ADVISORY COMMITTEE ON MANAGEMENT OF COPYRIGHT AND RELATED RIGHTS IN GLOBAL INFORMATION NETWORKS

First Session
Geneva, December 14 and 15, 1998

ELECTRONIC RIGHTS MANAGEMENT AND DIGITAL IDENTIFIER SYSTEMS

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INTRODUCTION

This study on electronic copyright management and digital identifier systems was prepared for the first session of the Advisory Committee on Management of Copyright and Related Rights in Global Information Networks, as provided for in the Program and Budget of WIPO for the 1998-1999 biennium.

The study is divided into three parts. The first part, entitled "Electronic Copyright Management: A Definition in Time and Space" discusses (a) the concept of rights management as it applies to copyright and related rights, (b) the changes brought about by digital technology and (c) possible areas of application of Electronic Copyright Management Systems (ECMS). The second part examines the legal, technical and standards-related issues that must be addressed to implement successful rights management solutions in global information networks; existing and proposed identifier systems as well as debates surrounding metadata definitions are discussed. The third part looks at the future of electronic copyright commerce and explores ways in which existing obstacles to such commerce could be overcome.   A link between electronic copyright commerce and ECMS is made, and the study argues that such commerce will be much more successful for rightsholders and more interesting for users and consumers if adequate rights management solutions are found and applied. The possible role of various parties in bringing about such solutions is also discussed.

Two preliminary notes on vocabulary.

First, there are (too) many acronyms used in the field of rights management and in standards-related work. Yet, it is practically impossible not to use those acronyms in a study of this kind. Acronyms used will be defined and a list is provided in Annex 1.

Second, for the purposes of this study the term "work" is understood to refer to an (incorporeal) intellectual creation in the literary or artistic domain (protected by copyright). That work may have various manifestations (e.g., a performance of a musical work). A manifestation may in turn be incorporated in a physical product (e.g., a CD), or a digital object (this expression will be defined later).   Whenever it is possible to do so, the term "content" will be used to refer to both manifestations and products. "Content" is also more neutral than "work" as regards related rights.

1. ELECTRONIC COPYRIGHT MANAGEMENT: A DEFINITION IN TIME AND SPACE

1.1 Defining Rights Management

Before discussing Electronic Copyright[1] Management Systems (ECMS), it may be necessary to define the concepts that underlie such systems, starting with "rights management" itself.

Without their "electronic"[2] component, Copyright Management Systems (CMS) are basically systems (or methods) that can identify content (works, discrete manifestations of works and related products) and, in most cases, the author(s) and other current rightsholder(s). Using that information, a CMS may then be used to authorize users to perform certain restricted acts[3] in respect of the works concerned. A CMS thus usually involves two basic modules: (a) one for the identification of content and (b) one for licensing (or other rights transaction, such as a full assignment). In many cases, ancillary modules are also considered part of the system, such as a payment or account receivable module. But at the core of a CMS are a systematic content and rights identification and a licensing tool.

A CMS can be used by individual rightsholders or by third parties who manage rights on behalf of others. In the former case, a rightsholder may use the system to track a repertory (catalogue) of works, manifestations or products. In the latter case, an organization may represent a group of rightsholders and then use a CMS to track each rightsholder's rights and works. Let us mention two examples: a literary agent representing a number of writers, and a more common example, a collective management organization (CMO) such as an authors society. Most known CMOs are members of the International Federation of Reproduction Rights Organisations (IFRRO) or of the International Confederation of Societies of Authors and Composers (CISAC).

In a CMO, the mandate to authorize third parties may come directly from rightsholders, under a voluntary system, or it may follow from government regulations, for example when the law contains a non-voluntary license or creates a right to remuneration that must be managed collectively[4]. In a few cases (e.g., Copyright Clearance Center in the United States), rightsholders set the price for each type of use of each piece of content. In a vast majority of cases, however, prices are contained in tariffs applicable to a class of content and/or users. Those usage fees can be of two main types. First, users can pay an annual fee to use an entire repertory. In some countries this is referred to as a "blanket license", which may be contained in the legislation itself. A variation on that theme is the so-called "umbrella" license, which covers all content not specifically excluded by rightsholders. These repertory licenses are a useful solution in cases where more precise management would be either too costly or simply

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[1] - The expression Electronic Copyright Management System (ECMS) is widely used. However, related rights may also be administered in this way. A better expression would be "Electronic *Rights* Management System", but we opted for the most common terminology.

[2] - This term may be considered a synonym of "digital" for the purposes of this study.

[3] - Defined as acts in respect of a work protected by copyright requiring an authorization.

[4] - For a discussion of the various CMO models, see Mihály FICSOR. Collective Administration of Copyright and Neighboring Rights. WIPO, 1990.

impossible. Two good examples are music performing rights (e.g., a radio station that purchases a blanket license to broadcast music) or corporate photocopying (a company that purchases a license to reproduce and distribute printed material within the company).

The second type of fee is known as transactional. Here a user acquires a license to use a specific work or manifestation for a defined purpose. Two examples: first, educational institutions that produce "coursepacks" (collections of photocopied material for students) in the United States must obtain a prior authorization for each piece of content used. Second, use of music in advertising or, in most cases, for recording purposes also works in this way. A transactional fee is paid and the value is assessed for each transaction (although pre-existing fee formulas may apply). In the transactional model, CMOs either grant a license based on conditions provided in advance by the rightsholder, or act as an intermediary between rightsholder and user[5].

Having seen the functions of a CMS, what changes then when the word "electronic" is added?

1.2 Defining Electronic Rights Management

With the help of computers, the management of large amounts of rights data is greatly facilitated and its efficiency significantly enhanced. The "systematic information" component of a CMS thus becomes an electronic content and rights *database* in an ECMS environment. Most if not all professional rights managers, including CMOs, have such a database at their disposal. The licensing function can also be made easier, even though in practice progress has not been as rapid as with rights databases. Many so-called *E*CMS are in fact simple internal processing of licensing functions which are by and large done manually. In some cases, email has replaced letters and faxes but a human intervention is necessary to process a license request. Full electronic implementation of an automated licensing function into an ECMS, in other words the online availability and searchability of catalogues (prices, available content, authorized uses), and a full-fledged "lights-out" licensing function (available 24 hours a day seven days a week) is still quite rare, but many systems are under development. We will mention them later.

When one applies this concept of ECMS to practical rights licensing and trading applications, the enormous importance of such systems becomes readily apparent. To start with individual rights management, a full ECMS (i.e., with both an automated rights information and licensing function) allows rightsholders to maintain their rights data, exchange it with other rightsholders and more importantly, to process individual transactions from users, e.g., licenses to use a specific work that can thus be granted automatically to individual users. A corporation or an individual author or user can purchase the right to use an image, video "clip", or a song, for example to republish it in a magazine article. A publishing house might purchase the right to reuse previously published material. Computer software may be sold on line with various types of licenses (e.g., use on a single computer, a site license, etc.). When performed online without human intervention, transaction costs are kept at a very low level.

