WIPO Committee on Intellectual Property and Development

THE GLOBAL DIGITAL MUSIC LANDSCAPE

An Overview of Distribution, Copyright, and Rights Administration for Music in the Digital Age

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Executive Summary

This guide has been prepared as per the mandate given by the WIPO Committee on IP and Development. It aims to provide an understanding of the digital music industry for creators in developing countries and for those shaping public policy that affects them. The first part of this guide covers the primary entities that make music available to the public: digital service providers (DSPs), record labels, and music publishers. It also covers an area of renewed interest in recent years: distribution channels that are based on scarcity and collectability rather than digital ubiquity, physical (vinyl) and digital (NFTs).

The second part of the guide discusses trends and challenges in music distribution for artists today. One of these is the challenge of channel control: digital technologies giving creators less control over how their music is packaged, distributed, and presented to users. Another is supply and demand, where the former is huge and growing at an accelerated pace while the latter remains relatively flat, causing problems in exposure for new or independent artists. Copyright infringement has been a well-known problem since the early days of digital; this is discussed along with its more recent cousin, streaming fraud. Finally, the guide discusses generative AI and its potential impact on the music industry, although it is early days for this exciting technology in the music context.

The third part of this guide covers rights administration and copyright infrastructure for today's music industry. These are the laws, data, systems, and processes—the nuts, bolts, and plumbing—that enable creators to get paid when their music is heard. The discussion here is intended to give creators and policy officials an overview of the basic elements of copyright infrastructure, including fundamental concepts of copyright law,[1] standard identifiers, metadata, and licenses. Then it covers the flows of information and payments for sound recordings and musical compositions, and the various services that are available to independent artists to simplify and automate these processes.

The final section of this guide discusses opportunities for developing countries, whose creators may be able to participate in the global music industry through services described here, but which may not have sufficiently mature copyright infrastructures to enable them to participate as fully as possible. This section includes a list of suggested steps for independent creators to familiarize themselves with local copyright laws, relevant identifiers, and copyright compliance tools, and to sign up for CMOs and helpful services. The guide concludes with a glossary of terms and a list of references to consult for further and ongoing information.

The views expressed herein are solely my own and not necessarily those of WIPO.

[1] This is, of necessity, a high-level overview; copyright laws and rights administration entities vary considerably from one country to another.

I. Introduction

Digital technologies have transformed the global music industry in ways that are at least as profound as the transformations that took place a century ago, when music could first be recorded and distributed on portable consumer products (such as, piano rolls and wax cylinders). The legal music marketplace of the 2000s, focused on downloaded files, proved unsustainable. Streaming, though invented in the late 1990s, did not become popular until the 2010s, but it then proceeded to dominate global music consumption around the world. Nowadays, digital *is* the music industry: it accounts for about three-quarters of global music industry revenue,[2] and the vast majority of that comes from streaming.

Yet services that deliver digital music to the public are just the tail end of a variety of processes for creating, preparing, and distributing music. These processes have also been enabled by digital technology, and—in part because of this—they have become far more complex, and far more global, than they were when vinyl ruled the industry in the 1960s and 1970s.

Since that time, digital technologies have disrupted the music industry from the inside out. Professional recording studios began to adopt digital recording technology in the late 1970s. So-called digital audio workstation (DAW) software for personal computers, such as Digidesign's Pro Tools, appeared in the early 1990s. Nowadays free or low-cost DAW software such as Audacity and GarageBand are widely used by independent musicians. The use of digital sampling to create music also began in the late 1970s with innovations such as the Kurzweil and Fairlight digital sampling synthesizers; their capabilities have now also filtered down to the many free or low-cost tools that everyday musicians also use.

The first use of digital technology to distribute music to the public on a wide scale was, of course, the compact disc (CD), which was launched in the early 1980s. But the distribution of digital music to the public over networks did not happen on a wide scale until almost two decades later, once the Internet and technologies for compressing digital audio became available to everyday users.

It used to be that the most important entities in the recorded music industry, apart from creators (songwriters and performing artists), were music publishers, record labels, radio, and retail record stores. Today, a new type of entity has evolved as arguably the most important in the industry: the digital music service, known as a digital service provider or DSP. As an indication of the size of their influence, the combined revenues of DSPs worldwide likely exceeded those of record labels sometime in the mid-2010s. DSPs are certainly far more influential than record stores in distributing music to the public in most countries around the world, and the influence of terrestrial broadcast radio is on the wane.

Figure 1 shows the primary entities in today's digital music ecosystem for independent creators. Artists create music recordings and submit them to record labels (see p. 11) or digital distributors (see p. 29), which send them to DSPs (see p. 5) for users to play. Songwriters (who could be the same as the recording artists) submit information about their compositions to music publishers (see p. 11) or publishing administrators (see p. 35). As will be discussed, the

[2] IFPI, IFPI 2023 Global Music Report: Global Recorded Music Revenues Grew 9% In 2022, March 21, 2023, https://www.ifpi.org/ifpi-global-music-report-global-recorded-music-revenues-grew-9-in-2022. This number counts streaming, downloads, and a portion of sound recording performance revenue.

differences between the entities in Figure 1 shown in green and those shown in blue is that the latter own rights in the music while the former do not.

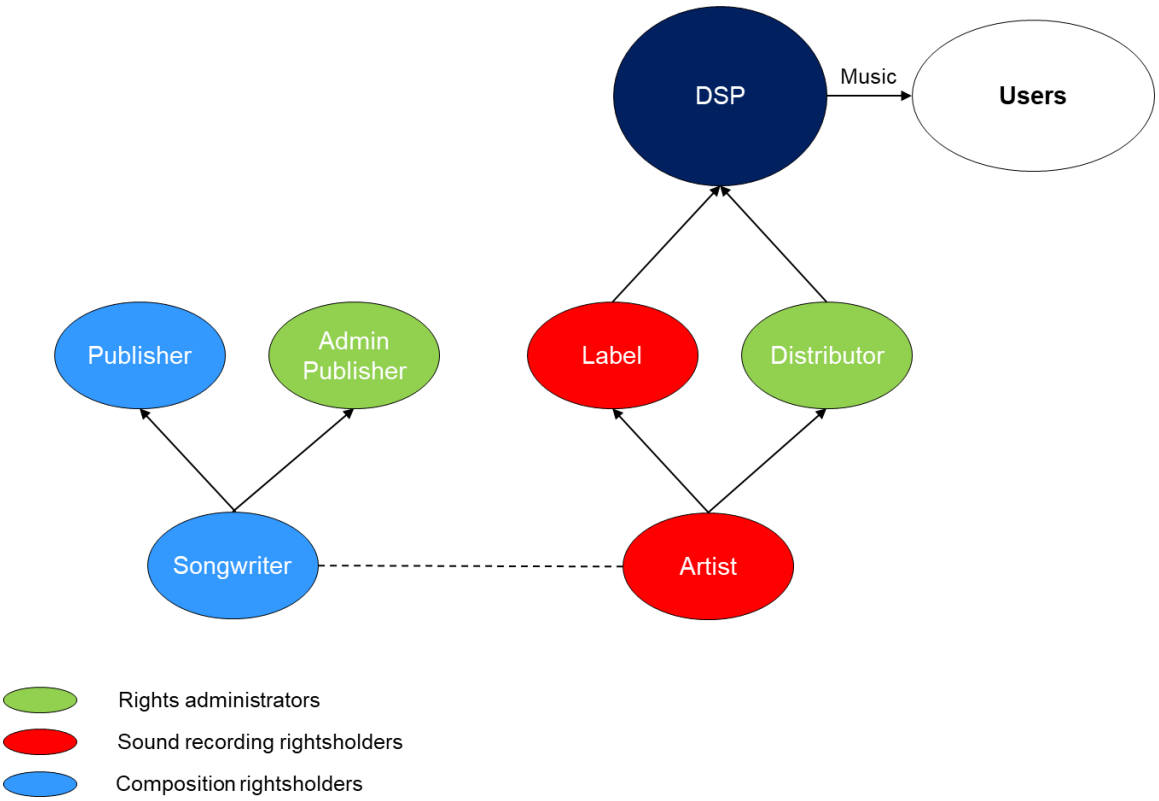

Figure 1: The primary entities in the digital music ecosystem.

Several other entities besides those shown in Figure 1 are involved in the process of determining, collecting, and disbursing royalty payments, as I will describe below. The resulting technologies and complexities of the processes that I'll discuss go hand-in-hand with enormous opportunities for musical artists around the world to reach global audiences. But they also require artists and the people they work with to understand a lot more than was necessary a half century ago. This guide aims to address those gaps in understanding.

II. Music Distribution Channels

The largest component of the global music industry by revenue is recorded music, which involves recording artists and record labels. The International Federation of the Phonographic Industry (IFPI), the umbrella trade organization for recorded music worldwide, reported USD 26.2 billion in recorded music revenue in 2022.[3] Revenue figures for music publishing, which involves songwriters and music publishers, are harder to pin down, but the segment is smaller than recorded music, with estimated worldwide revenues of USD 14 billion in 2022.[4] The third prong of music industry revenue is from live performances, which are not discussed here; global live music revenue is estimated to be comparable to that of recorded music. Of course, live music revenues were affected profoundly in recent years by the COVID-19 pandemic.

A. Music Digital Service Providers (DSPs)

The most important type of entity in the distribution of music to the public is the digital service provider or DSP. DSPs provide the following services and models:

- **Downloads**: selling digital files in MP3, MP4 AAC, FLAC, or other formats.
- **Fixed non-interactive streaming**: providing radio-like playlists of music and possibly other content as audio streams. These can be either Internet simulcasts of AM/FM radio broadcasts or "pure play" Internet-only services.
- **Customized non-interactive streaming**: programmed streaming services that provide ways for listeners to influence music selections, such as featured artist selection, "thumbs up/thumbs down," and song skipping, but do not let users pick individual songs or define their own playlists.
- **Interactive streaming** (also called on-demand streaming): streaming services that let users pick individual songs and define (and usually share) their own playlists. Most of these services charge monthly subscription fees; some are free with ads or are "freemium" models with limited-functionality free subscription tiers.
- **Tethered downloads** (also called conditional or limited downloads): subscription services that enable users to download files protected by digital rights management (DRM) so that they work only on the device on which they are downloaded and only as long as the user subscribes to the service.

Most of today's DSPs bundle several of the above services into subscription offerings.

Non-interactive streaming services appeared in the late 1990s and could be used over the dialup Internet connections that were common at the time. Tens of thousands of non-interactive streaming services are available worldwide today; for example, the TuneIn Radio app maintains a directory of over 120,000 of them.

The first paid download DSPs appeared in the early 2000s. These services soon bifurcated into DRM-enabled services that licensed major-label content (such as Universal Music Group's own BlueMatter) and DRM-free services with independent label music (such as eMusic).

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[3] IFPI 2023 Global Music Report.

[4] Kristin Robinson, U.S. Music Publishing Revenue Grew 19% to $5.6B Last Year, June 14, 2023, https://www.billboard.com/pro/music-publishing-revenue-2022-united-states-nmpa/. U.S. revenues are estimated to be 40% of global revenues.

The first interactive streaming service with licensed music from all major labels was Rhapsody (now known as Napster[5]), which achieved its license agreements with the majors in 2002. Yet the first DSP for music to make a major impact on the market was a download service, Apple's iTunes Music Store, which launched in 2003 and sold DRM-protected files. Download services had stopped using DRM by 2009, by agreement with record labels, as the labels sought alternatives to Apple as a retailer that could sell music files which would still play on Apple's ubiquitous iPods and iPhones.

Interactive streaming music services lagged in popularity for several years. There were two major reasons for this. First, download and non-interactive streaming were similar to older models of music distribution that users were already familiar with: record stores and radio stations respectively. But the model of paying a monthly subscription fee for access to an enormous library of music on demand (which only lasts as long as the user pays the subscription fee) was not familiar. Second, such services could only work on computers with Internet connections that were fast enough to support streaming; smartphones did not appear until 2007, and mobile broadband Internet connectivity did not appear until the late 2000s depending on territory.

The first interactive streaming services with major label licensing that broke through on a global scale were Spotify and YouTube. Spotify launched in Sweden in 2008. Its chief innovation was to implement a freemium model, which included a free subscription tier that limited access to music and earned revenue through ads and a paid tier with no limitations and no ads. Spotify has been quite successful over the years in getting free users to convert to paid.

YouTube launched in 2005. It was never really a music service per se, but it flourished as a de facto music service because it allowed users to upload their own content, some of which included music. YouTube began licensing music from the major labels in 2006 (shortly before its acquisition by Google) and achieved licensing with all of the major labels around 2011, by which time Spotify had launched in several countries outside of its native Sweden. An upward inflection point in interactive streaming use came in the couple of years after that, as shown in Figure 3 on p. 17 below.

Interactive streaming is now by far the dominant mode of music consumption in the world. Today there are several dozen DSPs that offer subscription-based interactive streaming as well as other models; a selection are shown in Table 1. Most of these also offer non-interactive streams (playlists) as well as tethered downloads. A few, such as iHeartRadio, offer Internet simulcasts of AM/FM broadcast stations as well.

Of the DSPs listed in Table 1, apart from Napster/Rhapsody and Spotify, the services that launched earliest (and survived to this day) include Melon, which launched in South Korea in 2004; KKBOX, which launched in Taiwan in 2005; JioSaavn, which launched (as Saavn) in India as a consumer service in 2009; Yandex Music (Russia, 2010); Gaana (India, 2010); and Anghami (Lebanon, 2011).

