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Identifiers Used in the Music Industry

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Introduction

Imagine this scenario: Mary meets someone whose name sounds like John Smith. At the end of the encounter, he tells her to give him a call; he does not give his telephone number. Consider the challenges Mary would face trying to look up John's phone number. If she searched by the name *John Smith* she would likely find a staggeringly large number of possibilities. And the list might not even include the number she needs if it turns out his name is spelled *Jon Smith*. If he had given her his telephone number, the time wasted trying to find it could have been avoided and the chances that she would reach him, rather than someone else with the same name, would be very high. The same sorts of challenges present themselves when applied to music rather than people. Imagine trying to look up information about a song titled *Always and Forever*. While the list of songs with this title is shorter than the list of possible phone numbers for John Smith, it is no less daunting; and the chance of selecting the wrong one is significant. The music industry's way of addressing this problem is through the implementation of numerous music identifiers.

The average person uses identifiers every day without realizing it. Telephone numbers, credit card numbers, bank account numbers, Social Security numbers, and passport numbers are just a few examples. An identifier is an "unambiguous string denoting an entity" (Paskin 2003, 28). In other words, an identifier is a set of numbers or letters, or a combination of both, used to uniquely identify something. Identification numbers have become more and more important as we deal with greater volumes of information and we move from a society where transactions occur face-to-face to one where they occur computer-to-computer. As transactions involving music, both as intangible intellectual property (e.g., musical compositions and sound recordings) and as commercial products (e.g., CDs and single-track downloads), move from being paper-based to EDI-based (electronic data interchange), the need for identifiers in the music industry has grown. In response to this need, a number of different identifiers have been created such as the ISWC, ISRC, GRid, ISMN, and GTIN. For individuals and companies involved in licensing or selling music, it is important to be-

come familiar with these identifiers and to use them in the proper manner. Not doing so could prevent certain opportunities from being realized, such as selling recordings digitally via the leading online retailers, and could result in lost royalty income due to misidentification of the music itself and its corresponding rightsholders. This article will analyze all of these identifiers, summarizing what they represent, how they are constructed, administered, and assigned, and how successfully they have been implemented.

Uniqueness

All of the identifiers used in the music industry adhere to the rule that once an identifier is issued to an item (song, recording, CD, etc.), it must not be issued to any other. The Principle of Unique Identification is that every entity should be uniquely identified within an identified namespace (Ruse and Bide 2003, 9). For example, once the namespace is known, such as University of Miami student ID numbers, each student should be identified with a unique number. Every identifier must be able to be tied back to one and only one item. Reusing identifiers renders them useless in that their entire purpose is to identify a single item.

The International Organization for Standardization (ISO)

Identifiers can become official international standards if they are adopted by the ISO. “ISO is a network of the national standards institutes of 157 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system” (www.iso.org/iso/about.htm). As indicated on the ISO website, ISO is a non-governmental organization: its members are not, as is the case in the United Nations system, delegations of national governments. Therefore, ISO is able to act as a bridging organization in which a consensus can be reached on solutions that meet both the requirements of business and the broader needs of society, such as the needs of stakeholder groups like consumers and users. When the large majority of products or services in a particular business or industry sector conform to international standards, a state of industry-wide standardization can be said to exist. This is achieved through consensus agreements between national delegations representing all the economic stakeholders concerned: suppliers, users, and governments. They agree on specifications and criteria to be applied consistently in the classification of materials, the manufacture of products, and the provision of services.

In this way, international standards provide a reference framework, or a common technological language, between suppliers and their customers, which facilitates trade and the transfer of technology. ISO has developed over 17,000 international standards on a variety of subjects and 1,100 new ISO standards are published every year. Most of the identifiers used in the music industry have been adopted as ISO standards. The published ISO standards documents can be purchased from the website www.iso.org in either electronic or paper version.

Proprietary Identifiers

In addition to the international standard identifiers, many entities in the music industry such as publishers and record companies also utilize proprietary identifiers. This is primarily due to the fact that the need to assign identifiers existed long before most of the international standard identifiers were created, which was not until the late 1980s or early 1990s. Many of these entities continue to use their proprietary identifiers alongside the standard ones due mainly to their internal computer systems and/or their physical file index reference dependencies.

Metadata

Several of the standard procedures associated with identifiers used in the music industry require the capture and maintenance of certain metadata pertaining to the item being identified. Metadata is “data that provides information about other data” (*Merriam-Webster’s Collegiate Dictionary* 11th ed., s.v. “metadata”). In the context of the music industry, metadata is descriptive information (data) about a music item (the other data). For example, if a recording is the item, metadata about the recording would include its title, artist, and its owner. If a musical work is the item, metadata about the work would include its composer and owner.