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[5] - While this type of application is newer, theatrical performance of theater plays has functioned under this model for a very long time, but does not enter the scope of this paper which focuses on diffusion techniques, i.e., on reception of material by users other than by direct personal access (presence at a live concert, etc.).

The greatest commercial potential seems to emerge when acquisition of the right is simultaneous with the acquisition of the content. A number of software and journal publishers make content available for download and grant the necessary rights[6]. Professional quality images can be purchased online[7].

Third parties using an ECMS might include: (a) a cable or telecommunications company or other access provider tracking sales and use in a pay-per-view or pay-per-listen environment (assuming that obligations concerning rights usage tracking are part of the agreement with the rightsholders), and (b) CMOs which are probably best placed to take advantage of an ECMS. CMOs represent a multitude of rightsholders and deal with just as many users and one of their principal advantages is this "bottleneck" function, i.e., the ability to put a large number of users in contact with a large repertory of content.

CMOs try to make copyright compliance as easy as possible. Their ECMS solutions should be able to work both in a "repertoire" and a "transactional" environment. In cases where users pay an annual fee for use of a whole repertoire, an ECMS' role is in the maintenance of a rights database that allows users to browse the repertory they are allowed to use (assuming there is not a full blanket license covering all works) and possibly a license renewal function.

With respect to transactional licenses, an ECMS acts as a licensing "engine", but the situation varies greatly in terms of the degree of automation. To understand the potential role of an ECMS in this content, let us look at an ECMS from a functional point of view. In a purely paper-based ("analog") CMS environment, a user would mail, fax or email a license request to a CMO. The CMO would then process it manually and return it to the user. In a slightly more automated environment, the CMO would use an electronic works and rights database but still process the license request manually. Another step up in the ladder of automation would be to use an internal computer licensing system to process the request. At a higher level of automation, and in our view the only one that should properly be called a full ECMS, the user would search available content and rights online, be able to input a license request at the time he/she chooses, probably via the World Wide Web, and then receive a response based on the rightsholder's instructions from the ECMS, in most cases without any human intervention, i.e., at a very low transaction cost.

One can thus identify the most complete ECMS from an end-user standpoint: most users do not just want a "right"; they also want the content. It is highly likely that in the future global information networks will allow users to search, select, download and at the same time clear the right to use a particular work, manifestation or product[8]. Given the absence of global identification standards, however, an issue to which we will return below, an ECMS may not be able to easily share works, rights and information relating thereto with another ECMS. In

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[6] - e.g., the Microsoft and Netscape sites, Lexis-Nexis, Springer Verlag's LINK.

[7] - www.mira.com.

[8] - An example supported by a creator trade association (The American Society of Media Photographers) may be found at www.mira.com, where users can "purchase" high-quality digital images. Another good example is ByLine, a project sponsored by the UK's Authors Licensing and Collecting Society (ALCS), which allows users to purchase journal and newspaper articles www.universalByline.com.

other words, in today's fragmented environment, an ECMS may have to work in a closed circuit environment.

1.3 ECMS and Global Information Networks

As is rightly pointed out in material prepared by the International Bureau of WIPO for the important forum on collective administration held in Seville, Spain, in May 1997,[9] until recently, copyright management when it was not performed by rightsholders directly was mostly known as "administration". This "administration" was entrusted to organizations each representing a separate field, each in contact with a specific industry: music was available on records and tapes, films on 35mm and video, photographs on "paper" or film, writings in books and periodicals, etc. This is hardly surprising. Each "copyright industry" was similarly distinct: there were recording companies, film studios, book publishers and so on. All this has changed of course. Carriers are no longer content-dependent and content is no longer media-dependent. A uniformity of media applies both to new creations and to almost all existing analog ones that may be digitized. In addition, a form of creation which was "marginal" has entered the mainstream: digital compilations. Databases, CD-ROMs, even HTML documents (Web pages) are compilations.

Digital technology is quite different from its analog predecessors. It has already led to the merger of large industries (a number of major industry groups involved in publishing, music, film, etc.) and the emergence of two overlapping giants: an "information industry" and an "entertainment industry". In both cases, the type of information and the way in which it is made available seems to be almost secondary. The focus is now on content; a clear sign of this shift is found in language: film producers, recording companies and publishers, as well as authors, have all been brought under the same umbrella term: content providers. The content is the message.

For individual creators, this new technology means access to existing material, creating as it were a real-time universal library of ideas and content. For them, digital networks also mean easier access to a distribution network, but not without its great peril: information overload. Digital networks allow access not only to various manifestations of protected works, but to information generally, and many users are in fact submerged by this worldwide flow of information. Without management, information is practically inaccessible and cannot reach a proper audience. In the same way, without rights management, protected content will not reach users and rightsholders will not be appropriately compensated.

A complete ECMS should be more than just automated rights clearance. It should allow users to locate the content that they want quickly and easily, and then let them clear the necessary use rights. If both rights and content are made available in a seamless amalgam (or one-stop shop), so much the better. We should also consider in this connection that users frequently need to access less than an entire work or manifestation. Users may wish to use (and pay for) only the right to use a small fraction thereof[10].

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[9] - See document WIPO/MCR/SEV/97/INF. I.

[10] - "Digital technology makes smaller units marketable than would satisfy the originality croterion."
Thomas Dreier. "Copyright Digitized: Philosophical Impacts and Practical Implications for Information Exchange in Digital Networks". *WIPO Worldwide Symposium on the Impact of*

Finding the material that one wants or needs is a challenge. There are of course large public catalogues of bibliographic data, but would a user looking for a particular scientific journal want to use, say, the Library of Congress MARC data?[11] The answer depends on how focused the search is. With more than seven million registered titles in that particular database, a search on keywords such as "Science" or "Art" would return hundreds of thousands of "hits". A user looking specifically for the "Canadian Journal of Applied Chemistry", would have much less difficulty finding it. But what can one do with the bibliographic data? The same can be said of search engines such as Yahoo, Excite, Lycos, Northern Light and AltaVista.   Matters become more complicated in non-text fields. How does one search for an image? The answer to those questions really depends on the quality and "intelligence" of search engines. Hopefully, ECMS providers will be able to rely on advanced search engines to help users locate what they need.

Another key aspect of digital networks is that they know no boundaries and no countries. Information, including content protected by copyright, will not stop at borders, and rights management must take that fully into account. For example, currently most CMOs operate on a national basis.

In these network environments, ECMS will have one other key application: monitoring and licensing of interactive transmissions of content protected by copyright. Reuse of transmitted material will become a major issue, and hence also rights clearance for such reuse (both off and on-line). Let us look in more detail at certain applications of ECMS.