DSP	Regions and Countries

[5] Apart from the brand name, today's Napster DSP has no relationship with the US-based file-sharing network of the late 1990s that was shut down by court order over copyright infringement claims.

Global Services	
Spotify	237 countries
JioSaavn (South Asian)	Worldwide[6]
IDAGIO (classical)	190 countries
Deezer	185 countries
Apple Music	162 countries
YouTube Music[7]	96 countries
TIDAL	61 countries
Amazon Music	50 countries
Regional Services	
Anghami	Middle East/North Africa, Europe, United States
Audiomack	United States, UK, Canada, several African countries
Boomplay Music	Africa
Claromúsica	Central and South America
iHeartRadio	North America, Australia, New Zealand
Joox	Hong Kong, Thailand, Malaysia, Indonesia, Myanmar
KKBox	Taiwan, Japan, Singapore, Malaysia
Kuack	Caribbean
Line Music	Japan, Taiwan
Melon	South Korea, Indonesia
Napster	North America, Western Europe, some South America
Presto Music (classical & jazz)	North America, Europe, Australia, New Zealand
Qobuz	North America, Western Europe, some South America
SoundCloud Go+[8]	North America, Western Europe
TikTok (TikTok Music, Resso)	Indonesia, Brazil, India, Mexico, Australia, Singapore
Trebel	Colombia, Mexico, Indonesia, United States
UMA	Russia, Commonwealth of Independent States countries
Wynk	India, Sri Lanka, several African countries

[6] Limitations on English-language content and no free tier outside of South Asia.
[7] YouTube Music is a paid subscription service that launched in 2018 and is separate from the "regular" YouTube but offers music that was uploaded to YouTube.
[8] SoundCloud's basic service with limited catalog is available worldwide.

Yandex Music	Russia, Commonwealth of Independent States countries
Zvuk	Russia, Commonwealth of Independent States countries

Single Territory Services	
Tencent Music (QQ Music, Kugou, Kuwo)	China
NetEase Cloud Music	China
YouSee Musik	Denmark
Hungama Music	India
Gaana	India
Patari	Pakistan
Flo	South Korea
Genie Music	South Korea
Naver Music/VIBE	South Korea
Pandora	United States

Table 1: Selected music DSPs with interactive streaming. Countries subject to change.

From the standpoint of rights administration (handling submission of music and payment of royalties), interactive streaming services are of two basic types: one epitomized by Spotify, the other by YouTube. Services such as Spotify, Apple Music, Deezer, and Amazon Music only accept music from record labels and digital distributors (see p. 29) with which they have agreed licenses. The process for distributing music on one of these services is straightforward: if a label or digital distributor has a license agreement with the DSP, then it can feed music to the DSP, which will put it all up on the service.[9] I refer to this as "opt-in" licensing: labels can "opt in" to licensing their music to the DSP.

On the other hand, DSPs such as YouTube and SoundCloud that accept content uploads from all users work differently from a licensing perspective. These services generally obtained license agreements after they started operating, sometimes after actual or threatened legal action from rightsholders. Such DSPs typically have license agreements with record labels that allow labels to decide on a case-by-case basis what to do when a user attempts to upload their content onto the service; otherwise, they generally presume that user-provided content should be allowed.

These services typically use content recognition technology (see p. 21) that tries to identify the music that a user is uploading by looking it up in a large database; if it finds a match, then the service abides by whatever the content licensor has arranged with the service, which is typically to let the content go up in exchange for a share of advertising revenue, or in rare cases, to block the upload. If the content recognition technology does not find a match, then the service simply allows the content to go up. In other words, content on these user-contributed services only *doesn't* go up if a rightsholder chooses to disallow it; therefore, I refer to this as "opt-out"

[9] Assuming that the music satisfies the DSP's policies and guidelines, such as editorial policies for metadata.

licensing. (These services accept feeds from record labels and indie distributors as well as from users.)

Digital radio (non-interactive streaming) services may operate differently from interactive streaming services from a licensing perspective, depending on the territory's copyright laws. Such services may invoke what are known as *neighboring rights*, i.e., performance rights on sound recordings (see p. 24), which are implicated for terrestrial broadcast radio in most countries. In some countries, neighboring rights exist by licensing convention, while in a few (such as Spain, Hungary, and Belgium) they exist by law. Generally, countries that are signatories to the WIPO Performances and Phonograms Treaty (WPPT) of 1996 require payment of digital performance royalties on sound recordings.[10]

A few streaming DSPs also sell permanent downloads, but the market for downloads has shrunk worldwide as fans have abandoned them for streaming (or vinyl). Most of the remaining download-focused services, a selection of which is shown in Table 2, focus on indie music (i.e., not from major labels), music for DJs (electronic, EDM, House, etc.), Western classical music, and high-resolution files for audiophiles in lossless formats such as FLAC and PCM.

Service	Focus
Bandcamp[11]	Indie music
Beatport	Music for DJs
Classical Archives	Classical music
eMusic	Indie music
HDtracks	High-resolution lossless
Jamendo	Indie music
Juno Download	Music for DJs
Magnatune	Indie music
ProStudioMasters	High-resolution lossless
Supraphonline	Czech/Slovak music
Traxsource	Music for DJs

Table 2: selected digital download services and their areas of musical focus.

B. Video DSPs

Some of the most popular music services today are video services. Virtually all of these are based on user uploads and opt-out music licensing, although they also accept submissions from

[10] See https://www.wipo.int/treaties/en/ip/wppt/summary_wppt.html. For a list of signatories, see https://www.wipo.int/treaties/en/notifications/wppt/treaty_wppt_1.html.
[11] Bandcamp also acts as a label for its artists: it produces vinyl, CDs, and cassettes. Physical products contribute a large percentage of Bandcamp's revenue.

record labels and distributors. The very few video DSPs that use opt-in licensing—as well as paid-subscription revenue models—are small ones that primarily offer catalogs of long-form live concert videos; examples include Qello Concerts of Canada (pop music) and Medici TV of France (classical music).[12]

Otherwise, all video services that use music are based on user-uploaded content. YouTube is the largest music DSP (of any kind) in the world by sheer numbers, yet it's difficult to measure its exact user base for music because music is only a subset of its content: a 2019 study found that 22% of the video views on YouTube are of videos that their uploaders categorized as "Music," which is one of 15 category choices.[13] Most "music videos" on YouTube consist of entire songs, whether they are official label videos or those that users post. Yet the vast majority of *views* of music videos on YouTube are of "official" label-supplied videos of studio recordings rather than user uploads.

In other words, although music on YouTube is mixed in among a huge amount of other content, YouTube has become essentially another licensed music service, albeit one that is video-based. In fact, an especially large number of music video views on YouTube are of videos distributed by Vevo, a joint venture of the major record labels that distributes official music videos on YouTube and several other video services, mostly channels on Internet TV set-top boxes (Apple TV, Roku, Amazon Fire TV, etc.), Smart TVs, and pay-TV operators around the world.

On the other hand, services such as TikTok and its competitors such as Reels (Meta) and Triller use a lot of music but are not really music services per se. These services use music in video clips that are more like social network posts than music releases. TikTok, for example, started out in 2017 as a platform for users to post videos of themselves lip-synching or dancing to short clips of music. TikTok eventually acquired licenses from record labels. The music clips used in short-form video services are known as *derivative works* in copyright law and generally require licenses from copyright owners.

The emphasis in these services is on the users who post the videos rather than on the artists who play the music.[14] A growing number of musical artists have their own TikTok channels, but the most popular channels on TikTok are not those of superstar musical artists. Some artists use TikTok clips as promotional vehicles for full-length music plays on other DSPs. This has led TikTok to launch two opt-in style DSPs of its own, Resso and TikTok Music, though only in a handful of countries thus far (see Table 1). TikTok should be able to use its own DSPs to keep users on TikTok services instead of losing them to other DSPs.

In addition to short-form social video platforms, gaming platforms such as Fortnite and Amazon's Twitch are also important platforms for music—most often for video livestreaming of musical performances. Several other livestreaming platforms exist as well. For some of these

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[12] YouTube Music is categorized here as an interactive streaming music DSP, although it features a lot of video content from YouTube.

[13] Pex, Music became even more valuable on YouTube in 2019, https://pex.com/blog/state-of-youtube-2019-music-more-valuable/.

[14] For example, musical artists' accounts don't get any special designation on TikTok, apart from TikTok's standard identity verification program; fans of artists can take user and account names that lead to confusion. E.g., there are currently TikTok account names such as the.real.ladygaga, planet_doja_cat, and taylorswifttoday, which list their user names as "Lady Gaga," "DOJACAT," and "Taylor Swift."

platforms, disputes exist over whether responsibility for proper music licensing should fall to the platform companies or their users.

Apart from the opt-in vs. opt-out dichotomy, another important licensing difference with video DSPs is that they require synchronization ("synch" or sometimes "sync") licenses. Copyright owners require synch licenses for using music as part of a presentation of other media, such as a video, game, or VR/AR experience.[15] See p. 36 for more on synch licensing.

C. Labels

Once an artist makes a recording that they want to release to the public, there are three general ways to do it: through a major label, an independent ("indie") label, or an independent digital distributor. All of these provide artists with ways of making their music available on DSPs and collecting royalties from plays on those DSPs. The first two of these also make music available on physical media such as vinyl, CDs, and cassettes. See p. 29 below for a discussion of digital distributors, which work with independent artists in lieu of labels.

The major labels currently are those owned by three global recorded music companies: Universal Music Group (UMG), Sony Music Entertainment (SME), and Warner Music Group (WMG). Each of these owns several labels; for example, WMG owns labels such as Atlantic, Elektra, Asylum, Atco, Reprise, and Rhino; Sony Music owns Columbia, RCA, Epic, and Arista; Universal owns Interscope, Geffen, Capitol, Republic, Island, Def Jam, Verve, and Virgin. Both major and indie labels typically own copyrights in artists' sound recordings, known as *master rights*, with two exceptions: a few superstar-level artists have been able to negotiate deals with major labels in which they retain ownership of master rights; and some indie labels will allow artists to retain master rights. Collectively the major labels own 70% of the global market for recorded music,[16] a share that is slowly decreasing over time. There is also a "fourth major" called Merlin, which negotiates licenses with DSPs on behalf of its member indie labels, which collectively account for another 15% of the global market.

Otherwise, the main differences between major and indie labels are tradeoffs between relationships and resources. Indie labels tend to give artists more personal attention and creative freedom, and they typically offer more artist-friendly contract terms, such as release of master rights to the artist after a few years. Majors can pay bigger advances and have a lot more resources to market a record. The vast majority of music at the top of the charts worldwide is released on a label owned by one of the majors.

D. Publishers

Music publishing covers musical compositions (by songwriters or composers) rather than recordings; this is explained in more detail below. The three major recorded music companies each have corporate siblings that are music publishers: Universal Music Publishing, Sony Music Publishing, and Warner Chappell Music respectively. The music publishing market is less concentrated than recorded music; Kobalt Music Group and BMG are also often included in lists

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[15] This is not a statutory right in copyright law but rather an industry convention, one that goes back to the days of silent films when a music track was "synched" to a movie as it played in a theater.

[16] Music & Copyright, Recorded-music market share gains for SME and the indies, publishing share growth for UMPG and WCM, April 25, 2003, https://musicandcopyright.wordpress.com/2023/04/25/recorded-music-market-share-gains-for-sme-and-the-indies-publishing-share-growth-for-umpg-and-wcm/.

of top music publishers worldwide. As with independent labels, there are far too many independent music publishers to count.

In addition to traditional music publishers, a new breed of service providers has arisen to help independent songwriters collect royalties from various sources without claiming a share of copyrights. These are called publishing administrators or admin publishers. They are analogous to independent digital distributors, and they are discussed below at p. 35.

E. Analytics Tools for DSP Data

Artists, managers, and labels have a number of online tools at their disposal today that help them go beyond chart data and analyze the torrent of information related to artists and their music that comes from DSPs and social platforms. These tools are useful for planning single releases, marketing campaigns, tours, social media presence, and many other activities. Each of the major DSPs has its own analytics tools (e.g., Spotify for Artists, Apple Music for Artists, Deezer for Creators), but a competitive market has also emerged for third-party analytics tools that analyze data across multiple DSPs and other platforms.

A popular choice for cross-platform music data analytics is Chartmetric. Chartmetric tracks artists' and songs' performance on several DSPs and broadcast radio; artists' metrics on social networks such as TikTok, Facebook, Instagram, and Twitter; fan engagement metrics across multiple platforms; synchs of songs on movies, TV shows, and games; concerts; and much more. It has powerful charting tools and enables users to download data for their own further analysis. Chartmetric is constantly adding features and improving its data visualization (look and feel).

On the other hand, Chartmetric is the most expensive of these tools; it is widely used within record labels, artist management companies, and so on; less so by individual artists or at small indie labels. At this writing, a full Premium plan costs USD 140/month per user. Chartmetric also makes an Artist plan available at a price (at this time of writing) of USD 10/month for up to 3 artists, which provides some but not all of the features of the Premium plan, as well as a free plan with basic data.

Other powerful multi-platform music data analysis tools include Soundcharts and Viberate. Both have lower-cost artist plans; Viberate also offers a free "Lite" plan for artists.

F. Scarcity-Based Distribution Channels in the Digital Age

Digital distribution channels have all been based on the idea that digital content is trivially easy to copy and send to other people. DRM on digital downloads limits what users can do with downloads they purchase online, but it does not limit the supply of those files from online services. DRM-free digital downloads have no technical restrictions on copying and redistribution.[17] And streaming services employ flavors of DRM on streamed content, but the fundamental idea of these streaming services is to make music available to subscribers on as wide a variety of devices as possible in as many locations as possible. In other words, all of these digital music channels rely on ubiquity of digital content and digital networks.