Check Digits

Many identifiers include a check digit. ISO standard 7064:2003 defines a check digit as an “added digit which may be used to verify the accuracy of a standard number through a mathematical relationship to the digits contained in that number.” It is calculated by applying an algorithm to the rest of the element string (i.e., the identifier). Computer systems that use an identifier containing a check digit perform a mathematical check whenever the identifier is entered into the system (whether manually or via

an electronic interface) to confirm that the identifier is valid.

Allocation

The identifiers used in the music business are each allocated by different entities operating within the industry. In all cases, a portion of the identifier is allocated by either a central industry group or a rightsholder such as the music publisher or record company, or some combination of the two. In none of the cases is the identifier allocated by a government body such as a copyright office. The allocation and administration of industry-wide identifiers involves a significant amount of human and technical resources. The industry itself must believe that the benefit derived from developing and implementing an identifier outweighs the cost of maintaining it. Rightsholders, such as music publishers and record companies, and their agents and trade associations, all have an economic interest in identifying and organizing their intellectual property and commercial products. Other entities, such as government copyright offices, which are not engaged in the operational aspects of the exploitation of music, do not share the same interest. As each of the identifiers used in the music industry was developed, the question of which entity within the industry was best placed to administer the identifier was asked. A cost-benefit approach was taken and supports the current placement of administrative responsibilities.

International Standard Musical Work Code (ISWC)

The ISWC is a unique, permanent, and internationally recognized reference number for the identification of musical works. Musical works are commonly defined as works consisting of music and lyrics, or music alone. The ISWC was adopted as ISO standard 15707:2001 in 2001. The international registration authority for the ISWC is the International ISWC Agency, operated by CISAC (International Confederation of Societies of Authors and Composers). According to its website, the ISWC is part of the CIS (Common Information System) plan which CISAC has developed in order to respond to the need for information in the digital age. An ISWC is allocated to a musical work as intellectual property. It does not represent a physical or digital embodiment of the musical work such as sheet music or an audio CD recording.

The ISWC construction begins with a one-character prefix element followed by a nine-digit work identifier, followed by a one-digit check digit. The letter *T* was chosen as the prefix element for all ISWCs. The

nine-digit work identifier must be in the numeric range of 000000001-999999999. The check digit is calculated using the formula described in the published ISO ISWC standard. For example, the ISWC for Prince's *When Doves Cry* is T-070.204.642-1. The total number of characters in an ISWC is eleven as the dashes and periods are not counted.

The international hierarchy for administering the ISWC begins with the International ISWC Agency, operated by CISAC. The next level down is the national or regional ISWC Agencies (hereinafter referred to as the local agencies). Local agencies are appointed and overseen by the International ISWC Agency and are generally national or regional performing rights societies.¹ For example: in the United Kingdom, MCPS-PRS (Mechanical-Copyright Protection Society and Performing Right Society) serves as the local agency for that territory.

Assignment of an ISWC to a musical work is dependent upon another identifier called a CAE/IPI number. CAE stands for *Compositeur, Auteur, Editeur* code. IPI stands for Interested Parties Information. As stated on the IPI system website, the CAE was originally created by the Swiss performing rights society SUIISA as a way of identifying various composers, authors, and publishers of music by number. Soon after, the other performing rights and collecting societies adopted it and it became the international standard. The CAE has been replaced with a new schema called the IPI, which is also administered internationally by SUIISA. However, many performing rights societies still refer to the number as the CAE/IPI Number. An individual's CAE/IPI number is associated with one, and only one, performing rights society membership. For example, the recording artist Prince has a CAE/IPI number of 052.21.00.40 and is associated with ASCAP (American Society of Composers, Authors, and Publishers), while recording artist Michael Jackson has a CAE/IPI number of 523.55.36.64 and is associated with BMI (Broadcast Music, Inc.).² Within the CAE/IPI framework, a party having a CAE/IPI number is associated with a musical work by indicating the role the party plays (e.g., composer) and the rights the party has (e.g., performing right) with respect to the work.

An ISWC is assigned to a musical work by a local agency. The songwriter's CAE/IPI performing rights society affiliation determines which local agency is authorized to issue an ISWC to a particular song. Every performing rights society falls under the jurisdiction of one local agency. There are specific rules detailed in the ISWC Handbook as well as the published ISO standard about how to handle particular circumstances, such as

when coauthors are affiliated with different performing rights societies.

When a new musical work is registered with the local agency by a publisher or owner of the work, the agency automatically assigns it an ISWC. There are specific rules detailed in the ISWC Agency manual as well as the ISO published standard about how to handle particular circumstances, such as how adaptations and translations are to be handled, and how to prevent multiple local agencies from assigning an ISWC to the same musical work.