1.4 ECMS: Areas of Application

Most ECMS are designed with interactive transmissions in mind. They may also apply less precise forms of management, including the blanket licensing model mentioned above. In fact, today the only way to have a true one-stop licensing shop is to combine all models, thus covering all types of rights and content. In other words, a one-stop shop must be able to clear use or reuse of all or part of a manifestation of any type of content, and may embrace also those rights, works and manifestations for which the rightsholder prefers to use less precise forms of management, including blanket licenses. Let us look at the most important areas in greater detail.

[Footnote continued from previous page]

Digital Technology on Copyright and Neighboring Rights. WIPO Publication 723(e). WIPO, Geneva, 1993. At p. 195.

[11] - See below, section 2.2.2.1 (b)

1.4.1 Interactive Transmissions

The main area of application of ECMS is to clear rights in content transmitted (interactively) on digital networks. The user may obtain both content and rights, or may already have the content and need (additional) rights. While the Web is already an immense source of information (some of it protected by copyright), cable and satellite operators are competing to establish broadband services to provide interactive access to worldwide databases of all types of protected content. With broadcasting moving to digital, the volume of transactions of digital broadcasts (not interactive) will be dwarfed by the millions of interactive transactions. An ECMS is the best, and perhaps the only way to clear rights in and monitor use of content sent through these networks. In fact, usage monitoring is already a key issue in the discussions between rightsholders and access providers. Simply put, access providers in general agree to return relevant market information to rightsholders but want to limit their liability in case of user misuse.

1.4.2 Rights Clearance for Reuse

A specific challenge of ECMS will be to allow managed access to material to be reused to create new products. This may be done online or offline (e.g., when "buying" a password is necessary to use material contained on CD-ROM or DVD). Here also, rightsholders should have the option of delegating this task to a third party such as a CMO. Their decision should be based on factors such as cost, users' need for confidentiality of usage data and efficiency. Clearly, users would benefit from central access points to help them find what they want and clear the necessary rights.

ECMS must also allow users to obtain the rights that they want as precisely as possible, which means that ideally each item (or "grain") forming part of a given work or manifestation could be identified and dealt with separately. This important function is known as "granularity". Traditionally, this type of rights clearance is handled manually by a "rights & permissions" or "copyright' department within a company. In some cases, part of it may have been entrusted to a third party, such as a CMO. But the important point is that this process which was "exceptional" compared to primary trading is now moving to the forefront.

1.4.3 Digital Broadcasting

Digital broadcasting should be mentioned here. It is different from its traditional analog counterpart in at least two ways: first, it will offer many more channels, including multiplexing of the same program (e.g., different start times for the same film); second, users, if they are equipped to record the program on digital media, may want to reuse it. At present, radio and television broadcasters may provide CMOs with written logs of their programs, on paper or on diskette. Otherwise, sampling techniques are used. A combination of both logs and samples is used in many countries. This is done on a country-by-country basis. This may not work any longer in a digital environment, because the amount of data generated by the sheer number of channels will make this task daunting and in fact probably impossible. Properly functioning ECMS should include or refer to one or many coding/identification systems discussed below,

which should in turn allow automatic tracking. Standards such as MPEG in the audiovisual area allow rightsholders to put in a code before compression takes place[12].

2. ECMS: ISSUES AND OBSTACLES

The ECMS concept must maintain the equilibrium between the various interests involved. Rightsholders want to prevent piracy and unauthorized use as well as their control over the commercial distribution of material. On the other side, users, and in particular consumers, want to protect their privacy/confidentiality and ensure manageable access to material. Both sides share a concern about the cost of the system, or more precisely the cost/benefit ratio.

Taking these needs into account, we can now focus on the specific issues and obstacles to be overcome.

2.1 Legal Issues

2.1.1 The Fundamental Issues

The principal legal issues involved from an ECM viewpoint are:

(a) who owns the rights initially?

In the case of a work, it is usually the author. There are cases where due to an employment or other legal relationship (e.g., work-for-hire), initial ownership vests in another rightsholder, typically an employer. In the case of a manifestation, other rightsholders may be involved, such as a performer or a producer. The ECMS needs to know not who owns the right initially but rather who owns the right to authorize a certain restricted act in respect of a given manifestation of a protected work, or the work itself (as pure intellectual property), and possibly who is entitled to a share of the royalties.

(b) which rights are involved?

Copyright is not a monolith. It comprises a number of different rights. And those rights have a separate existence in each country (or a "territory of exhaustion", such as the European Union). We thus have a three-dimensional matrix, with a multitude of "rights" that can, in most cases, be separated territorially[13].

An inventory of the components of "copyright rights" is found in the Berne Convention and many national laws. There are two overarching categories, moral rights and economic rights.

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[12] - Compression is necessary to send most types of material, owing to the limited capacity of networks. Compression is based on mathematical formulas (algorithms) that can drastically reduce the size of digital "files" containing text, images, music, etc. A new algorithm for music, called WP3, reduces the original file size by up to 90%, allowing music to be broadcast or transmitted on the Internet even with today's limited bandwidth.

[13] - The adoption of international exhaustion may impact on the application of this principle, but the principle remains nonetheless.

Within the former, one finds at least the right of paternity/authorship and the right to oppose mutilation. In the latter category, the most important rights are the reproduction right, the right of communication to the public (which includes, according to Article 8 of the WIPO Copyright Treaty (WCT), the right to "make available") and the right of adaptation. An ECMS is concerned mainly with rights that can be licensed or traded on a routine basis. It thus seems likely that economic rights are better candidates for electronic rights management.

Against this backdrop, it seems that a digital transmission implies making a copy, at least at the point of reception. It may involve the right of "distribution", although a copy is not really "distributed" in the traditional, physical sense. Certainly, whenever a copy of a protected work is taken from a server (via "pull" or a "push" technology) and a copy is then made by a user (on any recordable media), the right of reproduction may be involved. This seems to be confirmed in the first of the Agreed Statements accompanying the WIPO Copyright Treaty (WCT):

> "The reproduction right, as set out in Article 9 of the Berne Convention, and the exceptions permitted thereunder, fully apply in the digital environment, in particular to the use of works in digital form. It is understood that the storage of a protected work in digital form in an electronic medium constitutes a reproduction within the meaning of Article 9 of the Berne Convention."

The only open question is to what extent exceptions to the exclusive right of reproduction apply. Such exceptions, including "fair use" and "fair dealing", should have a limited scope whenever a commercial activity is involved, or any other wide-scale diffusion that interferes with the normal exploitation of the work.

The right of communication to the public, which certainly applies to broadcasting, also applies to certain cases of interactive, on-demand transmissions. A question emerges as regards "push" technology where information is sent to a user without his asking. Article 8 of the WCT says that the exclusive right of communication to the public includes "the making available to the public of their works in such a way that members of the public may access these works from a place and at a time individually chosen by them."

(c) under the laws of which country?