[17] Download services such as Amazon Music also provide "cloud sync" capabilities, which automatically download copies of music users purchase to all of their devices as long as those devices have the service's app installed and are logged in under the user's ID.

Of course, physical music products do not operate this way: they are limited in number and require cost and effort to reproduce. In recent years, music distribution channels have arisen that re-introduce that notion of scarcity and create music products that are collectible. The importance of scarcity-based offerings is increasing again as fans look for ways to engage with music and artists beyond merely hearing them on streaming services.

Vinyl

The biggest scarcity-based channel for music today—once again—is vinyl. The market for vinyl LPs and 7-inch singles hit bottom in the mid-2000s, when digital downloads were on the rise and CDs were still selling relatively well. Now vinyl sales have grown again. Today vinyl is a multi-billion-dollar market worldwide and represents at least 8-10% of overall music industry revenue, much more if used vinyl sales count. Vinyl now sells more than CDs and digital downloads combined at prices that, adjusted for inflation, are about equal to what they were during vinyl's peak period in the 1970s. In many countries, vinyl is now the second largest source of music industry after streaming, albeit still much smaller than streaming.

One big difference between the vinyl market of today and the original vinyl market is that vinyl records are used as tokens of fandom as much as they are used for listening: one survey found that fully 50% of buyers of vinyl in 2022 did not own turntables.[18]

Cassette tapes, which were most popular in the late 1980s, have also enjoyed a resurgence, but on a much smaller scale than vinyl. CDs have remained popular in recent years in certain markets, such as Japan.

Non-Fungible Tokens (NFTs)

The other noteworthy scarcity-based music distribution channel today is non-fungible tokens (NFTs). NFTs are a byproduct of the blockchain technology revolution of the 2010s.[19] The most widely known and most popular use of blockchain technology is for cryptocurrency, in which a blockchain (such as the Bitcoin blockchain) contains a record of every transaction in that currency that has ever taken place. But blockchains are also used to track transactions that don't involve currency. For example, some physical product retailers use blockchains to track goods that come to them from suppliers and wholesalers.

NFTs are another example of this use of blockchains strictly as transaction records. An NFT identifies a purchase of something that is not "fungible," i.e., is not currency. It is simply a record of a purchase—of something—that is stored on a blockchain. It's like a publicly accessible receipt for a transaction, unalterable proof ("bragging rights") that a user paid for something. That "something" could be anything, but in the world of NFTs, it's typically one or more items of digital content. Artists typically create ("mint") NFTs in limited numbers or as single items.

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[18] Luminate Data, Luminate U.S. Year-End Music Report for 2022, https://luminatedata.com/reports/luminate-2022-u-s-year-end-report/ .

[19] A blockchain is a database of transaction records, one that is out there on the Internet and has no owner; instead, everyone who wants to participate in transactions on a given blockchain has a complete, up-to-date copy of the entire blockchain. There are elaborate protocols to update blockchains whenever anyone completes a transaction, to ensure the validity of the transaction and the integrity of the blockchain. (It is only possible to add transactions to a blockchain, not to change or delete them.)

In music, the most typical configuration for NFTs is a digital audio file combined with a piece of digital visual art. Other music oriented NFTs have been created for physical items such as tour props and rare musical instruments.[20] They have also been created for experiential items such as concert attendance, like digital ticket stubs.

The relationship between NFTs and copyright has been the subject of some interest. For NFTs on digital content, with rare exceptions, the content has no DRM protection, so that anyone can listen to or view it; yet the "ownership" of an NFT belongs to only one user at a time. However, from a legal standpoint, a buyer of an NFT does not actually own anything. As with vinyl LPs and other physical products, the NFT buyer does not own copyright in the musical composition or sound recording. But unlike physical music products, the NFT buyer does not own anything else either. Likewise, if the NFT is on a physical item (such as a tour prop), the NFT buyer does not own the physical item. The NFT itself is merely a transaction record, and NFT systems merely replicate certain aspects of copyrighted materials in the digital domain.

For example, NFTs can be resold or given away, just as CDs and vinyl can. If an NFT is resold, the user associated with the transaction record on the blockchain changes. To some extent, this mirrors the concept of *exhaustion* in copyright law, which generally states that a seller of a copyrighted work exhausts its rights in the copy of the work, so that the purchaser has the right to dispose of it (sell, lend, rent, give away) as they wish. NFT records are stored on blockchains that support *smart contracts*, which are code routines that implement sets of rules that run whenever an NFT is minted or changes hands. Smart contracts for NFTs typically implement payments of resale royalties to creators (and sometimes commissions to NFT platforms) when NFTs are resold. In this sense, the mechanics of NFT can diverge from those of physical copyrighted works, in that some countries do not support artists' resale rights a/k/a *droits de suite*.[21]

There are dozens of NFT platforms, some of which focus on specific types of content (music, visual art, etc.) while others are more general. Users have *wallets* that show information about the NFTs that they have purchased. These can be web browser plug-ins, mobile apps, or even hardware devices. When a user resells an NFT, the record of that NFT disappears from that user's wallet and appears in the buyer's wallet. NFTs are typically purchased using the cryptocurrency supported by the blockchain that the NFT is on, such as ETH for the Ethereum blockchain. Some NFT platforms allow purchases in standard currencies through traditional methods such as credit cards.

NFTs enjoyed a period of hype in 2021, with average prices exceeding USD 1000 each and the peak selling price for a single music NFT over a million dollars. One reason for this is that cryptocurrency speculators drove much of the market activity. Another is that Ethereum, the most widely used blockchain that supports smart contracts, used a method for validating new transactions that was extremely costly in its use of computing power; to compensate for the electricity use and environmental impact, NFT platforms charged "gas fees" that often exceeded USD 100, making it impractical to sell NFTs at vinyl-like prices.

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[20] Examples of the latter have included NFTs on Stradivarius violins and guitars that were owned by John Lennon.

[21] Artist resale rights apply mainly to single- or limited-edition visual artworks, and have not been known to apply to musical works. The world is roughly evenly divided between countries that support *droits de suite* and those that do not.

But starting in late 2022, Ethereum switched to a new technology architecture that reduced computing power requirements drastically, and gas fees have been decreasing or going away entirely. That, combined with the general exodus of crypto speculators from the market, caused NFT prices to plummet; at this time of writing average prices are comparable to those of vinyl LPs, and only a small number of music NFTs are now considered valuable collectors' items. The research firm Water & Music built a database of music NFT sales through early 2023 that put the total revenue from music-related NFTs in 2022 at just under USD 100 million; this is only about 2% of worldwide physical music revenue.[22]

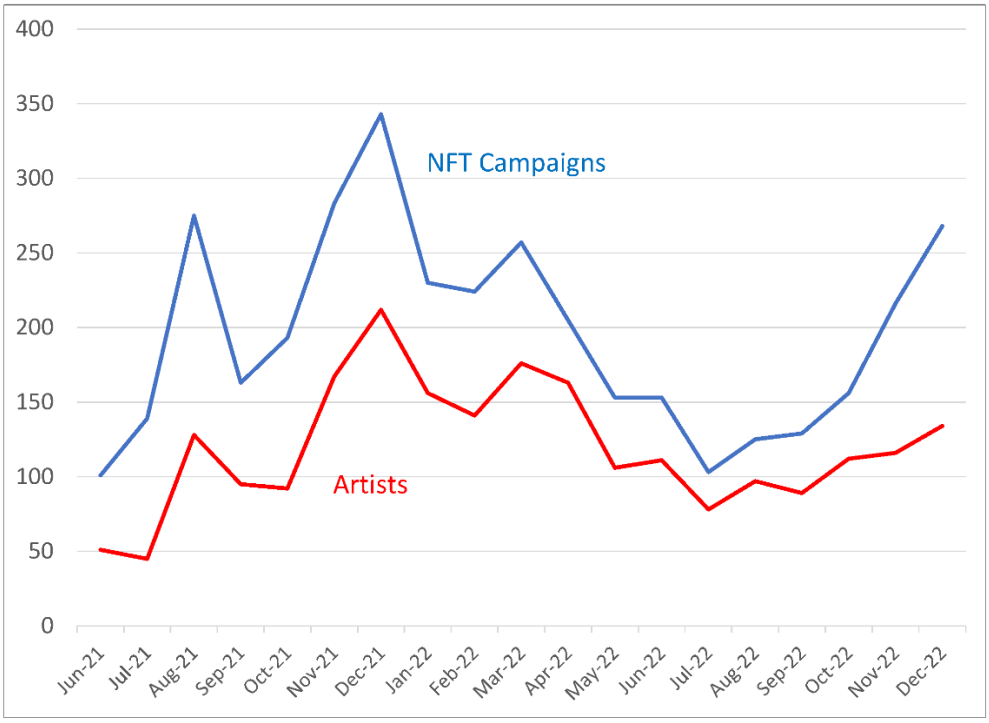

Figure 2: NFT campaigns and participating artists, June 2021 through year end 2022. Source: Water & Music.

Yet NFTs are not dead. On the contrary, they have been following the typical trajectory of new technology adoptions, known as a "hype cycle,"[23] which consists of a hype-driven spike, followed by a decline as the hype wears off, followed by slow, steady growth. The number of artists who are minting NFTs and the NFT campaigns they are minting are slowly increasing, as shown in Figure 2. it looks as though NFTs are destined in the near- to medium-term to become an established category of merch-cum-content similar to vinyl LPs.

[22] Global physical music revenue was $4.6B for 2022. IFPI, Global Music Report 2023, https://globalmusicreport.ifpi.org/.
[23] Gartner, Gartner Hype Cycle, https://www.gartner.com/en/research/methodologies/gartner-hype-cycle.

III. Digital Music Distribution Trends and Challenges

Streaming has dominated the music industry in terms of revenue and music consumption worldwide since the late 2010s. As shown in Figure 3,[24] streaming is the latest in a series of formats for distributing recorded music to the public.[25] Revenue and consumption from streaming is still growing, and although growth is now slowing down, streaming has already dominated the market for a longer period of time than tapes or downloads.[26] Streaming currently drives 76% of recorded music revenue worldwide and growing.[27] It is likely that by 2025, inflation-adjusted recorded music revenue will reach or exceed the level it achieved in the late 1970s, at the height of the era of LPs and cassettes;[28] though it remains to be seen whether revenues will ever reach their all-time peak levels set in 1999 at the peak of the CD era before Internet file-sharing caused industry revenues to collapse.

[24] Figure 3 shows United States recorded music revenue figures, adjusted for inflation, going back to 1973. USA is the only country for which these detailed historical figures are readily available, but it is representative of economically developed countries.

[25] Howie Singer and Bill Rosenblatt, *Key Changes: The Ten Times Technology Transformed the Music Business.* Oxford: Oxford University Press, 2023.

[26] Bill Rosenblatt, New Music Industry Numbers From RIAA And Edison Research Show Growth Slowing, March 9, 2023, https://www.forbes.com/sites/billrosenblatt/2023/03/09/new-music-industry-numbers-from-riaa-and-edison-research-show-growth-slowing/.

[27] IFPI 2023 Global Music Report, not counting performance or synchronization revenues, which apply across multiple delivery modalities.

[28] The sharp drop in revenues after 1978 was due to a combination of the 1979 oil crisis, in which the price of oil (a raw ingredient in making vinyl) shot up while the world economy went into recession, and the rise in home taping of albums as moderate-priced cassette equipment became capable of high audio quality.

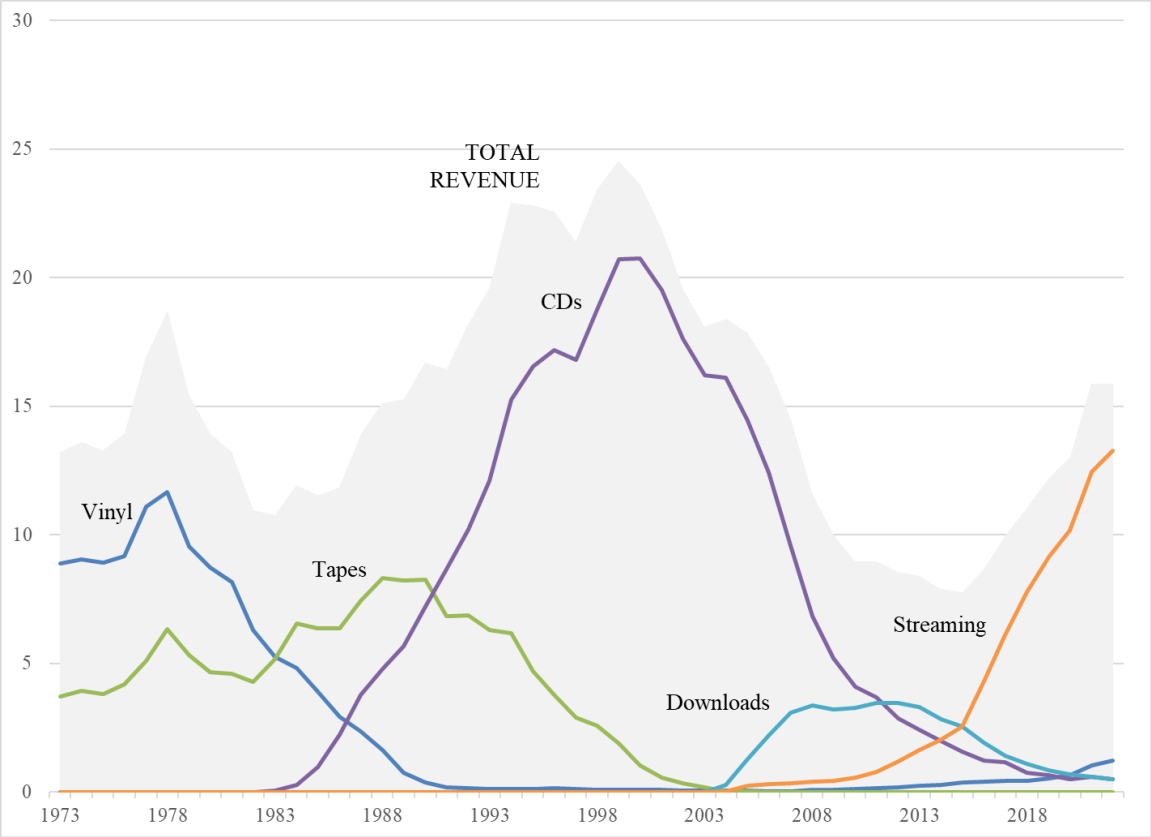

Figure 3: Half a century of recorded music revenues by format, USA, USD billions, 2022 dollars. Source: RIAA.