As part of the registration process, certain metadata must be provided to the local agency. The metadata includes the title of the work; all composers, authors, and arrangers of the work identified by their CAE/IPI numbers and role codes; the work classification code (from the CISAC Common Information System standards list); and in the case of versions (e.g., arrangements), identification of the work from which the version was made. Without this minimum information, an ISWC cannot be allocated. This accumulation of metadata enables the consolidation of information from local agencies into one central database called the ISWC-Network, which can be accessed by the public.³ According to the ISWC International Agency website, information about “millions of musical works” is contained in the ISWC-Network database.

According to CISAC, more than 15 million musical works have had ISWCs assigned to them. However, the ISWC is not presently used in most of the electronic transactions involving licensing or usage of musical works. According to Sheila Tozak, Manager, Works & Participants for SO-CAN (Society of Composers, Authors, and Music Publishers of Canada), there is an initiative underway through CISAC and the ISWC Management Committee to disseminate the ISWC more widely to third parties. It is important to keep in mind that most uses of musical works are inextricably linked to the use of a recording of the work, such as with radio broadcasts or record sales. It is this author’s opinion that until each recording is associated with the ISWC of the underlying musical work, the ISWC will not be integrated into many electronic transactions. The work involved to perform this data association is enormous and problematic. The process involving musical work creation, recording, and dissemination does not easily facilitate a pro-active approach to this association and there would likely be significant debate regarding which entity (music publisher, record company, or performing rights society) would be responsible for maintaining the association data.

More information about the ISWC can be found at www.iswc.org.

International Standard Recording Code (ISRC)

The ISRC is a unique, permanent, and internationally recognized reference number for the identification of audio sound recordings and music video recordings. Audio sound recordings are commonly defined as works of intellectual property resulting from the fixation of musical, spoken, or other sounds. Music video recordings, for the purposes of the ISRC, are defined as short form music video initially produced to support the release of a recording. Other video recordings, such as feature length movies and productions for television, are identified with an ISAN (International Standard Audiovisual Number). The ISRC is applied to music video recordings because they are considered to be primarily a music-related form of intellectual property and therefore appropriately allocated an identifier created by the music industry. The ISRC was adopted as ISO standard 3901:2001 in 2001. The IFPI (International Federation of the Phonographic Industry) Secretariat was appointed by ISO to serve as the international registration authority for the ISRC and to act as the International ISRC Agency. According to the published ISO standard and the ISRC Handbook, an ISRC is allocated to an audio sound recording or a music video recording as intellectual property. It does not represent a physical or digital embodiment of the recording, such as an audio CD, video DVD, or digital MP3 file.

The ISRC construction begins with a two-letter country code, followed by a three-character registrant code, followed by a two digit year of reference, followed by a five-digit designation code. The two-letter country code identifies where the registrant's home office is located. ISO standard 3166-1, "Codes for the representation of names of countries and their subdivisions — Part 1: Country codes," sets forth the standard list of codes to be used. The three-character alphanumeric registrant code represents the entity that assigned the ISRC. This would normally reflect the original producer (i.e., record company) of the recording. The two digit year of reference identifies the year in which the ISRC is allocated. The designation code identifies each individual recording or part of a larger recorded work that may need to be identified as a unit. It must be five digits long, even if the first four digits are zeros. For example, an ISRC would appear as US-ABC-08-00001. The total number of characters in an ISRC is twelve as the dashes are not counted.

The international hierarchy for administering the ISRC begins with

the International ISRC Agency, operated by the IFPI Secretariat. The next level down is the national or regional ISRC Agencies (hereinafter referred to as the local agencies). Local agencies are appointed and overseen by the International ISRC Agency and are generally national or regional recording industry trade associations.⁴ For example, in the United States, the RIAA (Recording Industry Association of America) serves as the local agency for that territory.

An ISRC is usually assigned to an audio sound recording or a music video recording by its owner. In most cases, the owner is the record company commissioning the recording. The record company begins the process by requesting a registrant code from the local agency for its territory. Once the record company is provided with its code, it can begin assigning the year of reference and designation codes to its recordings. Each year, as the year of reference code is increased by one (e.g., 07, 08, 09...), the designation codes allocated must begin again at one (e.g., 00001, 00002, 00003...). For example, the first ISRC issued by a record company in 2008 would look like US-ABC-08-00001. The second would be US-ABC-08-00002, and so on. The first ISRC issued by a record company in 2009 would look like US-ABC-09-00001 regardless of the highest number ISRC issued in 2008. There are specific rules detailed in the *ISRC Handbook* as well as the published ISO standard about how to handle particular circumstances, such as remixes of recordings or complex classical recordings with multiple parts. According to the *ISRC Handbook*, “The ISRC should be encoded in digital sound carriers in the pre-mastering or authoring process in accordance with the specification on the format used” (*ISRC Handbook*, sec. 3.7). In order to facilitate this, ISRCs are normally assigned to a recording by a record company after the recording process (tracking and mixing) has finished, but before the mastering process has begun.