This question is of course very difficult to answer on a general level. The traditional theories of emission (according to which the law of the country of origin of the communication applies) and of reception (according to which the law of the country of reception of the communication applies) are both very hard to transpose literally into a digital environment. One of the reasons is the multiplicity of countries that may qualify, particularly given the absence of a globally-accepted definition.

As regards "emission," when a user browsing the World Wide Web clicks on a button to obtain a piece of content, that content may of course come directly from the site which the user is browsing. But it may also come from a different site. Large sites have mirror sites in third countries. In that case, should one apply the "fiction" that the content came from the "mother site"? In other cases, sites or parts thereof are cached so that the content can be downloaded

from a server closer to the user. Do we need a legal fiction to ignore the *actual* country of origin to apply instead of the *perceived* country of emission? A practical problem of the country of emission approach is of course that servers could be located in so-called "copyright havens".

The reception theory seems simpler, and to a certain extent it is. The country concerned is the country where the user is located. But it is not always evident. As a resident of country A, I can use telephone lines to connect to the Internet in country B. When certain Web sites were banned by a large ISP in Germany in 1996, people accessed the same network from Germany by dialing into access points in France and the Netherlands. To the system, those users were located in France and the Netherlands. In addition, when a user connects to a large global network, the server may very well be located far away, and certainly not in the country of residence. These are more evidentiary problems than substantive legal questions, but they do matter.

On a close reading of the Berne Convention, Professor André Lucas recently proposed an "amended" version of the reception theory, which applies the law of the country where protection is required, or in other words the country <u>for</u> which protection is claimed *(lex loci delicti)*. This in most cases would be the law of the country <u>in which</u> protection is claimed *(lex loci)*, but not necessarily. Courts in a third country might be given jurisdiction by a contract between the litigants.

> (d) how will the moral right apply in an ECMS environment?

ECMS are not just systems that can return a standard yes and no to a user who wants to use protected content. Already, sophisticated ECMS are in use that can help protect moral rights. First, since the ECMS makes it possible to have a contract between rightsholder and user (with or without an intermediary), the contract may stipulate that alteration of the work is not allowed and/or that authorship must be recognized in a certain way. Rightsholders can also impose special conditions. To use M*i*ra as an example, photographers can restrict the use of their works so as not to include certain classes of users, e.g., tobacco companies[14]. An ECMS can implement online restrictions to protect moral rights and those restrictions can be enforced technologically (by watermarks, etc.).

> 2.1.2 <u>Rights Transfer Issues</u>

Rights transfers depend in large part on the various national laws that apply to an international transaction, although transferability is widely accepted in principle as regards economic rights. For example, certain national laws will impose formalities, e.g., only accept transfers in writing.

It seems to make sense in a global economy to have documents[15] to prove important legal acts much as a transfer or assignment of copyright. An ECMS can help in that regard. The validity

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[14] - See for example the on-line contract for M*i*ra uses, Article 3,
   http//www.mira.com/Services/MoreTermsConditions.htm.

[15] - This need not be on paper. With emerging standards concerning digital signatures, a transaction can be "documented" electronically. See Daniel Gervais, "The Law and Practice of Digital

of the ECMS as an intermediary depends on the quality of the data on content and rights therein. Rightsholders thus have a duty to update the ECMS with which they are working, and a transfer of rights is clearly an operation that needs to be so recorded. The same is true of operations that do not necessarily have to be recorded on paper because they follow from the operation of the law (e.g., a rights reversion).

Widespread use of ECMS would in time force rightsholders to clarify rights ownership, to the benefits of both rightsholders and users.

2.1.3 A Provisional Conclusion

This overview of the legal issues facing ECMS developers and users is not intended to close the debate in any way. It may help to measure, e.g., the potential impact of the applicable law question on the developmental ECMS. An ECMS will be designed to work in a given environment. If that environment is chosen by the rightsholder or service provider, it is likely to be the country of emission. If it is the access provider, it could be the country of emission, or of reception or a third country. If an ECMS was used to manage rights at the user level (one could imagine an ECMS function integrated in a set-top box), the country of reception (or sale of the boxes) would probably provide the environment. That said, standard ECMS modules may eventually be produced for the world market, granting rights to use more or less independently of any national law. Increased harmonization of laws due to the WCT and continuing efforts by WIPO have reduced though not quite eliminated past differences. The gap is closing, albeit not as fast as some might wish.

The applicable law issue also impacts on exceptions. While the Berne Convention, the TRIPS Agreement, the WCT and the WPPT impose limits on possible exceptions, they vary considerably from one country to another. Depending on which law applies, an act may or may not require an authorization or may be covered by a compulsory license or equitable remuneration scheme. If a French user downloads material from a US site for educational uses in France, would the (country of emission's) US *Fair Use Guidelines*[16] apply?

In addition, as already mentioned, copyright is still negotiated and traded country by country and right by right. If I as an author have transferred the right to digitize and disseminate my work electronically to a publisher in, say, Hungary, what happens if a corporation in France downloads and copies my work from a site authorized by the publisher but not by me? Clearly, in both cases, an authorization is required. While the publisher's authorization (who may be using an ECMS to manage on-line sales) was given in Hungary, was it given for Hungary? An ECMS cannot ignore those questions. An ECMS can include, for example, a user validation function that would check whether the user is located in a "valid" country. For example, each user could be asked to open an account and give a mailing address, which would then be validated. With digital signatures and other modes of digital identifications[17], it will be easier to validate identities.

[Footnote continued from previous page]

Encryption", Amsterdam, Institute for Information Law, 1998.
http://www.imprimatur.alcs.co.uk/IMP_FTP/encryption.pdf .

[16] - See http://lcweb.loc.gov/copyright/circs/circ21.

[17] - See Daniel Gervais, "The Law and Practice of Digital Encryption", *op. cit.*

An ECMS can solve some, though not all of those problems. An ECMS is, as we indicated above, the digital embodiment of the transactional/contractual model. By contract, the parties may agree on terms independently of national laws and/or choose the applicable national law. This only works of course within the limits of *ordre public*.

2.2 Standards-Related Issues

2.2.1 Identification Issues

Identification of what travels on digital networks is at the core of real-time ECMS. If one looks at ECMS as nodes in an electronic network environment that licenses and tracks protected material and the legality of use of protected material, such material passing through these nodes must be readily identifiable. Users must be able to precisely identify what they are using. The system must be able to precisely identify works, manifestations and rightsholders in order to secure authorizations from the right person and then send payments to that person.

2.2.1.1 Existing Identification Systems

a) The International Standard Work Code

Literary and artistic works (i.e., the incorporeal intellectual property) may be identified under certain existing systems, including the International Standard Work Code (ISWC) under development by the International Confederation of Societies of Authors and Composers (CISAC), an umbrella organization representing a number of CMOs, in particular in the music field but with members administering also literary and artistic rights. One version of the ISWC is already in use for musical works (ISWC-T), while a similar code is under development for literary works (ISWC-L).