Music creators face several distinct structural challenges in today's streaming-dominated market.

A. Channel Control

One is control of distribution channels. The history of music technology is marked by several innovations that took channel control away from artists and record labels and put it into the hands of fans. Here are some previous examples:

- **Home taping, mid-1970s**: innovations such as chromium dioxide tape and Dolby noise reduction made it possible to record music onto cassette tapes on home equipment with sound quality approaching that of vinyl at a reasonable cost. This enabled mixtapes as well as unauthorized copies of albums.
- **CD re-sequencing, 1980s**: CD players had Shuffle buttons and (in more advanced models) the ability to program one's own sequence of tracks. This led fans away from listening to albums as the artists and producers intended.
- **Digital downloads, 2000s**: digital downloads broke albums up into individual tracks, which led to further declines in album sales relative to single track sales and, arguably, a decline in the primacy of the album as a music release configuration.
- **Streaming playlists, 2010s**: the majority of music played on streaming DSPs comes from playlists rather than albums or tracks that users select individually. Placement on widely-followed playlists—which are controlled by either DSPs or users—is now the

"coin of the realm" for music exposure on streaming services. Playlists can be either DSP-generated or user-generated. DSP-generated playlists are by human editors, algorithms, or both.[29]

The current trend that moves channel control further towards users is the rise of mobile-friendly short-form video services such as TikTok and their easy-to-use video editing tools. These are rising in popularity extremely quickly: statistics on TikTok usage vary, but TikTok is reported to have surpassed a billion monthly active users worldwide,[30] compared to 2.5 billion for YouTube around the same time (and half a billion for Spotify). As mentioned above, short-form video services lend more importance to users who use music as background for their videos than to the artists behind the music. This makes it more difficult for artists to gain exposure for themselves or even their complete music tracks, and it is causing some artists to create more "TikTok-friendly" tracks that, for example, start with the hook or chorus instead of waiting until after an intro and/or verse.

B. Supply and Demand

Another trend that imposes structural challenges on today's digital music market is the huge and growing disparity between supply and demand. Streaming music services currently ingest more than 100,000 new tracks into their catalogs worldwide *every day*. In contrast, labels released only a few thousand records (singles and albums) *per year* during the vinyl era. And the number is growing; for example, Luminate Data maintains a database that had data on 193 million recordings[31] as of the end of 2022; the database has been growing at a rate of more than 20% per year in the last five years.[32] This explosion of music is, of course, due to the ever-increasing ease of recording and releasing music through innovations such as 4-track cassette-based home studios, the Internet, DAWs, and the easy availability of digital samples. Yet while the amount of music available on streaming DSPs is growing at a torrid pace, demand is hardly growing at all, especially in countries where high percentages of the population have Internet access and connected devices. There are only so many hours in a day when people can listen to music.

The gap between supply and demand first became apparent in the licensed music market with digital music download services in the mid-2000s, which would compete on (among other things) how many million tracks were in their music libraries. Early Internet pundits predicted a bright future for lesser-known creators in the "long tail," compared to the limited inventories of content available at physical retailers such as bookstores and record stores.[33] Of course, the big advantage of "limitless" inventory of music in the digital world is that it makes "every record ever recorded"[34] available to anyone with an Internet connection. But it soon gave rise to the problem

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[29] Among the most highly popular and influential playlists today are Spotify's Today's Top Hits and Rap Caviar; both are editorial playlists. Spotify also has "algotorial" playlists that editors generate with the help of algorithms.

[30] See for example DemandSage, 45+ TikTok Statistics For Every Marketer (July 2023), July 22, 2023, https://www.demandsage.com/tiktok-user-statistics/.

[31] Unique ISRCs; see below.

[32] Top Entertainment Trends for 2023: What the Data Says, Luminate, presentation given by Luminate CEO Rob Jonas at SXSW 2023, https://luminatedata.com/reports/sxsw-top-entertainment-trends-for-2023/.

[33] See for example Chris Anderson, *The Long Tail: Why the Future of Business Is Selling Less of More.* New York: Hyperion, 2006.

[34] https://www.youtube.com/watch?v=SRjl_nIRSLk.

of discovery: the bigger the variety of music available, the harder it is to find something you might like.

Digital content services have been casting about for better ways for users to find content since the early days of digital. For example, some discovery techniques developed during the 2000s introduced ways of using user-contributed ("crowdsourced") information, while others were based on metadata created by trained professionals; and more recent techniques have harvested comments posted on websites, blogs, and social media to aid in discovery. Another technique known as *collaborative filtering* computes similarities between music you have played and music other users have played, with the idea that if other users' tastes are similar to yours, then music they listen to might be of interest to you too.

As the discussion of discovery metadata below (see p. 27) suggests, this is an area that is still considered to be ripe for improvement. Although more and more music has been released, more and more music remains undiscovered—and it has been argued that more and more music "clutters up" the offerings on DSPs. Discovery features are considered more important in comparing today's mainstream DSPs than the sizes of their catalogs.

One result of this is that it is getting harder and harder for new or independent artists to get their music discovered. In fact, the "long tail" theory has been somewhat turned on its head: the biggest music stars are getting an even bigger share of attention than they did in the pre-Internet days. Luminate's data, for example, shows that 42% of the recordings it tracks in its database received 10 plays or fewer in 2022, and 24% received no plays at all, while less than 400,000 tracks (0.2%) received at least a million plays.[35]

In response to this, record labels and music publishers are redoubling their efforts to promote catalog music—defined as music that is at least 18 months old—because it's more likely to be familiar to people already. This is one of the main factors[36] that has driven the recent spate of deals in which catalogs of legacy musical artists (Bob Dylan, Bruce Springsteen, Neil Diamond, etc.) and even recent stars (Shakira, Luis Fonsi, David Guetta), have been bought and sold for amounts reaching up into the hundreds of millions of dollars. The major labels are also pushing DSPs to emphasize their "premium music" over music that is, for example, generated automatically as background music. And fans are increasing the share of catalog music they listen to: for example, Luminate data shows that the share of catalog music being streamed grew steadily from 67% in 2019 to 75% in 2022.[37]

C. Fraud and Piracy

The explosion in recorded music has intensified the struggle for more plays on streaming services. And just as broadcast radio begat payola (bribes paid to radio stations to play songs on the air) when radio was the most important way to promote recorded music, streaming has led to streaming fraud—the generation of fake streams to boost play counts on DSPs.

[35] Top Entertainment Trends for 2023.
[36] Along with historically low interest rates.
[37] Top Entertainment Trends for 2023.

Streaming Fraud

Various forms of streaming fraud exist, such as setting up "stream farms" of computers that automatically play songs repeatedly, or using identity theft to take over existing user accounts so that they play certain music. A study in early 2023 in France suggested that at least 1-3% of streams in that country, possibly much more, are fake.[38] And although many DSPs take steps to detect and stop streaming fraud, new techniques are being developed all the time, thanks to what has become a lucrative market for play count boosting services.

Another form of stream fraud involves uploading unauthorized copies or remixes of hit songs under false artist names to generate royalties for the uploaders. This is just the latest way in that digital piracy[39] has affected the music industry, although in this case it involves gaming the system to generate royalties instead of getting music for free.

File Sharing and Stream Ripping

The potential of digital devices and networks for piracy has been well known since the 1990s. Napster[40] and other early Internet-based file-sharing services have been credited for having a devastating effect on music industry revenue: total recorded music revenue dropped by about 60% (adjusted for inflation) in the decade after the industry's peak, CD-dominated year of 1999. A US federal court found Napster liable for infringement and ordered it shut down in 2001.

After Napster's shutdown, a series of other file-sharing network services appeared that attempted to skirt the aspects of Napster that led to its legal liability, such as its central directory of files and their online locations. Many of these post-Napster file-sharing networks were also shut down through legal actions; others (such as Gnutella and BitTorrent) were designed to shift liability away from technology developers to individual users. Some of these still exist, though they are not used as much for music file-sharing anymore.

Instead, the primary means for music piracy nowadays is "stream ripping"—capturing streams into files on users' devices. The most popular form of stream ripping is technology that turns YouTube streams into files on the user's device.

Notice and Takedown

Since the late 1990s, rightsholders in many countries have been able to use a simple process called *notice and takedown* to get their content removed from online services where it's posted without permission. This process was first defined in the United States as part of a law enacted in 1998, the Digital Millennium Copyright Act (DMCA). The relevant part of the DMCA says, in essence, that if you send an online service a notification of content that was posted on the service without your permission, the service can avoid copyright liability if it removes the content

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[38] Centre national de la musique, Fake streams, real phenomenon: the CNM working with the industry to fight streaming fraud, January 16, 2023, https://cnm.fr/wp-content/uploads/2023/01/CP_CNM_Manipulation-des-streams_ENG.pdf. Spotify, Deezer, and Qobuz provided data for the study.

[39] This term for copyright infringement is controversial, but contrary to widely held belief, this definition of "piracy" originated long before Internet file-sharing in the 1990s. See for example Adrian Johns, *Piracy: The Intellectual Property Wars from Gutenberg to Gates*. Chicago: University of Chicago Press, 2010.

[40] The music DSP called Napster that operates today (see Table 1) has nothing in common with the file-sharing network of the late 1990s other than the brand name.

quickly. Most websites and online services provide ways to send these notices, such as dedicated email addresses or web forms. And although the DMCA is law only in the USA, many online services that operate worldwide accept takedown notices, and laws similar to the DMCA exist in several other countries.

Yet DMCA-style laws and processes do not prevent the same content from being reposted after someone sent a notice and had it taken down. This is known as the "Whac-a-Mole problem,"[41] and it has led many copyright owners to become dissatisfied with notice and takedown. Some have called for a new type of scheme that they call "notice and staydown." As the name suggests, this involves the online service keeping records of content that is the subject of takedown notices and taking steps to ensure that no one posts it again. So far, no countries have implemented "notice and staydown" in law.

Aside from takedown notices, various technologies have been developed to mitigate digital piracy. The first was DRM (see p. 5). Although many people like to say that DRM for music died when Apple stopped using it on files purchased on iTunes, DRM is actually still used in almost all forms of digital music distribution, permanent file downloads being virtually the only exception.[42] All of the major DSPs use their own flavors of DRM on streams and conditional downloads.

Fingerprinting and ACR

Another technology that was originally developed to address piracy is *fingerprinting*, also known as *perceptual hashing.* Fingerprinting technology analyzes the bits of the content in a file and extracts a set of numbers that capture its essence (its "fingerprint"). A properly designed fingerprinting algorithm should return the same fingerprint for every instance of a given sound recording regardless of format, codec, bitrate, etc. Fingerprinting for sound recordings nowadays is considered to be quite accurate.[43] Technology also exists to detect musical compositions (e.g., in cover versions or live performances of songs); this is not yet quite as accurate as fingerprinting technology for sound recordings. The use of fingerprinting to extract a fingerprint of a file and look the fingerprint up in a large database of fingerprints of content to find a match is known as *automated content recognition* (ACR) or simply content recognition. Probably the best-known application of fingerprinting and ACR is the Shazam app for recognizing music in public using the microphone on a mobile device.

ACR was originally developed to be used in file-sharing networks to detect and block uploads of copyrighted music in the wake of the Napster shutdown. But file-sharing networks that used the technology were never popular. Instead, ACR became important for its use in rights administration. Its first major use for that purpose was by YouTube (see p. 6), as part of its initial license agreement with Warner Music Group in 2006. Today, copyright enforcement services use ACR to detect potentially infringing content in publicly accessible places online, such as

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[41] See https://en.wikipedia.org/wiki/Whac-A-Mole.

[42] Bill Rosenblatt, The Myth of DRM-Free Music, Revisited, February 26, 2017, https://copyrightandtechnology.com/2017/02/16/the-myth-of-drm-free-music-revisited/.

[43] An exception to this is in classical music. Fingerprinting algorithms often give "false positives" by claiming that different performances of a standard repertoire piece (e.g., Bach or Mozart) match a given sound recording. Ironically, most standard repertoire compositions are out of copyright even if the recorded performances aren't.

websites, blogs, and so on. Several such services exist today; the ones focused on music include MUSO and AudioLock of the UK, Digital Content Protection of Italy, and RightsCorp of the US. (These services send takedown notices, as described above.)