There is no requirement to provide metadata to the International ISRC Agency. However, some local recording industry associations, which may also serve as local ISRC agencies, have implemented a process with their members to centrally compile information about local sound recordings and music video.

The ISRC has been adopted on a large-scale internationally. This is due to the rapidly developing move from physical forms of audio and music video products (e.g., CD, DVD) to digital forms (e.g., MP3, MP4). When legitimate forms of digital distribution came on line, beginning

with MusicNet and Pressplay in 2001 and iTunes in 2003, the need to uniquely identify single-track recordings as commercial products became urgent (Martinson 2001; Borland 2003). In the world of physical distribution, recorded music products, including all formats (CD, cassette, etc.) and lengths (album, single, etc.) are given a GTIN (Global Trade Item Number, described later in this paper) as a way to identify the product and track its sales. In the emerging digital world, individual recordings became products and needed to be given a unique identifier of their own. Since major record companies had begun the process of assigning ISRCs to their back catalogs and new recordings in the late 1990s, the ISRC was the most readily available identifier to be used for the purpose of identifying individual digital recording products. Although never intended to represent an embodiment of a recording, the ISRC has been used that way for the past seven years or so out of necessity. Using the ISRC in this way is problematic. The most significant reason the ISRC is not the appropriate identifier for representing single-recording digital products is that products are far more varied than individual recordings and the ISRC allocation rules are not well suited for products. For example, a particular recording, identified by a single ISRC, could result in at least four different single-recording products: the digital file of the recording in a format compatible with Apple's iTunes and iPod; the digital file of the recording in a format compatible with Microsoft's Zune software and Zune player; the ringtone of the first five seconds of the recording's chorus, made available exclusively through a mobile carrier called Sprint; and the ringtone of the first five seconds of the recording's bridge, made available exclusively through a mobile carrier called Verizon. Using the same ISRC for each of these four products would create confusion when tracking sales, and allocating a different ISRC to each of these four digital products would imply that four different recordings exist. The GRid (Global Release Identifier) was designed with this history in mind and is replacing the ISRC as the standard identifier of individual recording products.

The ISRC has been impacted in another way by the emergence of digital distribution and the increased number of self-distributed recording artists.⁵ Entities like CD Baby and TuneCore work to get self-distributed recording artists' music pushed out through the digital pipeline to consumers.⁶ Digital retailers, such as iTunes, require a recording to have an ISRC identifier before they will add it to their systems and make it available for sale (*ISRC Activities Report 2007*, 2). Many self-distributed recording

artists, as well as very small and relatively uninformed record companies, are not familiar with the ISRC and do not assign them during the creation process. This has led to companies like CD Baby and TuneCore offering the service of assigning ISRCs to their client's recordings. This process is acceptable under the ISRC standard if the sound recording or music video recording owner is agreeable. So long as each individual ISRC is assigned to one, and only one, recording, the data integrity remains intact. Potential changes to the ISRC, such as adding a check digit, have been discussed but not yet adopted as a modification to the standard.

Even before digital distribution came into existence, the ISRC was used in the process of licensing recordings between record companies. Once record companies implemented the ISRC, most regarded it as a mandatory item of metadata for each recording being included on a CD. When a record company puts together an album of recordings that it owns, ensuring each recording has an ISRC is easy. But when a record company puts together an album of recordings, some of which are owned by another record company, ensuring each recording has an ISRC can become problematic. The procedural solution to this problem is to require the owners of the recordings, as part of the licensing transaction, to provide the ISRCs they have already assigned to the recordings to the licensee.

More information about the ISRC can be found at www.ifpi.org/isrc.

Global Release Identifier (GRid)

The GRid, correctly written with two capital letters followed by two lowercase ones, is a unique, permanent, and internationally recognized reference number for the identification of electronic music releases. For this purpose, a release is defined as:

...an abstract entity representing a bundle of one or more Digital Resources compiled by an Issuer for the purpose of electronic distribution to individual consumers, directly or through intermediaries. The Digital Resources in Releases are commonly sound recordings or audio-visual recordings, however, they can also include other Digital Resources (including, for example, text, graphics, software). The Release is not itself a Product. Products have more extensive attributes than Releases; one Release

may be disseminated in many different Products (*GRid Standard* 2007, 6).