The ISWC is a "dumb" or "mute" number, in the sense that it does not in itself contain any information. It uniquely identifies a certain "object"; the identification number is a key to a database where relevant information is contained. The music code (ISWC-T) consists of the letter T followed by a sequentially allocated ten digit numeric code, the last digit of which is a "check digit", i.e., a computer-calculated number that verifies that the previous nine digits are valid.

The CISAC model is as follows:
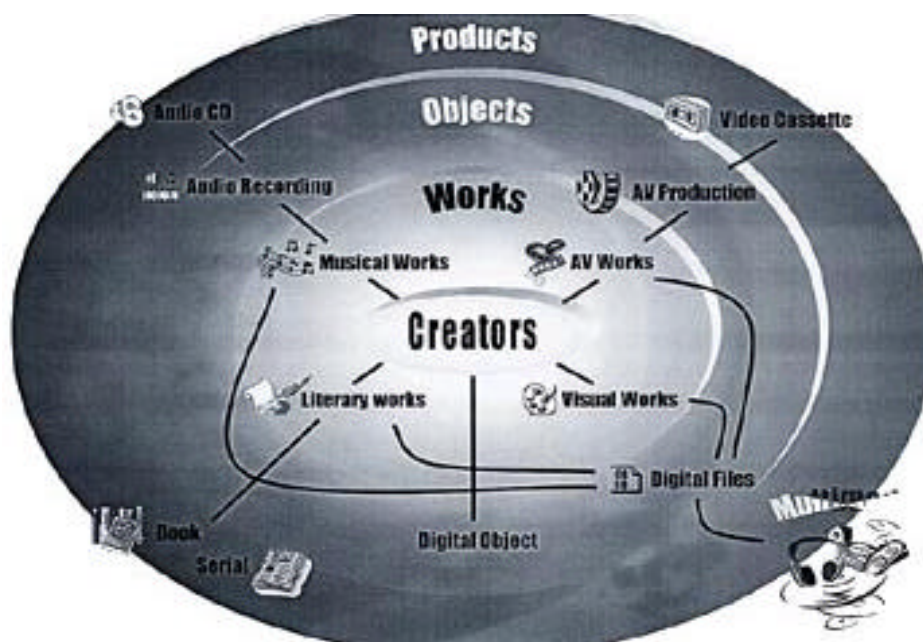
Source: CISAC
World Congress, Berlin,
September, 1998

b) The International Standard Recording Code

The material "traveling" on electronic networks will not consist of "works" in a pure copyright sense, but rather of manifestations of works (also referred to as digital "objects"), in other words a particular rendition of a work in a given embodiment[18]. Such manifestations include a recording of a specific performance of a specific musical work (which, in the United States, may become a new work), or an HTML or PDF version of a scientific article "published" on the Web including graphs and illustrations from various sources, etc. Current identifiers for manifestations include the ISO-recognized International Standard Recording Code (ISRC) that identifies a particular musical recording (e.g., a track on a CD). It is administered by the International Federation of the Phonographic Industry (IFPI). Despite its adoption by ISO more than 10 years ago, less than 50% of recordings on the market have an embedded ISRC and that percentage has not increased significantly in recent years.

Another musical identifier in the music field is the ISO-recognized International Standard Music Number (ISMN) which is used for printed (sheet) music.

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[18] - See the note on vocabulary in Introduction.

c) ISBN/ISSN

Books may be considered manifestations although they are also finished commercial products. For over thirty years, they have been identified using the International Standard Book Number (ISBN)[19]. The ISBN is composed of a one digit "region" code, a publisher prefix and then sequentially attributed numbers, followed by a check digit. Periodical publications are similarly identified at the title level by the International Standard Serial Number (ISSN), but that number applies to a periodical publication, not to individual works (articles, graphs, charts, images) that it contains.

d) Barcodes

Finally, in many industries (compact discs, computer software, videos, etc.) rightsholders identify "products" using the "barcode" that is used for physical distribution. The barcode may be based for example on the European Article Number (EAN) or Uniform Product Code (UPC). It is unlikely that barcode will be very successful in a purely digital environment.

e) Publisher Item Identifier

Another identifier, used in the publishing industry, is the Publisher Item Identifier (PII). The PII was agreed to in 1995 by an informal group of Scientific and Technical Information publishers calling themselves the STI group and consisting of the American Chemical Society, American Institute of Physics, American Physical Society, Elsevier Science and the Institute of Electrical and Electronics Engineers (IEEE)[20]. According to Mark Bide and Brian Green,

> "The PII is a string of 17 alphanumeric characters comprising one character to indicate source publication type, the identification code (ISSN or ISBN) of the publication type (serial or book) to which the publication item is primarily assigned; (in the case of serials only) the calendar year (final two digits) of the date of assignment (this is not necessarily identical to the cover date); a number unique to the publication item within the publication type and a check digit. The PII is a 'dumb' number with no intrinsic meaning. The ISBN and ISSN are used as a part of the number but simply to ensure uniqueness. The PII can only be assigned by the publisher and has no affordance (i.e., it cannot be 'reconstructed' from a published article). The STI group has made it clear that they will not assign PIIs retrospectively. There is to be no central registry of numbers."[21]

f) Serial and Book Item and Contribution Identifiers

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[19] - http://www.bowker.com/standards/home/index.html.

[20] - Brian Green and Mark Bide. Unique Identifiers: a brief introduction. http://www.bic.org.uk/bic/uniquid.html. IEEE has published a number of papers on ECMS. Among the most interesting ones, see A.K. Choudhury, N.F. Maxemchuk, S. Paul, and H.G. Schulzrinne. "Copyright Protection for Electronic Publishing Over Computer Networks". *IEEE Network*, Vol 9, Iss 3, p 12-20, May-June 1995.

[21] - *Idem*

The Serial Item and Contribution Identifier (SICI) is a recognized standard used by serial publishers[22]. According to Bide and Green, "SICI is currently widely used, mainly still at the item (i.e., issue) level, by subscription agents and libraries. It is an important element in EDI message transactions and is used in most library systems. It is represented in bar code form (the SISAC[23] barcode symbol) using the EAN128 symbology[24]."[25] The problem with the SICI is limitation to serials, a physical format with no obvious counterpart in a digital environment where manifestations of all types of works can be combined in "files" stored on any digital medium.