Impact of Piracy

There have been many studies that purport to measure the economic impact of piracy. A good recent summary of research in this area is a report written by three researchers for the United States Patent and Trademark Office in 2020,[44] although much of what it covers concerns video content rather than music. The upshot of the dozens of studies and meta-studies appears to be that piracy has had a negative economic impact on the music industry, one that has outweighed the positive impact from file-sharing that it promotes music and leads to legitimate purchases, though the size and proportion of that impact continue to be a matter of debate.

The impact of piracy from file-sharing has lessened over the past decade with the rise of streaming services that make enormous catalogs of music available. Studies by the copyright enforcement service MUSO show that overall piracy is down from its levels in the mid-2010s but slowly rising again thanks to stream ripping.[45] An industry consensus has emerged that while anti-piracy technologies and services have their places, legal services that are easy to use and provide lots of music at good prices with rich features are also effective weapons against piracy.

D. Generative AI

The problem of oversupply, discussed above, relates to another trend that will pose structural challenges for the music industry in the coming years: generative artificial intelligence (AI). Although AI as a field has been around since the 1950s, generative AI—AI techniques that generate content by themselves or with help from humans—has undergone a series of major breakthroughs in recent years. Generative AI tools for music are now widely available, often for free, and can be easy to use without much technical expertise.

AI will undoubtedly have profound effects on music and all other creative fields, and it's too early to predict exactly how it will affect the music industry. There are those who say that AI will diminish opportunities for musicians and others who say that it will expand them. Which of these turns out to be true will depend on many factors, including legal rulings and regulations[46] as well as advances in technology.

But one thing is for sure: whether AI is used to create, to assist humans to create, or to produce or distribute music, it will lead to even faster growth of the supply of music available to the public. In this respect, generative AI is the latest in a series of technologies that have sped up the rate of recorded music releases, as discussed above.

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[44] Brett Danaher, Michael D. Smith, and Rahul Telang, *Piracy Landscape Study: Analysis of Existing and Emerging Research Relevant to Intellectual Property Rights (IPR) Enforcement of Commercial-Scale Piracy*. United States Patent and Trademark Office, March 2020, https://www.uspto.gov/sites/default/files/documents/USPTO-Piracy-Landscape.pdf.

[45] Muso, Piracy Was Never Killed by Streaming, https://www.muso.com/magazine/piracy-was-never-killed-by-streaming.

[46] For example, whether laws or legal precedents emerge that require generative AI companies to take licenses to content that they use for algorithm training purposes.

It is conceivable that within the next few years, the pace of new music releases will hit an inflection point at which DSPs will no longer accept just anything that labels and distributors throw at them. DSPs historically competed with one another on catalog size; after a certain point, sheer catalog size might not be as important anymore. Conversely, DSPs also compete on the quality of discovery that they offer through playlists, search, navigation, social features, and so on; metastasizing catalogs leads to diminishing returns in discovery. DSPs may also find that despite the downward trend in storage costs, it may no longer be cost-effective to keep storing all that music. The evolution of download services towards niche markets, as shown in Table 2 above, may point the way to a future for streaming services that no longer attempt to offer "every record ever recorded" but also serve niche markets.[47]

[47] One example of this is classical music, which has many unique requirements for discovery metadata (see p. 22) and user interface features. Examples of classical-focused streaming DSPs with classical music only are IDAGIO (see Table 1) and Apple Music Classical, an offshoot of Apple Music that resulted from Apple's acquisition of another classical-focused DSP called Primephonic.

IV. Music Rights Administration

Section II of this guide described the various types of distribution channels in music today, along with the principal entities involved in distributing music to DSPs and processing rights and royalties. These entities, and others that I will describe here, are involved in a complex behind-the-scenes world of copyright law, royalty structures, licenses, data, and processes related to music. Success as a recording musician requires understanding this complexity. In this section, I explain the fundamentals of copyright infrastructure in music, the ways royalties are processed, and the tools and services that are available to artists to help them manage these processes.

A. Basics of Music Copyright

In copyright law, each piece of recorded music has two copyrights, which are shown in Figure 4. One is for the *musical composition*, also known as a *musical work*, created by a composer or songwriter, that an artist performs on the recording. This can be thought of conceptually as sheet music plus lyrics (if any). The other is for the recording itself, also known as a *sound recording* or *phonogram*. Of course, some music recordings are of songs that the performer also wrote, while others are not; in the latter case, the two copyrights belong to different people.

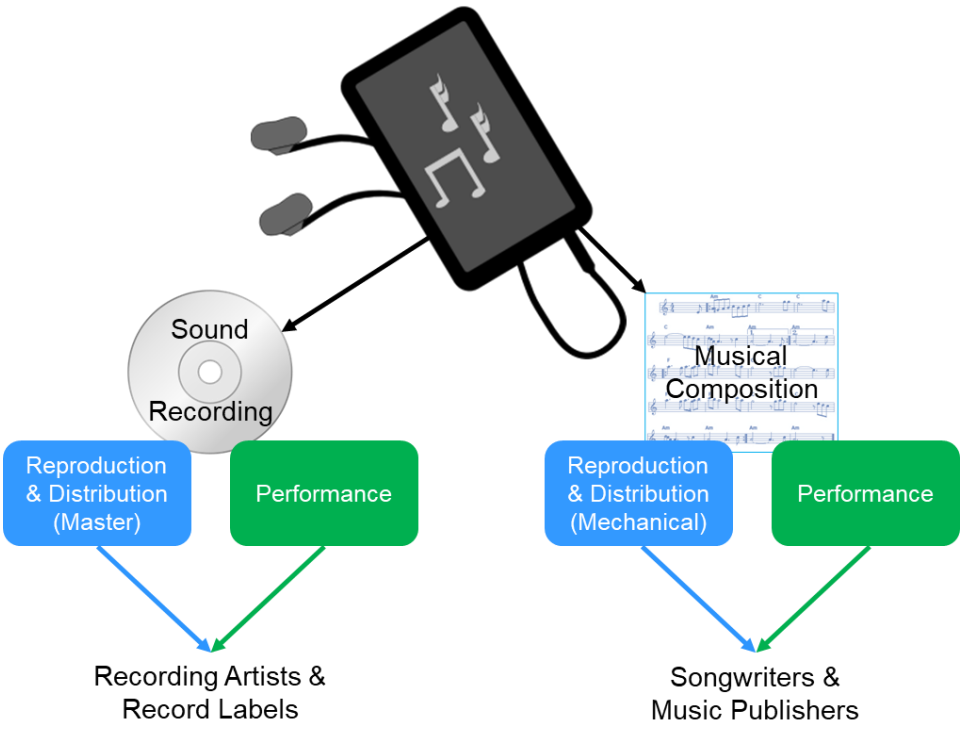

Figure 4: Each recorded music track has two copyrights, one for the composition and one for the sound recording.

Copyright law generally defines rights on each of these that the copyright owner has by default, unless and until they *license* those rights to someone else. These vary somewhat from one country to another, but generally they include rights to *reproduce* (copy), *distribute* (send to

someone else), and *publicly perform* a composition or sound recording; some territories define different rights, such as the right of *communication to the public* instead of public performance in European law. As mentioned above, reproduction and distribution rights are lumped together into one, whether by law or by industry convention, and called *mechanical rights* (for compositions) or *master rights* (for sound recordings).

Other aspects of music copyright also derive from industry conventions rather than purely from laws. For example, as explained above, labels rather than musical artists typically own the master rights to sound recordings; and in some territories songwriters typically split ownership of musical compositions with their music publishers. And other rights, such as synch and grand rights,[48] exist out of convention rather than directly in law.

B. Identifiers and Metadata

Despite its many complexities, the music industry is better organized than some other content industries regarding rights administration because it contains only a small number of well-understood royaltable items: there are compositions (songs), sound recordings (tracks), and collections of sound recordings (albums); and the latter two can be distributed as physical products (CDs, LPs, cassettes). These are the "atomic units" of music rights and royalty processing.

Standard Identifiers

Each of these units has standard alphanumeric identifiers that are recognized throughout the industry and used to automate rights and royalty processes. The most important are:

- **ISRC** (International Standard Recording Code), created in 1986 as a unique identifier for sound recordings, administered by IFPI, the international umbrella for recording industry trade associations. The first two characters of an ISRC are a country code, followed by three characters denoting the registrant (usually a record label), followed by two digits of the year of release.
- **ISWC** (International Standard [Musical] Works Code), created in 1995 as a unique identifier for musical compositions, administered by CISAC, the international umbrella organization for collective authors' and composers' rights management organizations, as explained below.
- **UPC** (Universal Product Code) and closely related **EAN** (European Article Number), international identifiers for physical products (of any type), designed in the early 1970s to be used with barcodes, administered by the international supply chain standards organization GS1.
- **IPI** (Interested Parties Information), created in 2001 as a unique identifier for songwriters and music publishers, administered by CISAC and Bureau International de l'Edition Mécanique (BIEM).
- **ISNI** (International Standard Name Identifier), a more recent standard launched in 2011 and increasingly used in the music industry as a unique identifier for recording artists, administered by the ISNI International Agency in the UK.

[48] Grand rights are rights to use music in stage performances, such as dance or musical theater.

For example, the 2015 hit song “Nena” by the Uruguayan group Marama, from their album *Todo Comenzó Bailando*, has the following identifiers:

- ISRC for *Todo Comenzó Bailando:* UYM121501381
- ISRC for single release of “Nena”: UYM121501378
- UPC for *Todo Comenzó Bailando* CD*:* 889853011926
- ISWC for “Nena”: T-046.527.890-3
- Songwriter: Ferra Agustin Duarte, IPI 00670940436
- Recording artist: Marama, ISNI 0000 0004 7029 012X

Supply Chain Metadata

In addition to identifiers, there are standard metadata schemes used in conveying information about these “atomic units” from entity to another. This is known as *supply chain metadata*. DDEX (Digital Data Exchange) is a standards body formed in 2006 that maintains a family of supply chain messaging protocol standards which contain metadata schemes.[49] The most commonly used of the several DDEX standards are those that apply to sound recordings:

- **ERN** (Electronic Release Notification), used by labels and distributors to feed release information to DSPs.
- **DSR** (Digital Sales Report), used by retailers and DSPs to report sales, usage, and/or revenue from music to righstholders or administrators.
- **CDM** (Claim Detail Message), used by some rightsholders and CMOs to send information to DSPs about royalties they are claiming for use of compositions embodied in sound recordings.

In addition, various standards maintained by CISAC are used on the composition side,[50] such as:

- **CWR** (Common Works Registration), used by music publishers to send information about compositions to rights administrators such as the collective management organizations (CMOs) that will be discussed shortly.
- **CCID** (Claim Confirmation and Invoice Details), an older standard used by some CMOs to send information to DSPs about royalties they are claiming for use of compositions embodied in sound recordings.
- **CRD** (Common Royalty Distribution), used for communication of composition usage among CMOs and publishers.

Creators need to create the metadata necessary to generate ERN and CWR messages when they write or record songs. There are apps that make this process easy by capturing metadata at the time of creation (including integration with digital audio workstations) and using it to register identifiers and ensure proper credits. One is Session Studio; another is Songspace, a division of the indie distributor FUGA.

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[49] https://kb.ddex.net/about-ddex-standards/.

[50] See https://www.cisac.org/formats#:~:text=The%20Common%20Royalty%20Distribution%20(CRD,or%20from%20society%20to%20members.

Discovery Metadata

The other important type of metadata in music is *discovery metadata*, which describes music in ways that are intended to be useful for searching, recommendations, website/app navigation, algorithmic playlist generation, and other forms of music discovery. The challenges of discovery amid the enormous supply of music available on today's DSPs are discussed at p. 18 above.

For a long time there were no standards (or at least no widely used schemes) for discovery metadata despite various attempts to create them. Some discovery metadata schemes are owned by third parties, such as Gracenote and Jaxsta, which sell them to DSPs and other services; others are proprietary to DSPs, such as the Music Genome Project (MGP) used in the DSP Pandora.

In 2019, record labels and DSPs got together to create a discovery metadata standard under the DDEX umbrella called Media Enrichment And Description (MEAD).[51] The primary impetus for MEAD was the rise of smart speakers, such as Amazon's Echo and Google Nest devices, which process voice queries for music (among other things). Labels and smart speakers had a mutual interest in ensuring that responses to queries such as "Play some cumbia" or "Play Bad Bunny's latest single" or "Play some jazz with alto sax" or "Play some background music for studying" are as on-target as possible.

The MEAD standard contains thousands of metadata attributes for each song. Tests have shown that the use of MEAD metadata improves smart speaker responses: for example, users are less likely to ask their smart speakers to "skip to the next song" when the smart speaker uses MEAD metadata provided by labels, and MEAD-tagged tracks are more likely to be included in algorithmically generated playlists.

C. Licenses

As mentioned above, copyright owners get exclusive rights to their works under copyright law. They can *license* these rights to others. Licenses are contracts that specify royalty terms, among other things. Licenses can be agreed by parties in a licensing scheme, in which case they are often called *voluntary licenses*, or they can be set by law, in which case they are called *compulsory licenses.* Voluntary licenses have royalties that are defined as part of the license agreement, while compulsory licenses usually have royalties defined by law, in which case they are called *statutory* royalties. For example:

- Record labels license their recordings to DSPs via voluntary licenses. Royalty rates for these licenses are typically confidential and vary according to several factors.[52]
- Compulsory licenses exist for specific situations, such as radio. This means that the licensee (e.g., a streaming radio DSP) can play whatever music it wants without having to ask permission in advance, but it must pay a royalty that is usually set as part of the

[51] DDEX, MEAD explained, https://kb.ddex.net/implementing-each-standard/media-enrichment-and-description-(mead)/mead-explained/.