The GRid has not yet been adopted as an ISO standard nor has it been submitted for consideration. The IFPI (International Federation of the Phonographic Industry) Secretariat serves as the GRid registration authority. According to the GRid standard, a GRid is allocated to a bundle of intellectual property. It does not represent the digital embodiment of the bundle (i.e., the digital product). The identification of a digital product would likely include additional attributes such as technical information pertaining to its file format (e.g., MP3, MP4, etc.), the way in which it is consumed (e.g., permanent download or streaming), and commercial terms such as its price. Some companies allocating GRids to their digital releases may track these additional attributes by requiring them to be reported alongside the GRid in transactions. Other companies may allocate multiple GRids to the same intellectual property bundle in order to reflect the different product types. While allocating multiple GRids this way is inconsistent with the GRid definition, so long as each individual GRid is assigned to one, and only one, intellectual property bundle, the data integrity remains intact.

The GRid construction begins with a two-character identifier scheme element, followed by a five-character issuer code, followed by a ten-character release number, followed by a single-character check character. The characters *A1* were chosen to be used as the identifier scheme element. The five-character issuer code represents the entity that assigned the GRid to the release. The ten-character release number identifies the unique bundle of intellectual property put together by the issuer. The check character is calculated using the formula described in the published GRid standard. For example, a GRid would appear as GRID: A1-4321G-ABC7654321-M. The total number of characters in a GRid is eighteen as the dashes are not counted.

The international hierarchy for administering the GRid begins with the GRid Registration Authority (referred to in the GRid standard as the International GRid Authority), operated by the IFPI Secretariat. Unlike many other identifiers, there is no regional or territorially-based local agency to administer the GRid. According to the *GRid Handbook*, RITCO (an associated company of the IFPI Secretariat) serves as the Registration Agency for the GRid.

A GRid is usually assigned to a release by the entity responsible for creating the release. For example, when a record company puts together a digital bundle including recordings, an artist biography, and a photograph of the artist, it would issue the release a GRid even if it had to license the rights to use the photograph from a third party. The record company begins the process by requesting an issuer code from RITCO, the registration agency. Once provided with this code, it can begin assigning release numbers to digital bundles. There are specific rules detailed in the GRid Standard and *GRid Handbook* about how to handle particular circumstances, such as material changes in a release.

The GRid Standard includes the requirement to maintain “Reference Descriptive Metadata” in an International GRid Authority-approved metadata repository. A metadata repository will be approved if it is able to comply with the metadata maintenance requirements outlined in the standard (i.e., it can hold the required data fields of information, in the required data formats). A record company may maintain its own metadata repository, so long as it is approved. Numerous pieces of information must be maintained in the repository about the release itself (such as the release title) and about the component elements of the intellectual property (such as the recording titles, etc.). Where other identifiers are used with respect to the component intellectual property (such as the ISWC or ISRC) those identifiers must be stored in the complete set of metadata.

The GRid is a relatively new identifier. It was officially introduced on February 10, 2003 (*IFPI new electronic identifier* 2003). Its adoption has been slow, due mainly to the cost involved in modifying numerous computer systems at record companies, digital distributors, and digital retailers. The major record companies have begun to incorporate it into their systems, as have retailers like iTunes. However, use of the GRid is not yet mandatory for all entities wishing to sell digital bundles involving music in the marketplace.

More information about the GRid may be found at www.ifpi.org/grid.

International Standard Music Number (ISMN)

The ISMN is a unique, permanent, and internationally recognized reference number for the identification of printed music publications. Examples of printed music publications include scores and songbooks. The ISMN was adopted as ISO standard 10957:1993 in 1993. The internation-

al registration authority for the ISMN is the International ISMN Agency, which has an advisory panel comprised of representatives of ISO, music publishers, and the music library communities (*ISMN Users' Manual* 2005). An ISMN is allocated to a physical or digital embodiment of a musical work or works in visual form. It does not represent the underlying intellectual property.

The ISMN construction changed on January 1, 2008 from what it had been since the standard was published in 1993. The previous construction began with a one-character prefix element, followed by a variable-digit publisher identifier, followed by a variable-digit item identifier, followed by a one-digit check digit. The letter *M* was chosen to be used as the prefix element for all ISMN in order to distinguish it from the ISBN used in connection with books. The publisher identifier and item identifier both vary in length depending on the output of the publisher. Large publishers are given a three- or four-digit identifier. Small publishers are given a five-, six- or seven-digit identifier. The publisher identifier is assigned this way in order to ensure that the total number of characters in the ISMN reflecting the publisher identifier and the item identifier equals eight. The fewer digits that are used for the publisher identifier, the more digits become available for the item identifier. The check digit is calculated using the formula described in the published ISO ISMN standard. For example, an ISMN using the previous construction would appear as M-29910234-9. The total number of characters in an ISMN is ten as the dashes are not counted (*ISMN Users' Manual* 2005.)