This prompted proposals for an expansion of the SICI and the creation of the Book Item and Component Identifier (BICI), a new version of the SICI now under development. "The code can be used to identify a part, a chapter or a section within a chapter, or any other text component, such as an introduction, foreword, afterword, bibliography, index etc. It can also identify an entry or article in a directory, encyclopedia or similar work which is not structured into chapters; an illustration, map, figure, table or other piece of non-textual content which is physically part of the item, or an enclosure which is supplied with but is not physically part of the item."[26]

The BICI is flexible identification system with a fairly loose set of rules. The absence of firm rules here and in other cases (e.g., the DOI) reflects the amorphous and changing nature of the data to be identified, the way in which it is stored, made available and used or reused.

g) Compositeur, Auteur, Editeur Code

Natural and legal persons have been identified by CMOs in the music field and CISAC members using the "Compositeur, Auteur, Editeur" or CAE number. In the framework of the development of their Common Information System (CIS) which started in 1992, CISAC decided to eventually extend this code to all interested parties (authors in other fields, performers, producers, etc.) and consequently changed the name of this identifier to Interested Parties (IP) number. The extension of this code has begun, notably in the literary field. The format of the number itself has not changed and previously allocated CAE were thus simply converted into IP numbers. As with the ISWC, the numbers are mute (or "dumb").

At present, use of and access to the IP database is restricted to CISAC members. One could hope that, if made accessible to other parties, it could lead to a standard identifier for people by all copyright industries.

In the book trade, probably due to the absence of a specific publisher identifier, many people identify publishing houses by their ISBN prefix.

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[22] - ANSI/NISO standard Z39.56.

[23] - SISAC (not to be confused with CISAC already mentioned), is the US Serials Industry Systems Advisory Committee.

[24] - The European Article Number (EAN) is a standard used for barcodes. The Uniform Product Code (UPC) is also widely used.

[25] - http://www.bic.org.uk/bic/uniquid.html#SICI. Information on the code itself may be found at the same URL.

[26] - *Idem*

2.2.1.2 Proposed Identification Systems

As previously indicated, there will be no difference amongst the carriers; most formats apply to the different "categories" of works. It thus seems desirable to develop a common system to identify "manifestations", independently of the contents. Projects such as the Digital Object Identifier (DOI) are relevant in this context.

a) Digital Object Identifier (DOI)

The DOI is not an identifier *per se*, but it offers both a structure for an identifier and a persistent routing system to a database containing relevant information.

The DOI project was launched by the Association of American Publishers (AAP) in conjunction with the US Corporation for National Research Initiatives (CNRI)[27]. After a successful launch at the 1997 Frankfurt Book Fair, the DOI promoters announced the creation of the International DOI Foundation (IDF), with offices in Geneva and Washington[28]. The DOI was designed to "provide persistent and reliable identification of digital objects via a proven technology -- the CNRI Handle System® --and an efficient administration system, to link customers with publishers, facilitate electronic commerce, and enable automated copyright management systems". The CNRI "Handle System" is a distributed computer system which stores names, or "handles", of digital items and which can quickly resolve those names into the information necessary to locate and access the items[29].

The DOI is thus mainly two things: (a) an identification *system*, potentially applicable to any and all categories of works and manifestations (even though at present its beta users are mostly book and journal publishers), and (b) a central directory or database which, when queried using a DOI number will route the user to the appropriate source of information.

The number itself is composed of three parts as follows:
Source: The International

The DOI is very flexible or other persons using it as any suffix, including other ISBN in the example given
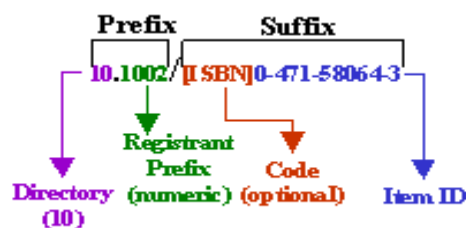
DOI Foundation

given that rightsholders an identifier can use existing identifiers (the above).

The Directory depends on rightsholders using the DOI. The DOI is functionally similar to a Uniform Resource Locator (URL) in the sense that it points a user (who "clicks" on a DOI) to the DOI Directory, which in turn seamlessly reroutes the user to the source of information corresponding to that DOI. Unlike a traditional URL, the DOI can easily be rerouted. A

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[27] - For further information on CNRI, see http://www.cnri.reston.va.us/about_cnri.html. As regards AAP, see http://www.publishers.org.

[28] - For further information on organizational aspects, see http://www.doi.org/DOI-Found-Recruit.html.

[29] - http://www.handle.net/index.html.

rightsholder who purchases rights to a work to another rightsholder can update the Directory information to ensure that future clicks are routed to its system[30].

It is foreseen that a fourth part will be added to the DOI to automate certain transactions. Relevant information would be added after the DOI number itself, separated from the identifier by a semicolon.

The DOI Foundation is still grappling with the issue of which "digital objects" the DOI should identify. And this only partially covers the complexity of the question, since the DOI Foundation came to the (preliminary) conclusion that, while every digital object can have a DOI, not every DOI should identify a digital object[31]. As with other identifiers, this is a key question and is closely related to efforts to standardize metadata, as we shall see later on. The current DOI online discussion forum spends most of its time on precisely that point[32].

The issue is also discussed in detail in the DOI "white paper", version 3[33]. The problems stem from the different viewpoints. The creative community as well as some more traditional copyright industries see the point of departure as the creative work or its manifestation. They see the initial work as the "core" to be identified, acknowledging that it may have digital "versions". Even from that viewpoint, however, the task is difficult, given that there is no uniform identification system for those works and manifestations and "no widely accepted data model defining all creative and publishing acts, necessary in placing [creations] in a digital world."[34] If the original works are identified using DOIs, should the various "physical" manifestations receive DOIs? What about products such as books, journals, articles and abstracts? The information industry, on the other hand, starts with digital objects that can be traded and has no need or desire to go "upstream" back to the original "work".

The conclusion drawn by the DOI Foundation is that no single identifier is capable of serving all purposes. This is not fatal, however, because the DOI is not "just" an identifier. Rather, it is a structure in which other identifiers can be used to create a new identifier. With this structure in place, it is likely that the DOI and interested parties will be able to also offer an ECMS solution, at least for print publications (in paper or digital form), probably late in 1999.

b) International Standard Audiovisual Number

The International Standard Audiovisual Number (ISAN) is a joint development of CISAC, the International Federation of Film Producers Associations (FIAPF) and the Association de Gestion Internationale Collective des Oeuvres Audiovisuelles (AGICOA). The ISAN has reached the level of "committee draft" within ISO, and has been submitted to national ISO committees[35]. The (draft) ISAN is a sixteen digit dumb number, including a check digit, that

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[30] - See http://www.doi.org/introduction.html.

[31] - The Digital Object Identifer Initiative: Current Position and View Forward. Version 3, August 1998. http://www.doi.org/white-paper-3.pdf, at p. 10.

[32] - http://www.doi.org/mailman/listinfo/discuss-doi.

[33] - Available online at the abovementioned URL.

[34] - *Idem*, at p. 7.

[35] - Document ISO/TC 46/SC 9/WG 1 N 64, dated September 24, 1998.

may be used to identify audiovisual works of all kinds[36]. It is an identification number without any legal implication or meaning and has no *prima facie* evidence value as regards the copyright status or ownership of the work. It does not identify right owners, even though it will be a tool used by people concerned with rights management as well as by many people interested in precise identification of audiovisual works for whatever purpose. In other words, the number is a mere pointer to a database, where information necessary for the identification of content is maintained.