[52] For a highly detailed and fairly recent set of statistics on streaming royalty rates from several DSPs around the world, see Soundcharts, What Music Streaming Services Pay Per Stream (And Why It Actually Doesn't Matter), June 26, 2019, https://soundcharts.com/blog/music-streaming-rates-payouts.

law (statute) that defines the compulsory license. Compulsory licenses vary from one country to another.

In addition, entities known as collective management organizations (CMOs) define and administer licenses for catalogs of content that comes from rightsholders that they represent. CMOs often offer *blanket licenses* to DSPs that cover all of the music that the CMO represents. The most common type of CMO is a performance rights organization (PRO), which manages public performance or communication-to-the-public licensing for catalogs of compositions or sound recordings. There are also mechanical rights organizations (MROs) that manage mechanical licenses for compositions.

Many countries have single designated CMOs that license music to DSPs, while a handful have multiple PROs that do this. Some CMOs manage only one type of right while others manage multiple rights; for example, PRS for Music in the UK manages both performance and mechanical rights on musical compositions. CISAC, the international organization for author and composer CMOs, maintains a list of its members at https://members.cisac.org/CisacPortal/annuaire.do?method=membersDirectoryList&by=society/ . Separate PROs also exist for performance rights in sound recordings in some countries; examples include PPCA (Australia), PPL (UK), PPM (Malaysia), Re:Sound (Canada), RMPL (India), and SoundExchange (USA).

A. Sound Recording Rights Flows

When a listener plays a song on a DSP, the record label or indie digital distributor (see below) gets a royalty according to the applicable license, which could be a voluntary license for a download or on-demand stream, or a compulsory license for a digital radio stream. The process is straightforward: the record label pays the recording artist a royalty according to terms in the artist's contract with the label. If the artist uses an indie digital distributor, the distributor passes the royalty along to the artist, less any commission that the distributor takes. Similarly, if an indie label distributor is involved, the distributor takes a commission and passes the remaining royalties along to the indie label, which shares royalties with the artist according to a contract.

Pro-Rata vs. User-Centric Royalties

Much has been said about the per-stream royalty rates that DSPs pay to record labels and distributors based on streaming play counts. Those rates tend to be quite complex and depend on various factors, so they are hard to pin down. A more recent controversy is not about per-stream rates but about how DSPs convert overall stream counts into royalties for artists and labels.

The traditional way has been simply for a DSP to make payments for a given song proportional to the total number of plays of that song by all of its users within each territory. This has come to be called the *pro-rata* method of calculating royalties. For example, if a DSP in Indonesia gets a billion total plays in a month and Mahalini Raharja gets 10 million of those plays, then Mahalini's label, Hits Records, gets 1% of the total royalties that the DSP pays out to record labels that month in Indonesia.

Some independent artists and labels claim that this model puts them at a disadvantage and rewards only the biggest stars, because it incentivizes gaming the system for "raw numbers" rather than building loyal fan bases. They have been pushing for an alternative called the *user-centric* royalty model.

With the user-centric model, the DSP divides up royalties generated from each user's subscription fees according to that user's plays, regardless of how much music each user plays in a given period of time. For example, assume a DSP in Chile charges CLP 4000 a month and pays 60% of its revenues to record labels and distributors.[53] Assume that a user of that DSP listens to Myke Towers 75% of the time and Quevedo the other 25% of the time. Then Myke Towers's label One World will get CLP 1800 (75% of the CLP 2400 that the DSP pays out in Chile for that user), and Quevedo's label Taste the Floor will get CLP 600. This will happen regardless of whether the user plays music for one hour or a hundred hours in a given month.

DSPs tend to resist the move to user-centric royalty payments; among other things, it would require major retooling of the software they use to calculate royalty payments, and it is more complex to implement and to audit. At this writing, SoundCloud and Deezer are the only global DSPs that have adopted a user-centric model. It's unclear how this change would really affect the distribution of royalties among superstars vs. indie artists or across musical genres; studies have been done and opinions vary,[54] though the experiences of SoundCloud, Deezer, and any other DSP that adopts user-centric royalties in the coming years should increase understanding.

B. Independent Digital Distributors

Some independent artists choose to go without labels and work with indie digital distributors instead. Digital distributors accept uploads of artists' recordings and associated metadata, and they submit the music to DSPs and to other types of services, such as wholesale digital music distributors, social media platforms, karaoke services, exercise machines, music services for restaurants and retail stores, etc. They handle various types of paperwork, such as registering for copyrights in countries where this is required before an artist can receive royalties. Digital distributors do not own master rights, and (except CD Baby) they do not produce physical music products. Some will help promote music on DSPs, such as by plugging songs for inclusion on their editorial playlists, but otherwise they do no marketing or promotion.

At this writing there are dozens of indie digital distributors. These are generally accessible to artists anywhere in the world, with a few exceptions. They vary in the number and location of DSPs to which they distribute music, though those lists are constantly growing and changing. Here are some other points of differentiation among these services:

- Some distributors will also contribute music to user-generated content platforms such as YouTube and SoundCloud that have programs for content monetization, or to social networks such as Instagram and Facebook.
- Some will distribute music videos to Vevo (see p. 10).

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[53] The DSP will pay additional royalties to composition rightsholders; see below.

[54] Several articles have been written about this. See for example: Huppe, Michael, Should Streaming Services Change How Artists Are Paid? Forbes.com, February 8, 2023, https://www.forbes.com/sites/forbesbusinesscouncil/2023/02/08/should-streaming-services-change-how-artists-are-paid/ (Huppe is the CEO of SoundExchange, the US sound recording PRO). Martin, Didier, Music Streaming Must Switch to a Fair and Logical Payout Model. There Is No Time to Lose. Music Business Worldwide, February 9, 2021, https://www.musicbusinessworldwide.com/the-streaming-music-industry-must-switch-to-a-fair-and-logical-payout-model-there-is-no-time-to-lose/ (Martin is CEO of Outhere Music, a Paris-based independent classical music label). Centre National de la Musique, Music streaming: impact of UCPS settlement model, January 2021, https://cnm.fr/wp-content/uploads/2021/03/1_CNM_UCPS_Detailed_report_January2021.pdf.

- Some let artists choose which DSPs will receive their music.
- Some let artists choose which territories (countries) to distribute their music.
- A few also offer publishing administration services (see p. 35).
- A few also offer mastering services.
- Some will accept cover songs (songs written and already recorded by others), and of those, some will obtain mechanical licenses for the compositions being covered.
- The speed at which these services get music onto the major DSPs varies from less than 24 hours to two weeks. This also depends on the DSP, the territory, and whether the song is a cover (i.e., whether it's necessary to clear mechanical rights for the song).
- Some offer mobile apps for artists, while others have websites only.

Pricing structures vary widely among indie digital distributors, and many have multiple plans to choose from. Most charge commissions on royalties; commissions may vary according to the plan the artist selects. Similarly, most charge distribution fees which also vary according to the plans they offer: some plans charge per release, others charge per number of artists, others charge annual flat fees, and so on.

At this time of writing, the only digital distributor that is entirely "free" (no commissions, no registration or distribution fees, no annual membership fees) at this writing is SoundOn, which TikTok launched in 2022. SoundOn distributes to many other DSPs worldwide besides TikTok's own services. It is possible that as TikTok continues to build out its own DSPs around the world, it will start charging for SoundOn or limit the DSPs that it works with.

A selection of widely used indie distributors and some of their attributes is shown in Table 3. A much more detailed comparison is available at https://aristake.com/digital-distribution-comparison/. Ari Herstand, author of the book *How to Make It in the New Music Business* (See References below), maintains this chart. Other more detailed comparisons are from the website ProMusicianHub at https://promusicianhub.com/online-music-distribution-companies/ and the music data analytics company Soundcharts at https://soundcharts.com/blog/music-distribution.

Distributor	Launched	Areas of Focus	Commission	Distribution Fees?	Publishing Admin?
CD Baby (Downtown Music)	1998	CDs	9%	yes	yes (Songtrust)
Ditto Music	2005		0	yes	
EmuBands	2005		0	yes	
TuneCore (Believe)	2005		0-20%	yes	yes
Horus Music	2006	Asia	0-20%	yes	
Symphonic	2006	Urban, Latin, Electronic	0-15%	yes	yes (Songtrust)
RouteNote	2008	Asia	0-15%	yes	yes

ONErpm	2010	Latin America	15%		
Music Gateway	2011		0-20%	depends on plan	yes
Record Union	2011		0	yes	
DistroKid	2013		0	yes	yes
Stem	2015	Advances to artists	10%		
Soundrop (Downtown Music)	2016	Covers	15%		
Amuse	2017		0	depends on plan	
LANDR	2017	Production & Mastering	0-15%	yes	
United Masters	2017	Hip-hop	0-10%		
Level (Warner Music)	2018		0%	yes	
Songtradr	2018	Synch Licensing	0-10%	yes	
SoundOn (TikTok)	2022		0		TikTok/Resso only

Table 3: Selected digital distributors for independent artists.

There are also distributors for indie labels, which get member labels' music onto DSPs so that the labels do not have to maintain the infrastructure to do this themselves. Examples of indie label distributors include Alternative Distribution Alliance (ADA), The Orchard, Ingrooves, and FUGA. These companies provide different services that depend on the needs of labels.

C. Composition Rights Flows

The royalty *calculations* for sound recordings in record label contracts and labels' licensing deals with DSPs can be very complex. But the *flows* of royalties for musical compositions from plays on DSPs are more complicated than for sound recordings. There are several reasons for this.

Sound Recordings Embody Compositions

One reason derives from the fact that sound recordings embody musical compositions, which—as discussed above—are separate entities from the sound recordings, with separate administrators and potentially separate creators. Labels have historically not passed information along to DSPs about the compositions embodied in their sound recordings. The reason for this has its roots in the development of the first licensed streaming music services.

In the early 2000s, the first DSPs with major label licensing were those owned by the major labels themselves. Under an agreement with the major music publishers, the labels cleared

mechanicals on the compositions through a licensing agency that was affiliated with the publishers themselves. This licensing agency, the Harry Fox Agency (HFA), maintained a large database of compositions and their associated sound recordings; it used that database to match recordings to compositions and cleared the mechanicals on those compositions. In other words, the major labels used an agency that represented music publishers (some of which were the labels' corporate siblings) to clear mechanicals.

But in the ensuing few years, the major labels spun out those DSPs as independent companies, and other independent DSPs launched. These DSPs still didn't get composition information along with the recordings that labels sent them, and they were not (or no longer) owned by record companies with corporate siblings that were music publishers. So the DSPs hired agencies such as HFA and others to clear mechanicals "after the fact" on their behalf in the same way. In other words, the burden of clearing mechanicals shifted from labels to the DSPs themselves.

None of these licensing agencies had a 100% complete, accurate, and up-to-date database of compositions matched to recordings, and they used various techniques to find compositions for recordings that were not in their databases. This led inevitably to errors and omissions in clearing mechanicals. Through the 2000s, the market for interactive streaming was small enough that few concerns were raised. But when streaming started to become the major source of revenue in the industry after 2011, composition rightsholders began to bring legal actions, with damage claims large enough that the industry began to take notice.

The industry sought solutions to this problem as the monetary implications got larger. Yet solutions would not be simple—especially since, in many cases, the labels themselves did not necessarily maintain composition information associated with the recordings in their catalogs in a timely manner for the release of music in digital form.[55] One idea was to solve the problem by creating a global database of music rights that everyone could use. A few such projects were started, but none succeeded, and this approach has been rejected as impractical and too complex.[56]

A more recent direction has been for DSPs to ask labels to send them information on at least one rightsholder per music track before they will ingest the music into their catalogs. Yet another has been to launch services that facilitate the sharing of data among different types of entities rather than attempting to store it all in a single large database. An example of this approach is the Verifi Rights Data Alliance, launched in 2022 by the startup Verifi Media.[57]

Compositions Can Have Multiple Songwriters and Publishers

Another reason why composition royalty flows are more complex than sound recordings is that while a recording always comes from one label or distributor, a recording's underlying

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[55] The historical roots of this state of affairs go back to the 1980s. At that time, labels were rushing to re-release albums on CD, which required re-clearing mechanicals on the compositions. Some labels decided to release some CDs before clearing the mechanicals, and a large backlog of uncleared mechanicals ensued. This led to lawsuits and settlements, but it established a "release now, clear later" practice that has largely persisted ever since in certain situations.

[56] The best-known of these attempts was the Global Repertory Database (GRD), which began in 2010 and was abandoned four years later.

[57] https://www.verifi.media/vrda.

composition may have multiple songwriters, each of which may have their own music publisher and may be affiliated with different CMOs. The average pop song today has about four songwriters; some have more than a dozen. And the odds are greater and greater that those songwriters come from different countries. For example, a song played in Uruguay might be written by songwriters in Chile and Argentina who are affiliated with the PROs SCD and SADAIC respectively; this can require the involvement of so-called *sub-publishers* and/or reciprocal agreements among PROs to recover foreign royalties.

In addition, rights ownership data can change over time; this happens much more frequently with compositions than with sound recordings. For example, some songs are released before the splits (royalty shares among songwriters) are finalized, or splits change after release; and publishers buy and sell rights to compositions all the time. All of this complicates composition royalty transaction processing.

Parties Involved in Composition Royalties Vary

Finally, the parties involved in composition royalty processing vary, not just from one territory to the next but also among rightsholders and DSPs within a given territory.