According to the ISMN website, beginning January 1, 2008 the construction was changed so that the identifier now begins with 979 and the one-character prefix of *M* was replaced with 0 (zero). For example, a previously constructed ISMN of M-29910234-9 would now be 979-0-29910234-9, taking the total number of characters in an ISMN to thirteen as the dashes are not counted.

The international hierarchy for administering the ISMN begins with the International ISMN Agency. The next level down is the national or regional ISMN Agencies (hereinafter referred to as the local agencies). Local agencies are appointed on the basis of a contract. For example, in the United Kingdom, the MPA (Music Publishers Association) serves as the local agency for that territory.

An ISMN is assigned to a printed music publication by the music publisher. The music publisher begins the process by requesting a pub-

lisher identifier from the local agency for their territory. Once the publisher is provided with an identifier, it can begin assigning item identifiers to the individual items it publishes. There are specific rules detailed in the *ISMN Users' Manual* as well as the published ISO standard about how to handle particular circumstances, such as a change in the musical or literary content of a work.

There is no requirement to provide metadata to the International ISMN Agency or local agencies. However, there is a requirement to maintain certain information in a “register” maintained by the music publisher. The register should include the ISMN, author, title, and format (*ISMN Users' Manual* 2005, 11).

The ISMN appears to be more widely adopted in countries other than the United States—although not without issues. This seems mostly due to lack of awareness or practical implementation issues. Many of these issues involve a similar identifier called the ISBN (International Standard Book Number). The ISBN is used to identify books and book-like products. According to the *ISMN Users' Manual*, “Some music publications may be distributed through the book trade. Publishers issuing music materials intended for the book market may assign an ISBN...in addition to the ISMN” (*ISMN Users' Manual* 2005, 26). Most songbooks have an ISBN assigned to them. According to the ISBN website, the ISBN was originally ten digits long but was changed to thirteen digits beginning January 1, 2007. This was done with the intention of aligning the ISBN with the global GS1 GTIN standard (formerly the EAN.UCC, commonly known as the bar code appearing on products). According to an ISMN newsletter issued in September of 2007, the United Kingdom local agency lost two major publishers because the revision to the new thirteen-digit format was not in place at the same time the ISBN became thirteen digits, causing them to continue using the ISBN (*ISMN Newsletter* 2007, 10). Publishers wishing to replace the bar codes they had been using on their printed music publications with the ISMN were not able to do so since it did not move to the new thirteen-character format until a year after the ISBN moved. Therefore, they used the ISBN instead. A check of numerous songbooks available for sale on www.sheetmusicplus.com, published by U.S. publishers Hal Leonard and Warner Brothers, reveals ISBNs but no ISMNs. However, a similar check of songbooks published by German publisher Tonos reveals ISMNs but no ISBNs. Many music publishers continue to use the ISBN instead of, or without an accompanying, ISMN, although

doing so is not in conformity with the ISO rules of standard numbering offering a separate standard for printed music publications (*ISMN Newsletter* 2007, 10).

More information about the ISMN can be found at www.ismn-international.org.

Global Trade Item Number (GTIN)

The GTIN is a unique, permanent, and internationally recognized reference number for the identification of items in trade. In the context of the music industry this includes CDs and DVDs. The GTIN is the reference number encoded into a series of bars appearing on physical products; we think of this as a bar code. The numeric identifier and the corresponding bar code are recognized as international standards and have been incorporated into numerous ISO standards, including 15418:1999. The GTIN is administered internationally by GS1. GS1 was previously known as EAN International, which co-managed the EAN.UCC System with the Uniform Code Council.⁷ A GTIN is generally allocated to the physical embodiment of a recorded music product. It does not represent the underlying musical work or sound recording intellectual property.

The twelve-digit U.P.C. (Universal Product Code), developed by the grocery industry in the United States, was first scanned in the U.S. in 1974 (Garg, Jones, and Sheedy 1999, 1). According to the timeline provided on the GS1 website, the thirteen-digit EAN (European Article Number) was developed soon after in 1977. A U.P.C. can easily be converted into an EAN by adding a leading zero, taking it from twelve digits to thirteen. In 1997, the “2005 Sunrise Initiative” was launched, requiring all retailers in the U.S. and Canada to be capable of scanning and processing EAN-13 symbols in addition to the U.P.C. The bar code symbols continue to be called the U.P.C. and EAN. However, the identification number that is encoded into the bar code, and appears below it, is referred to as the GTIN.