Specific ISAN features include:

❑ Identification numbers are delivered on the request of the producer**.** A specific procedure is however contemplated (through AGICOA) to provide numbers to pre-existing works so that a critical mass of numbered works can be reached immediately. It is foreseen that the number will be affixed onto the work, on masters, copies, whether in analogue or digital format, on packaging, contacts, etc. The MPEG 2 and MPEG 4 standards already provide a specific space to carry ISAN.

❑ The system will be administered by an *ad-hoc*, non profit making, International ISAN Agency which will be responsible towards ISO of the respect of the standard; select, appoint and control regional agencies; and keep the central identification database. This agency will have a contract with ISO as is common practice for International standard.

❑ Regional Agencies will be the interfaces with users; they will issue the numbers on request; receive the supporting data from registrants; and transmit the data to the central database administered by the International Agency. Regional agencies do not need to operate on a national base.

❑ The system and the information in the identification database will be open to any interested user. A fee will be charged to access the database.

Many CMOs active in the audiovisual field, including SACD in France and SSA in Switzerland, plan to use the ISAN as a key feature of the International Database on Audiovisual Works (IDA), a database of rights ownership in audiovisual works to be used for collective rights management purposes.

c) Persistent Uniform Resource Identifiers

There are currently various proposals to "upgrade" the standard Internet Uniform Resource Locators (URLs). The problem is that when a digital resource moves from one "page" or file on a server or from one server to another, the URL also changes. A user who was trying to find the resource but given the original URL will then get the infamous "error 404" message, meaning that the resource is no longer available at the address given. This is very important for electronic commerce of digital resources. To name just a few scenarios where URLs

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[36] - "3.1 audiovisual work: Work consisting of a series of related images, with or without accompanying sound, which is intended to be made visible and/or audible through the use of devices, regardless of the medium of initial or subsequent fixation."

change: multiple versions can be made available, content may be moved because it is sold to a new rightsholder, or is made available through a different access provider. In each case, a user given the "wrong" address does not get the content s/he wants and the transaction does not take place. In addition, in the long run the value of the entire access system tends to diminish. Just as the DOI is permanently affixed to a particular resource, there are generic Web proposals to create persistent digital resource locators.

This led to a standardization effort by the Internet Engineering Task Force (IETF), operating in conjunction with the above-mentioned CNRI, known as Uniform Resource Name (URN). The term Uniform Resource Identifier (URI) is used as a generic term covering both URLs and URNs. A URN is basically a URI that has "institutional commitment to persistence"[37]. In other words, the institution that issued the URI (and presumably also put the resource on the Web) commits to maintain the validity of the URI, if necessary by putting a redirect of a user request to a different address.

One implementation of URNS is the Persistent Uniform Resource Locator (PURL). PURLs are in fact URLs that point to a server that can be updated (a system not unlike the DOI directory). "Instead of pointing directly to the location of an Internet resource, a PURL points to an intermediate resolution service. The PURL resolution service associates the PURL with the actual URL and returns that URL to the client. The client can then complete the URL transaction in the normal fashion. In Web parlance, this is a standard HTTP 'redirect'"[38].

Clearly, if not through persistent locators, than through intelligent search engines, users will need to be able to find the content that they want if electronic copyright commerce is to flourish on global networks.

2.2.2 Metadata Issues

Until and unless a single global identification system can be agreed upon, ECMS must be able to function in a multi-code environment. Interestingly, encoding and compression standards (such as MPEG in the audiovisual sector), do not mandate use of a particular code, but rather leave a "space" to include one or multiple codes in a transmission.

To determine which data need to be encoded or referred to by a pure identification system (such as the ISWC), or an identification/routing system such as the DOI, one needs to know which manifestation or product is made available, in which form and for which purpose (and perhaps to whom and for which period of time). One also needs to know which metadata ("data about data") are useful. While the past few years have seen a lot of activity over identification systems *per se*, recently the attention seems to have turned to metadata discussions. We shall look in that context at projects and standards related to the world of print publishing. The existence of well known standards in that field may be explained by the fact that metadata has been widely used there for many years[39] and the fact that text is a primary target for electronic copyright commerce because files containing text are usually

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[37] - See http://www.w3.org/Addressing/.

[38] - Stuart Weibel, Erik Jul and Keith Shafer. *PURLs: Persistent Uniform Resource Locators*. 12/9/1998. Available at http://purl.oclc.org/oclc/purl/summary.

[39] - The ISBN has been in use for almost 35 years.

much smaller than files for music or video. This will remain an issue until bandwidth is sufficient to transmit music and video at a high level of quality and in real time. It is only a matter of time.

While there are existing standards for bibliographic metadata that go back many decades, the situation is less clear in other sectors. In the audiovisual sector, there are databases that contain, e.g., film credits, but there are no worldwide standards even though some may emerge. The same is true in the music field, with the exception of CMOs. We shall also look at the work done by those organizations.

2.2.2.1 Print-Related Metadata Discussions

a) The Dublin Core

The Dublin Core is an attempt to identify the "core" elements of metadata that are needed to satisfy the needs of all those involved in the exchange or commerce of electronic information resources. It was developed over a three-year period by workshops in which "experts from the library world, the networking and digital library research communities, and a variety of content specialties"[40] participated. This "core" was named after the city in which the first meeting was held.

Originally, the Dublin Core contained 15 core elements as follows: Title, Subject, Description, Creator (or primary contributor), Contributor, Publisher, Date, Type, Format, Identifier, Source (previous resource), Language, Relation (to another resource), Coverage (geographical or temporal) and Rights. In further meetings, other elements were added including the concept of: "sub-element", which is used to qualify an element (for example, "date" can refer to a date of publication, or of a revision); "scheme", a label used to identify a scheme followed to identify the data (e.g., Dewey or Congress); "Lang", for the language in which the metadata is entered, as opposed to the language of the resource itself.

Currently, there are open questions, such as:

- ❑ Should an organization take responsibility for finalizing the Dublin Core?
- ❑ If so, where should work on the Dublin Core be finalized?
- ❑ Who should develop the implementation guidelines?[41]

To make matters slightly more complicated, a number of other groups are working on standards that could have a direct impact on the future of the Dublin Core. While those standards are not for metadata *per se*, they affect the way in which metadata is coded, transmitted, used, retrieved and accessed[42]. For example, the World Wide Web Consortium

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[40] - http://purl.oclc.org/metadata/dublin_core/. Participants came from the following countries: Australia, Canada, Denmark, Finland, France, Germany, Norway, Japan, Sweden, Thailand, United Kingdom and the United States.

[41] - David Martin. Beyond Dublin Core: The Need for High Quality Product Information. Paper presented at the BIC/British Library Seminar Trading Electronic Content, March 1998. Available at http://www.bic.org.uk/bic/rights.html.