Figure 5 shows a typical composition royalty process for streaming in countries with single CMOs that process royalties for digital music use.[58]

[58] For a good high-level description of the processes and challenges, see *The Song Royalties Guide*, Music Managers Forum, at https://themmf.net/site/wp-content/uploads/2022/05/mmf-songroyaltiesguide.pdf.

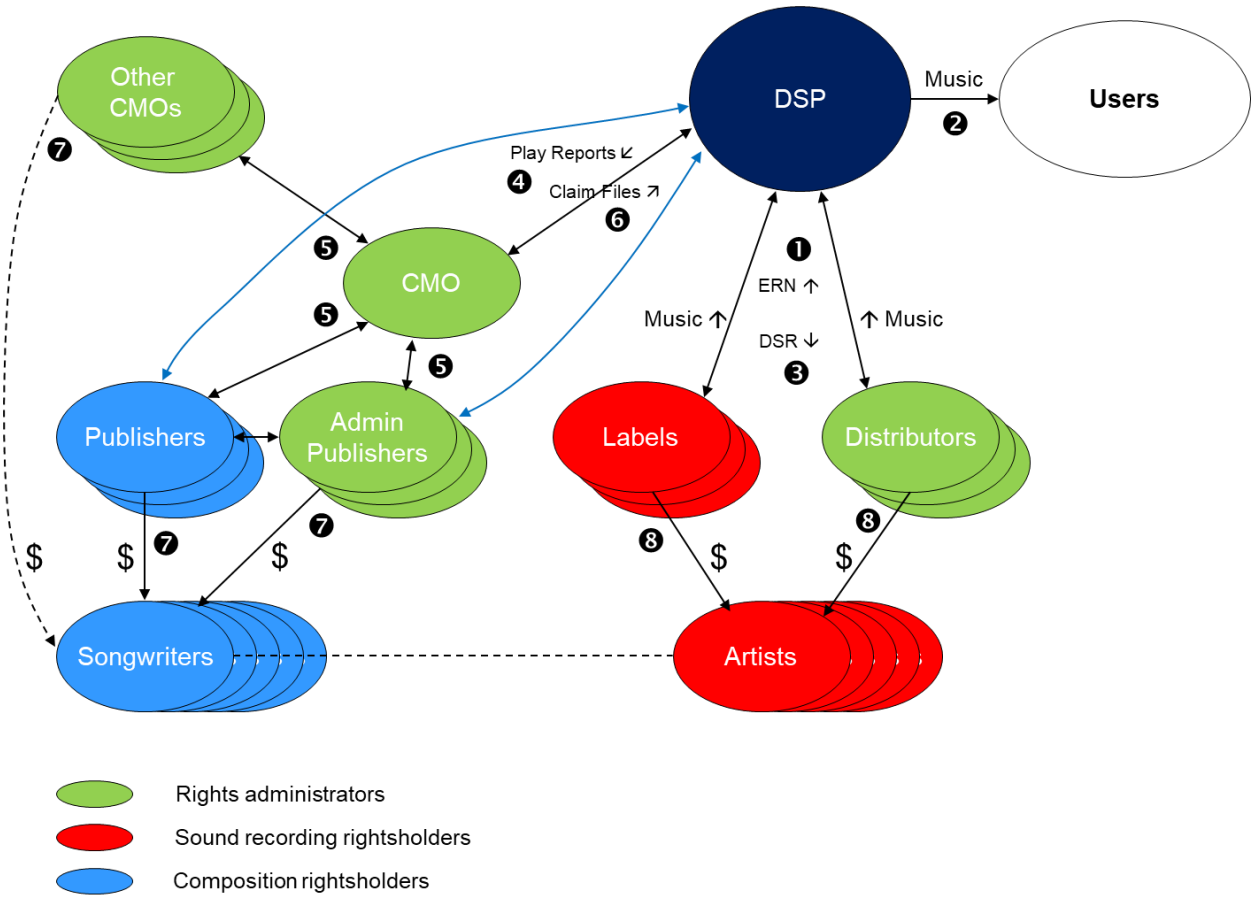

Figure 5: Typical process for sound recording rights flows from plays of music on a DSP.

The steps in this process, most of which are labelled in Figure 5, are as follows:

1. Labels and distributors send music along with metadata feeds in DDEX ERN files (see p. 26) to a DSP.
2. Users stream music on the DSP.
3. The DSP sends DDEX DSR files (see p. 26) to labels and distributors after the end of each reporting period (month or quarter). This data includes ISRCs to identify sound recordings, along with use counts, types of uses (paid subscription streams, free streams, tethered downloads), and other information.
4. The DSP sends play reports, which can also be in DDEX DSR files, to the local CMO for calculating royalties on composition performances, composition mechanicals, and (in most countries) sound recording performances. It also sends play reports to publishers with which it has direct licenses, which can be either traditional music publishers (e.g., Sony Music Publishing) or admin publishers (e.g., Songtrust; see below).
5. The CMO uses its own database and other technology to determine the compositions embodied in the sound recordings and their songwriters, publishers, and splits. It communicates with publishers, other CMOs, and possibly third parties in cases where it can't figure this out.

6. The CMO sends the DSP a claim file, which could be in CISAC CCID or DDEX CDM format, for that reporting period showing which rightsholders are implicated in the music played and what royalties are owed.
7. The DSP pays royalties to the CMO, which passes them on to rightsholders or other CMOs as necessary.
8. The DSP pays sound recording royalties to labels and distributors.

This is just a simple example. Many variations are possible, depending on the country's copyright laws and conventions, the DSP's deals with publishers, the capabilities of the CMO, and other factors. For example:

- A DSP may pay a publisher directly (denoted in blue lines in Figure 5) for the publisher's share of royalties while paying a CMO for the songwriter's share.
- DSPs may pay so-called special purpose vehicles (SPVs), which are partnerships between publishers and CMOs that represent Anglo-American repertoire separately from other repertoire.[59]
- The DSP could hold off on royalty payment if there is missing data or a dispute over rights ownership.[60]
- The DSP may operate in a country where there are multiple CMOs that license DSPs.
- Conversely, the CMO may operate in multiple countries or handle multi-territorial licensing, making it possible to process some multi-territorial rights through a single CMO.
- The DSP may have an arrangement with a rights administration service to clear and process mechanicals and/or sound recording performances itself, instead of the CMO doing this.

Yet another reason for the increased complexity of composition royalty transactions has to do with synch licensing on video DSPs; see p. 36 below.

D. Publishing Administration Services

Just as record labels take care of rights administration and royalty collection on sound recordings, music publishers manage rights administration and royalty collection on compositions. As the above implies, independent songwriters face complex rights administration tasks. And just as there are indie digital distributors for independent recording artists, there are publishing administrators (also known as *admin publishers*) for independent songwriters and small publishers. Some songwriters set up personal publishing entities, sometimes known as "vanity publishers," and entrust administration to a major publisher. For example, Lady Gaga has a vanity publisher, House of Gaga Music, which uses Sony Music Publishing as its administrator.

But otherwise, admin publishers exist for indie songwriters. These services take percentages of royalties and various other fees for processing composition royalties, but they take no copyright ownership shares, nor do they do any marketing or promotion. As with digital distributors, songwriters from almost anywhere in the world can use these services.

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[59] Each of the major publishers has an SPV set up, although these operate mostly in Europe.
[60] For example, the DSP could receive royalty claims that add up to more than 100% of the rights ownership, which is known as "overclaiming."

The primary purpose of a publishing administrator is to handle mechanical royalties, on the assumption that a PRO will handle performance royalties for the songwriter. Some indie publishing administrators also handle synch royalties, and some provide setlist submission tools to assist with collecting performance royalties for live performances. Indie songwriters must also sign up with a PRO in their country, although in some cases admin publishers will take care of that. Admin publishers typically serve songwriters around the world and collect royalties worldwide as well through a combination of direct deals and CMO relationships. They take commissions on royalties of 15-20% (higher on synch royalties because they require more effort) and charge either signup fees or per-song/per-album fees.

Leading publishing administrators for indie songwriters include:

- Songtrust, a division of Downtown Music Holdings, which owns a number of music service businesses. Songtrust has partnerships with the digital distributors Symphonic and CD Baby (see Table 3 above).
- Sentric, owned by Believe of France, also an owner of a number of different music service businesses.
- The digital distributors TuneCore, CD Baby, RouteNote, Music Gateway, and DistroKid offer admin publishing for artists who use their distribution services.

Each of these companies collects royalties for tens or hundreds of thousands of songwriters in over 200 territories worldwide. A detailed comparison of these services' features and costs comes, once again, from Ari Herstand, at https://aristake.com/admin-publishing-comparison/.

E. Synch Licensing

As explained above, synchronization royalties arise out of industry convention and apply when music is used with another medium, such as a video, game, VR experience, and so on. It is possible to license synch rights for both sound recordings and compositions; for example, a music supervisor for a television show can license a composition and hire an artist to record a cover version (which implicates only the composition) or license the original sound recording (which implicates both).[61]

The most important point about synch rights is that every synch must be licensed individually with the rightsholder. There are no set rates and few industry standards for royalties, and rightsholders can refuse to license at all. And although there are several services that make music for synch uses available at low cost or for free, there are no CMOs or online licensing hubs for music owned by major labels or publishers.

This lack of an organized marketplace for synch rights was understandable when synch usages were limited to TV shows and movies, where the value and nature of each music use varied according to context and the volume of usage was limited. But in today's world of video DSPs, the lack of organization in synch licensing makes for an inefficient market. Publishers nowadays get into disputes with large user-generated video platforms about whose responsibility it should be to obtain proper synch licensing—the platform companies or their end-users—and these disputes sometimes result in the platform companies taking blanket licenses to large publishers'

[61] There are also instances where a synch license may not be required, such as fair use or fair dealing, which are highly situation-specific but may come up in instances such as news reporting and documentary filmmaking.

catalogs. This means that smaller publishers may go without licenses with these platforms. Some publishers are resistant to collective or standardized synch licensing because it would diminish their control.

This is an unstable situation that will take some time to resolve, but rightsholders should be motivated to make the market more efficient, as synch licensing is a growing opportunity for creators and rights administrators alike. On the recorded music side, although synch accounts for only 2.4% of overall revenue, it is the fastest-growing category after having been stagnant until 2017. Synch revenue rose 22% from 2021 to 2022, almost double the current growth of streaming revenue.[62]

[62] IFPI 2023 Global Music Report.

V. Opportunities for Developing Countries

Thanks to the global reach of DSPs (see Table 1), labels, digital distributors (see Table 3), and publishing administrators (see p. 35), recording artists and songwriters in developing countries have access to global digital music markets, which represent the vast majority of music consumption worldwide. As long as they have good Internet connectivity, artists can get their music exposed to the public on a wide variety of services and can get paid royalties on their sound recordings.

To help ensure that creators can take advantage of these opportunities, it is important to educate musical creators about:

- The availability of digital distribution and rights administration services for independent creators.
- The availability of administrative services for independent labels and music publishers, to help them get up and running in the digital age without investment in technology infrastructure.
- The basic nuts and bolts of copyright infrastructure, including identifiers and metadata.
- Copyright laws that govern digital music distribution and royalty flows.
- Music industry conventions that transcend or complement individual countries' copyright laws.

In many ways, the various services available to independent artists compensate for the lack of copyright infrastructure in some countries, such as some CMOs' lack of capability for collecting and administering digital royalties. But these services are based in a handful of Western countries. Although they can collect royalties from plays of music around the world, they do not necessarily help artists promote their music locally, and the commissions and fees they take move money out of the country.

A. Opportunities for Copyright Infrastructure

Therefore, opportunities exist in developing countries for local companies to help musicians promote and monetize their music. As the above has implied, building such capabilities is complicated and expensive. Yet there are things that countries can do to make it easier by reducing legal risk and operational complexity.

For example, it would be helpful to clarify responsibilities for rights clearance and administration under the country's copyright laws. This means answering questions such as:

- What rights are required for music streaming, and is it possible to consolidate them into single streaming rights for both sound recordings and compositions?
- Are rightsholders' interests better served through simple automatable licensing frameworks (such as compulsory blanket licensing) than through ad hoc "bespoke" licensing requirements?
- Must DSPs clear rights to music before they make it available to avoid legal risk, or is it sufficient to offer music and wait for claims from rightsholders to pay royalties (as with compulsory licenses)? "Release now, clear later" has become music industry convention, in some cases, despite its potential tension with national copyright laws.
- Who has responsibility to clear and administer rights—CMOs, DSPs, or rightsholders (labels, publishers)? In particular, where does the responsibility lie for identifying

compositions embedded in sound recordings and the compositions' rightsholders and splits?
- What types of entities are best positioned to do rights administration in a given country? Are there opportunities to create such entities through government action or entrepreneurship?

Once these basic questions are answered, then it can become clearer how a country can set up or incentivize the appropriate copyright infrastructures. For example, it will become clearer whether composition matching and royalty payments are best handled by CMOs that represent rightsholders or service providers that work on behalf of DSPs, some combination of these, or some other entity that works on behalf of multiple types of entities at once.

Along with this clarity should come avenues for investment in such infrastructure, including technologies and skills, which will move money onshore that is currently going to the US, UK, or EU. And along with investment should come requirements that data be made available openly, instead of the proprietary databases that many rights administrators (whether CMOs or otherwise) maintain for their own benefit.