As stated on the GS1 US website, GTINs can be eight, twelve, thirteen, or fourteen digits long. The music industry uses a GTIN-12 (corresponding to the U.P.C.) or a GTIN-13 (corresponding to the EAN) for its products. The GTIN-13 construction begins with a variable length company prefix, followed by a variable length item reference number, followed by a single-digit check digit. The company prefix is assigned by GS1. Company prefixes previously assigned by the U.S. Uniform Code Council can be converted into GS1 company prefixes by adding a leading zero.

The item reference number length will depend on how long the company prefix is, as combined they must total twelve digits. The check digit is calculated using the formula described on the GS1 US website. For example, a GTIN-12 would appear as 713365-10192-2, and a GTIN-13 would appear as 0-713365-10192-2. The total number of digits is either twelve or thirteen as the dashes are not counted.

Under the old EAN.UCC system, the music industry adopted a standard convention of using the eleventh digit of the U.P.C. to identify the configuration of the product. Table 1 provides a cross-reference between the configuration digit and the configuration type it represents.

Digit	Configuration
1	Vinyl, 12" single or full length
2	CDs, all lengths
3	Video (VHS)
4	Cassettes – all lengths
5	Digital Releases (MP3, etc.) – all lengths
6	Super Audio CDs
7	Vinyl, 7" single
8	MiniDiscs
9	DVDs
0	Enhanced CDs

Table 1. GTIN configuration digit to configuration description cross-reference.⁸

The GS1 standard no longer requires the use of a configuration digit for audio or video products. However, many in the music industry continue to follow this convention.

The international hierarchy for administering the GTIN begins with GS1. According to its website, GS1 is a global organization responsible for designing and implementing global standards related to supply and demand chains. The U.P.C. standard was managed by the UCC (Uniform Code Council). The EAN standard was managed by EAN International. In 2002, the UCC joined EAN International as a member organization. The General Assembly of EAN International then decided to change the name of the organization to GS1. The next level down in the hierarchy is the lo-

cal GS1 organizations. For example, the organization for the United States is called GS1 US (formerly the UCC).

A GTIN is assigned to a recorded music or video product by the manufacturer or supplier. In the context of the music industry, a record company is considered the manufacturer or supplier of its products, even if it uses a third party for the actual manufacturing. The process begins with the record company contacting its local GS1 organization to request a company prefix. Many record companies assign a GTIN to a recorded music product very early in the process so as to use the number for other internal tracking purposes. Usually, costs (such as recording costs and advances paid to a recording artist) tracked within a record company's internal financial systems are cross-referenced to a specific album or recording project. Many record companies use the item reference number portion of the GTIN to represent a specific album or recording project within their systems. In order to use the number this way, it must be assigned very early in the process—usually at the time the first cost associated with the project is processed. The first cost is typically an advance paid to the artist. A GTIN must be assigned to a product before it is manufactured so that the GTIN and corresponding bar code can appear on the product packaging. The company assigning GTINs to its products determines what the item reference number will be, thus ensuring that it never issues the same item reference number (and therefore the same GTIN) to more than one product.

There is no requirement to provide metadata to a local GS1 organization. However, there may be other requirements or common practices relating to the registration of information about recorded music products, including their GTINs, in individual countries. In the United States and Canada, record companies normally register their recorded music and video products with the company Nielsen SoundScan. SoundScan is an information system that tracks sales of music and video products.⁹ Registration enables the tracking of POS (point of sale) data using the GTIN.

The GTIN has been adopted on a large scale internationally. The symbol and number are regarded as one of the most successful examples of the implementation of a standard identifier (Garg, Jones, and Sheedy 1999, 5). Even though the GTIN was originally designed for use with physical products, it is used for both physical and digital products in the music industry. When multi-recording digital bundles (for example, a digital album) are sold by digital retailers such as iTunes, a GTIN is used to represent the

commercial digital product. Usually, the item reference number portion of the GTIN is the same for a physical product and a digital product. However, the configuration digit will be different in order to distinguish between the two. When single-recording digital products are sold, the ISRC rather than the GTIN has been the identifier used. Both of these uses are in the process of being phased out as they are replaced with the GRid.

More information about the GTIN may be found at www.gs1.org.

