

<http://www.thembj.org/2015/08/grds-failure>

³² “Global Repertoire Database Scoping & Stakeholder Consultation Phase Draft Recommendations”, Deloitte MCS Limited, March 9, 2012, <http://www.globalrepertoiredatabase.com/docs/grd-deloitte-final-draft%20study-phase-recommendations-v5.1.pdf>

³³ “Music Publishing Market Overview”, accessed January 2, 2017,

<http://rhmusicroyaltypartners.com/resources/music-publishing-market-overview>

³⁴ DIRECTIVE 2014/26/EU, <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0026&from=EN>

relying solely on their home country's society for pan-European collections³⁵. In the United States, rights societies have operated in a competitive environment for almost a century, but this enforced competitive environment is new in Europe.

Between the ongoing move to streaming as the primary delivery mechanism for music and an increasingly competitive landscape, European rights societies should consider the opportunities offered by new technologies.

The Promise of Blockchain

In the last several years, blockchain technology³⁶ has emerged as a possible solution for the music industry, bringing the promise of transparency, accountability, and faster payments. Despite the hope placed by many on blockchain, a healthy degree of skepticism is beginning to be voiced, based among other things on the legacy of bad data practice, maturity of the technology, the level of coordination required, and consumers' continued expectation that music should be free³⁷. With artists demanding fairness, and academic institutions and technology companies driving innovation, we can expect continued blockchain experiments and advancements in the music industry. Furthermore, several companies and collaborative efforts are already aimed at piloting or defining blockchain solutions for the benefit of the music industry. Some of the most visible include:

Dot Blockchain Music, which is driving standards and an open source implementation for a new media format and supporting technology architecture leveraging blockchain.

Open Music Initiative, hosted by the Berklee College of Music, which aims to create an open source protocol for the uniform identification of music rights holders and creators. Its mission is not to build a database or a product; rather, the effort is to define interfaces enabling interoperability. That said, blockchain is understood to be central to the initiative's activities.

PeerTracks, which provides a peer-to-peer network to enable both artists and fans to earn money from music streaming. PeerTracks is investing in blockchain technologies, aiming to provide a "global database for copyrights, a means of payment for all music related transactions as well as a tool to simplify licensing of musical works."

Mycelia, launched by independent artist Imogen Heap, is a project intending to use blockchain to ensure a fair, sustainable, and vibrant music initiative. It is one of the few blockchain efforts led by an artist rather than the tech community. As such, it should

³⁵ "New EU Regulations for Collection Societies and Pan-European Licensing to Take Effect This Weekend", April 8, 2016, <http://www.billboard.com/articles/business/7326401/new-eu-regulations-collection-societies-pan-european-licensing>

³⁶ *In brief, blockchain technology is a method by which parties previously unknown to one another can jointly generate and maintain practically any database on a fully distributed basis. In reality, the system works so that each party is distributed a copy of the database (or part of it) and all of them may also make changes to the database subject to certain predefined rules. The changes made by the various parties are assembled and stored in the database at regular intervals as bundled packets called blocks. When new blocks are added to the original database, they form a blockchain, or an up-to-date database containing all the changes made.* (Mattila & Seppälä, 2015).

³⁷ See Iansiti and Lakhani, 2017

serve as a useful point of reference, informing the tech industry as to the needs and desires of the actual creators.

In further studies, we shall examine blockchain, among other technologies, in greater depth to determine whether it is both necessary and feasible for solving the challenges in the industry.

Conclusions & Recommendations for Further Research

There is an evident need for modernization of the infrastructure and processes within the music industry to enable fast, fair, and full payment of royalties to the ultimate source of the business: the creators. Additionally, artists would benefit from a permanent public record of their “credits,” helping them gain additional visibility and credibility as they pursue further contracts and other musical employment opportunities. Much excitement exists around blockchain technology as a solution to the woes of the industry. However, solutions will require business and process change, as well as collaboration between music industry stakeholders. Any technological solution will exist to support business decisions, not the other way around³⁸.

Based on the dynamics of the industry, and learning from past efforts to address these needs, we can state certain high-level requirements for any solution:

- It must be proven to be more efficient than the current system, or else payments to creators will, by necessity, decrease.
- It must be scalable to handle the demands of both the pace of digital music releases and the growth of global per-stream consumption data.
- It must embrace common standards, enabling interoperability and selective sharing of data.
- It must recognize the reality of a fundamental lack of trust within the industry, or the resistance by many to reveal data, even that which simply represents factual “musical historical events.”

With the industry background now synthesized, we propose future research topics. First, we intend to develop a reliable prediction of the future of the music industry using the Delphi method. This interactive forecasting method relies on interviews with a panel of experts, followed by a second round of interviews based on an anonymized summary of the first round. The intent will be to develop a well-informed vision, and clarity into key requirements for the industry architecture of the future.

Second, with this vision established, we shall develop a model of the future industry architecture. This will be based on the current state of the industry as described in this study, the results of the expert interviews in the second stage, and an examination of how other industries are addressing similar challenges with new technologies and processes. This stage will also address technical as well as managerial implications.

³⁸ See Iansiti and Lakhani, 2017

A vital final step will be to understand the impact of the future industry architecture through econometric modelling. By analyzing in detail who creates and captures value in the both the current and future supply chains, and by estimating the amount of money tied up in black boxes across the industry, we can understand the true financial benefit or detriment, to all parties, of the supply chain transformation.

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