The movement towards open music rights data has already begun. For example, the United States enacted legislation in 2018 that established a CMO called the Mechanical Licensing Collective that processes mechanicals for streaming services. The law required the MLC to make its complete database—which currently holds information on over 30 million compositions—available to the public via a website for free and through regular bulk data feeds at a low cost. In the UK, a government study on the streaming music market recently led the UK collecting society PRS for Music to announce a project to build a database of composition and matching sound recording metadata for DSPs to use.[63]

Open data about music rights leads not only to transparency of royalty payments but the ability to build more administration and analytic services more quickly and easily. It should also ameliorate some of the complexities associated with multiple rights administrators in a given territory.

B. Checklist for Independent Creators

Here are some tips for independent artists and songwriters that summarize many of the the points raised in this guide.

☑	Learn about your country's copyright laws: • Determine what your exclusive rights are to your music under your country's copyright law. • Determine what aspects of music royalties, if any, are covered under your country's copyright laws, such as mandatory copyright registration as a precondition to collecting royalties or compulsory licenses with statutory royalty rates. • Find out about your country's approach to neighboring rights such as radio or digital radio play of sound recordings and the processes by which royalties are obtained for them.
☑	Register with CMOs:

[63] Presentation at https://www.wipo.int/meetings/en/details.jsp?meeting_id=76608.

	• Learn about your country's CMO(s) and to what extent they are involved in collecting royalties for digital music. • Sign up for a PRO that will collect digital royalties for you worldwide. If your country's PRO does not do this, try to sign up for one that will (national residency requirements vary). • If your country has a CMO that collects mechanical rights (a MRO), register for that too. Same if your country has a CMO that collects for neighboring rights (performance rights on sound recordings).
☑	Sign up with service providers: • If you are a recording artist, sign up for a digital distributor to make your music available on DSPs in your region and worldwide. • If you are a songwriter, sign up for a publishing administrator, or for a digital distributor that offers admin publishing services, to collect mechanicals and other composition royalties worldwide. • Sign up for a data analytics app such as Chartmetric, Soundcharts, or Viberate, and for at least one of the artist data apps on DSPs that offer your music (Spotify for Artists, Deezer for Creators, etc.).
☑	Identifiers: • Note the identifiers that distributors and/or admin publishers have created for you, such as ISRCs, ISWCs, and IPI. • Register for an ISNI if you do not have one already. You can do this through an ISNI registration agency; a list is available at https://isni.org/page/isni-registration-agencies/.
☑	Copyright compliance: Acquaint yourself with copyright compliance capabilities, such as notice and takedown forms, provided by online services operating in your country so that you can have unauthorized copies of your music taken down.

VI. Conclusions

The music business has been transformed by digital technologies and networks in ways that make it more accessible to creators in developing countries than it was before. There is a vigorously competitive worldwide market for digital music services with global reach as well as regional players that cater to specific audiences in different geographies.

Streaming royalty rates aside, the good news for creators with Internet connectivity is that there are many services available to make their music accessible to audiences all over the world with a few clicks, often at a nominal cost and without taking any ownership of copyrights. Music's short list of simple atomic units of commerce–the composition, the sound recording, the album–makes it particularly amenable to global online commerce. It is possible for creators to collect more royalties from more sources than ever before. And many tools are available, often at little or no cost, to enable creators to collect and examine data on how their music is being received around the world.

Yet as they say, the devil is in the details. Understanding the global world of music copyright and royalties requires understanding many details of copyright laws, royalty schemes, many types of data, and a whole host of administrative entities beyond labels and music publishers. It requires understanding the different processes and royalty flows for sound recordings and, especially, compositions.

Today's streaming-dominated music world is also fraught with challenges beyond royalty payments. As users become more able to slice and dice music into small chunks and use it with their posts on social platforms, creators lose more control over distribution channels. Creators are releasing music in a world where more than 100,000 new tracks are uploaded to DSPs globally every day, making new music harder for fans to discover, and new generative AI technologies promise to accelerate the supply of new music even more in the near future. And the streaming world is rife with ways to game the system that put creators with limited means at a disadvantage while the biggest stars with major-label resources garner more and more attention.

Opportunities also abound for developing countries in building copyright infrastructure that supports digital music. This can include revising copyright laws and regulations to reflect current processes and conventions in digital music. It can also include appropriate investment in public and/or private sector rights administration capabilities. This will help creators promote and monetize their music locally, and it will help repatriate portions of the revenues generated by music commerce that are leaving the country today. There are many other sources of information and assistance—including from WIPO—to help on this journey.

References

Books

- Jeff Brabec and Todd Brabec, *Music, Money, and Success: The Insider's Guide to Making Money in the Music Business, 8th Edition.* New York: Simon & Schuster, 2019.
- Chris Cooke, *Dissecting the Digital Dollar: Third Edition*, Music Managers Forum, 2020.
- Ari Herstand, *How to Make It in the New Music Business: Practical Tips on Building a Loyal Following and Making a Living as a Musician, 2nd Edition.* New York: Liveright, 2019.
- Donald S. Passman, *All You Need to Know about the Music Business, 10th Edition.* New York: Schirmer Trade Books, 2018.

Online Educational Resources

- Ari's Take (Ari Herstand): https://aristake.com/. Ari also runs Ari's Take Academy (https://aristakeacademy.com/), which offers online courses for indie musicians.
- Curve (royalty software vendor) Royalties 101 online classes: https://www.curveroyaltysystems.com/royalties-101-music-publishing, https://www.curveroyaltysystems.com/royalties-101-recorded-music
- Music Managers Forum (trade association for music managers) Digital Dollar reports: https://themmf.net/digitaldollar/
- Songtrust (publishing administration vendor) booklets and webinars: https://www.songtrust.com/resource-center

Industry News

- Billboard, https://www.billboard.com/.
- Music Ally, https://musically.com/.
- Music Business Worldwide, https://www.musicbusinessworldwide.com/.
- Variety, https://variety.com/v/music/.
- Your Morning Coffee (weekly newsletter), https://yourmorning.coffee/home#weekly-newsletter.

Podcasts

(Available on most podcast platforms)

- Music Business Worldwide
- Music Tectonics
- Musonomics
- The New Music Business with Ari Herstand
- Trapital
- Your Morning Coffee

Glossary

ACR – automatic content recognition. A technology for identifying content by taking its fingerprint and looking it up in a database of fingerprints to find a match. *See also* fingerprinting.

Catalog music – music that is at least 18 months old.

CISAC – Confédération Internationale des Sociétés d'Auteurs et Compositeurs. International organization of CMOs for authors and composers. CISAC administers standards including CWR (Common Works Registration), CCID (Claim Confirmation and Invoice Details), CRD (Common Royalty Distribution), ISWC and IPI. *See also* CMO, MRO, PRO.

CMO – collective management organization, a/k/a collecting society. A service that administers rights and royalties on behalf of rightsholders that affiliate with it. *See also* PRO, MRO.

DAW – Digital audio workstation. Software for recording, mixing, editing, and producing audio content on a computer.

DDEX – Digital Data Exchange. A standards body that creates and maintains messaging and metadata standards for the digital music supply chain. DDEX standards include DSR (Digital Sales Report), ERN (Electronic Release Notification), CDM (Claim Detail Message), and MEAD (Media Enrichment And Description). *See also* supply chain metadata, discovery metadata.

Digital distributor – a service that takes independent artists' music, submits it to DSPs, collects royalties from those DSPs, and distributes royalties to the artists without owning any rights. *See also* label.

Discovery metadata – metadata that describes music for purposes of discovery through recommendation, search, app navigation, algorithmic playlist generation, etc. *See also* supply chain metadata.

DMCA – Digital Millennium Copyright Act. A 1998 United States law under which if an online service accepts and acts on takedown notices from copyright holders, it can avoid liability for copyright infringement. Some countries outside the USA have similar legal regimes. *See also* takedown notice.

Downloading – transmission of complete files from a service to a user's device. *See also* streaming.

DRM – digital rights management. A set of techniques for encrypting files or streams before sending them to users. Users must have the proper credentials (such as a valid subscription to a DSP) to decrypt and play the content on their devices.

DSP – digital service provider. An online music service.

Fingerprinting – a technique for identifying the content in a digital file. A fingerprinting algorithm analyzes the data in the file and produces a series of numbers that characterize it (the fingerprint). *See also* ACR.

FLAC – Free Lossless Audio Codec. An open, royalty-free standard algorithm for compressing audio data into smaller storage space with no loss in sound quality.

Freemium – a service subscription model that includes free and paid membership tiers.

Generative AI – a class of artificial intelligence technologies that generate content automatically with varying degrees of human assistance.

IFPI – International Federation of the Phonographic Industry. The international umbrella trade organization for the recorded music industry.

IPI – Interested Parties Information. A standard identifier for musical composition rightsholders (songwriters or publishers).

ISNI – International Standard Name Identifier. A standard identifier for names, often used for recording artists.

ISRC – International Standard Recording Code. A standard identifier for sound recordings.

ISWC – International Standard [musical] Works Code. A standard identifier for musical compositions.

Label – a company that issues and administers rights in sound recordings, whether physical or digital.

License – a contract between a rightsholder and a licensee, such as a DSP, giving the licensee rights on content, such as distribution rights.

Master rights – reproduction and distribution rights to a sound recording. The name derives from the rights to a master tape of a recording.

Mechanical rights – reproduction and distribution rights to a musical composition. The name derives from mechanical reproduction of piano rolls in the early 20th century.

MP3 – short for MPEG-1 Audio Layer 3 or MPEG-2 Audio Layer 3. A standard algorithm for compressing audio data into a smaller space, potentially with some compromise in sound quality.

MRO – mechanical rights organization. A CMO that administers mechanical rights to musical compositions. *See also* CMO, PRO.

Music Publisher – a company that owns and administers rights in musical compositions.

Musical composition (a/k/a **musical work**) – the music and lyrics (if any) to a song.

NFT – Non-Fungible Token. A record of a transaction stored on a blockchain that identifies the item purchased, such as digital music or other content.

Opt-in licensing – a DSP's scheme for ingesting recorded music whereby it will only accept music from rightsholders under license agreements.

Opt-out licensing – a DSP's scheme for ingesting recorded music whereby it will accept any music from anyone; rightsholders must indicate which music they forbid the DSP from offering and negotiate license terms for the music that they allow the DSP to offer.

PCM – Pulse Code Modulation. An older format for uncompressed digital audio that produces very large files with full sound quality.

PRO – performance rights organization. A CMO that administers performance rights to musical compositions or sound recordings. *See also* CMO, MRO.

Pro-rata royalties – the traditional royalty calculation scheme for streaming DSPs, in which the DSP pays royalties to rightsholders based on the aggregate streams by all of the DSP's users in a reporting period. *See also* user-centric royalties.

Publishing administrator – a service that administers rights to musical compositions on behalf of independent songwriters and does not own any rights. *See also* music publisher.

Rightsholder – an owner or part-owner of copyright in a work, such as a musical composition or sound recording.

Sound recording (a/k/a **phonogram**) – audio recording of a performance of a musical composition. *See also* musical composition.

Stream ripping – capturing an audio or video stream into a file that resides on the user's device.

Streaming – sending an audio or video signal over the Internet to a user's device via a continuous series of small chunks of compressed audio or video (a stream) that the user's device reassembles into program content for the user. *See also* downloading.

Sub-publisher – a music publisher that administers royalties for a rightsholder in a different territory.

Supply chain metadata – metadata that describes music for purposes of DSP ingestion, rights administration, and royalty processing. *See also* discovery metadata.

Synchronization (a/k/a **synch** or **sync**) – a right to use music in connection with another type of media, such as a video, game, or VR/AR experience.

Takedown notice – a notice that a copyright holder (or a copyright enforcement service acting on its behalf) sends to an online service to get it to remove content that has been posted without authorization. *See also* DMCA.

UPC – Universal Product Code. A standard identifier for physical products (such as LPs and CDs), designed to be represented in barcodes.

User-centric royalties – royalty calculation scheme for streaming DSPs in which the DSP divides up royalties generated from each user's subscription fees according to that user's plays, regardless of how much music the user plays in a reporting period. *See also* pro-rata royalties.

About the Author

Bill Rosenblatt is the founder and president of GiantSteps Media Technology Strategies, a consulting firm that has provided expertise in technologies, business strategy, and intellectual property for digital media since 2000. His music industry clients have included major record labels, digital music services, technology companies, investment firms, and startups around the world. He has advised or testified before public policy bodies in North America, Europe, and Asia on issues related to copyright in the digital age. He has served as an expert witness in litigations and royalty rate proceedings in the United States, Canada, and the Netherlands on the digital music market, digital copyright, and related technologies such as DRM, streaming media, fingerprinting, and watermarking.

Bill is an adjunct professor in the Music Business program at New York University, and he has guest lectured at several universities including Carnegie Mellon, Columbia, MIT, the University of Virginia, and the law schools of Rutgers University and the University of New Hampshire. He is the program chair of the annual Copyright + Technology conferences in New York, which he co-produces with the Copyright Society, and he has spoken at other conferences worldwide including the World Economic Forum in Davos, Switzerland. He is on the trustee boards of the Copyright Society and Princeton Broadcasting Service, Inc.; and he is on the advisory board of the American Society for Collective Rights Licensing, a collecting society for illustrators and photographers.

Bill is the author of *Digital Rights Management: Business and Technology* (Wiley, 2002) and coauthor (with Howie Singer) of *Key Changes: The Ten Times Technology Transformed the Music Industry* (Oxford University Press, 2023). He is a media industry contributor to Forbes.com and has written for *Publishers Weekly* and other periodicals. He holds degrees in computer science from Princeton and the University of Massachusetts.