Summary

Each of the identifiers used in the music industry has, in its own way, enabled the digital revolution we are experiencing in the music industry today. EDI (electronic data interchange) has enabled many industries to move into the digital age of processing information electronically rather than manually. The music industry would not have been able to make this move without the successful implementation of identifiers. The adoption of other standards within the music industry, such as the ISPI (International Standard Party Identifier, proposed ISO standard 27729), the MWLI (Musical Works License Identifier), and potentially the DOI (Digital Object Identifier) loom on the horizon. Other intellectual property-based industries, such as the book and film industries, have also created and implemented identifiers. The ISBN (International Standard Book Number, ISO 2108), ISAN (International Standard Audiovisual Number, ISO 15706), ISSN (International Standard Serial Number, ISO 3297), ISTC (International Standard Text Code, proposed ISO standard 21047), as well as others, are examples of this. The association between these identifiers and their corresponding metadata is crucially important to support the evolving intellectual property industries. The use of other tools for the identification of music, such as fingerprints¹⁰ and watermarks,¹¹ is equally important.

Most of these methods of identification have developed independently from each other. The challenge now faced is integrating them into one large information framework involving intellectual property and associated entertainment-based products. It is this author's opinion that each group of rightsholders should independently develop identifiers for its segment of the entertainment industry. Each segment, whether it is music, video, literature, or software, has its own needs with respect to identification, and its own rules that distinguish one item of intellectual property or product from another. These identifiers should, however, be unified into one framework through the use of a super-identifier that references the segment spe-

cific identifiers, much in the way the GRid does. A super-identifier, such as the GRid, could easily be used to represent any type of digital product, as the design of its associated metadata allows for reference to any of the composite elements of intellectual property comprising the product.

The times we are living in have been labeled by many as the Information Age. According to the authors of *The Information Age: An Anthology on Its Impact and Consequences*, “Advocates of the concept of the Information Age maintain that we have embarked on a journey in which information and communications will become the dominant forces in defining and shaping human actions, interactions, activities, and institutions” (1997, 2). According to the *IFPI Digital Music Report 2008*, “Growing availability of repertoire, more choice, and the spread of portable devices have helped drive music demand to an all time high” (2008, 4). The ability to meet this demand is dependent on the strength of the informational backbone supporting all forms of music performance, reproduction, and distribution.

Endnotes

- ¹ Performing rights societies, sometimes called performing rights organizations (PRO), are generally associations of composers, songwriters, lyricists, and music publishers that license and distribute royalties for the non-dramatic public performances of the musical works they represent.
- ² This information is available by searching the databases on the ASCAP website at www.ascap.com and the BMI website at www.bmi.com.
- ³ The database is available at <http://iswcnet.cisac.org/ISWCNET-MWI/loginPublic.do>. A login is not required.
- ⁴ According to IFPI, recording industry trade associations generally promote the value of recorded music, safeguard the rights of record producers, and expand the commercial uses of recorded music in all markets where its members operate. See the IFPI website at http://www.ifpi.org/content/section_about/index.html and the RIAA website at <http://www.riaa.com/aboutus.php> for more information.
- ⁵ According to Nielsen SoundScan, “Since 1997 the sales from New Releases distributed by Indy’s has been consistent (\$37 million) even though the number of releases has increased drastically” (*State of the industry 2008*, 20).
- ⁶ More information can be found about the services these companies offer at <http://www.cdbaby.net> and <http://www.tunecore.com>.
- ⁷ EAN International and the Uniform Code Council were both organizations dedicated to the development and implementation of standards-based, global supply chain solutions.
- ⁸ The information used to create this table was confirmed with an individual in the A&R Administration department at EMI Records in the United Kingdom.
- ⁹ More information about Nielsen SoundScan may be found at <http://www.soundscan.com>.
- ¹⁰ An audio fingerprint is a unique code generated from an audio waveform. It is based on the perceptual characteristics of the audio (i.e., how it sounds to the listener). It uses an algorithm to calculate the fingerprint. Fingerprints are stored in a database, and music files are run against the database to identify the music. The fingerprint is used in broadcast monitoring to identify music being performed, and on the internet to identify music being traded illegally on peer-

to-peer sites. In the near future it will also be used by consumers to identify music in order to purchase it. For more information, read about Gracenote's MusicID at http://www.gracenote.com/business_solutions/music_id/ and about BMI's BlueArrow at <http://www.bmi.com/news/entry/234530>.

- ¹¹ Watermarking of music files involves embedding data directly into the file. A watermark can be embedded in both analog and digital forms of music. The data is imperceptible to humans, but can be read by computers. Watermarks must be encoded (using an encoder) into the audio, then decoded (using a decoder) in order to be read. Uses of watermarks fall into three main categories: Digital Rights Management (DRM) information, forensic information, and identification information. More information is available from the Digital Watermarking Alliance, a group of organizations wishing to further the adoption of digital watermarking, at www.digitalwatermarkingalliance.org.

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