[42] - See http://www.w3.org/Metadata/Activity.html.

(W3C), is developing standards including new markup languages (e.g., HTML, XML) and a recent effort on a Resource Description Framework (RDF), which is a language for representing metadata, and its relative Platform for Internet Content Selection (PICS). RDF provides a way to structure metadata for any object. It can be expressed in the Extensible Markup Language (XML), the markup language touted as the replacement to the current HTML[43].

The Dublin Core has been criticized for its inability to address both physical and electronic information exchange and commerce[44]. One author commented that the Dublin Core elements were ill-defined, "neither tight enough to satisfy the requirements of a rights-based system (which needs a fully structured framework) nor loose enough to be able to accommodate such a structure being imposed from another source. It views rights metadata as an extra (15th) element or set of elements, not recognizing that, in fact, it embraces 13 of the other 14 elements (*Titles* being the only exception)."[45] The same author argues that one set of metadata elements should enable a user to find (basically the "discovery" function) information and then perform a transaction as authorized by the rightsholder (the "rights management" function). Indeed, it would seem to be simpler to ask rightsholders and other players to maintain a single set of metadata for both. In contrast, the Dublin Core documents express doubts as to whether a single set of metadata can satisfy the "widely divergent and highly specific needs of the various rightsholders"[46]. This approach has been called "defeatism of the highest order."[47]

Clearly, there is a need for more work towards a consensus on metadata in the text field as in other fields. The fact that proposals in the text field take account of the need to identify "multimedia documents" should be considered a positive development, as it might lead to a standard for metadata that could span many types of content.

b) US MARC

A well-known public repository of metadata is the US MARC records database. The US MARC formats are standards for the representation and communication of bibliographic and related information in machine-readable form. The US MARC was developed by the Library of Congress and the Canadian National Library and the American Library Association. Other participants include the Australian National Library, OCLC, the Music Library Association and

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[43] - HTML or Hypertext Markup Language is a form of SGML, the Standard Generalized Markup Language, which is ISO standard 8879. SGML could be viewed as a system that allows one to define and use documents, in particular on the World Wide Web. XML is the Extensible Markup Language. XML is a more "transaction-friendly" SGML-based system. It is thus probably better suited to enable e-commerce. For a history, see http://www.xml.com/xml/pub/w3j/s1.discussion.html.

[44] - David Martin. Beyond Dublin Core. *Op. cit.*

[45] - Godfrey Rust. Metadata: The Right Approach. D-Lib magazine. July/August 1998. At p. 28. D-Lib magazine is available at http://www.dlib.org/dlib/.

[46] - From the May 1995 Dublin Core Workshop. Proceedings available at http://king.syr.edu:2006/CGI/edit/page.cgi/Misc...95Workshop.html.

[47] - Godfrey Rust. *Op. cit.* At p. 29.

the Special Libraries Association. The US MARC database contains approximately seven million records of publisher titles. It can be searched online[48].

A US MARC record contains three elements: the record structure, the content designation, and the data content of the record:

–   The structure of US MARC records is an implementation of national and international standards, e.g., Information Interchange Format (ANSI Z39.2) and Format for Information Exchange (ISO 2709);

–   Content designation, the codes and conventions established to identify explicitly and characterize further the data elements within a record and to support the manipulation of those data, is defined in the US MARC formats;

–   The content of most data elements is defined by standards outside the formats, e.g., Anglo-American Cataloguing Rules, Library of Congress Subject Headings, National Library of Medicine Classification[49].

The US MARC benefits from the fact that it already applies to a vast number of titles. The question is whether (and how) it could be extended to apply to other types of content.

c) INDECS Project

A new project called Interoperability of Data in E-Commerce Systems or INDECS, funded by the European Commission (DGXIII), was launched in November 1998. It is worth mentioning here because it seems to have the support of many international representative organizations, including IFPI, CISAC, IPA, STM and the DOI Foundation. In addition, the project partners have significant experience working with identification and metadata issues in a copyright environment, and understand the difficulties encountered by the various ongoing standardization efforts. In addition, INDECS posits the existence of several identification schemes and, rather than try to achieve worldwide harmonization, is aiming for interoperability. For the reasons discussed above, this approach may be more suited to the current political and industrial realities that underpin most identification systems.

According to the Project description submitted to the European Commission, which was asked to finance this initiative, INDECS will try to deliver, within an 15-month timeline,

❑   A directory of participants, which should help provide a "translation" among existing or proposed identifiers;
❑   A directory of such identifiers; and
❑   An agreement on metadata formats.

At the heart of the project will be to achieve agreement on a proposed ISO/W3C standard for descriptive and rights metadata which provides a means of integrating data from the different rights-based sectors which are now coalescing towards an interoperable electronic copyright

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[48] - See http://lcweb.loc.gov/marc/.
[49] - http://lcweb.loc.gov/marc/96principl.html#one.

commerce environment. The INDECS project partners view the World Wide Web development of XML (the Extensible Markup Language already mentioned), and RDF as the most likely technical tools to enable such interoperability. The project partners are currently engaged in dialogue with bibliographic and metadata groups (such as the Dublin Core and the International Federation of Libraries Associations and Institutions (IFLA)), with the intention of ensuring that the proposed standard has the widest possible application.

To produce those deliverables, INDECS will also need to achieve agreement on a data dictionary to address the numerous vocabulary problems that stem from the participation of people and companies with widely different backgrounds and practices.

The INDECS Project will benefit from consensus work done in the IMPRIMATUR context[50] and by Mr. Godfrey Rust who has proposed a new approach to better define the necessary metadata elements necessary for electronic copyright commerce[51].

d) Stanford Digital Library Metadata Architecture

As part of the Stanford Digital Library Project, the Stanford Digital Library Metadata Architecture (SMA)[52] is another interesting effort to standardize metadata. The SMA does not contain a formal metadata proposal. Rather, its proponents created a metadata "service layer" within the digital library that could interface with several repositories or databases of metadata (including e.g., a Dublin Core repository, or the US MARC records) and external search engines, and would be able to "translate" different models with a view to achieving interoperability. Work on the SMA should probably be monitored in any attempt to achieve a consensus on metadata issues.

e) BIBLINK/NEDLIB

BIBLINK is not a metadata definition project as such, but rather a project which aims to establish a relationship and encoding model between national bibliographic agencies and publishers of electronic material, in order to establish authoritative bibliographic information that will benefit both sectors. It is intended to deliver an interactive prototype/demonstration system which will enable publishers of electronic documents to input and transmit an agreed minimum level of data describing the documents to national bibliographic services[53]. A BIBLINK deliverable was a study of existing metadata formats[54]. BIBLINK is funded by the European Commission.

The Networked European Deposit Library (NEDLIB) is a project sponsored by a group of European national libraries and particularly the National Library of the Netherlands[55]. It started where BIBLINK ended. Launched in January 1998 and funded by the European Commission,

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[50] - See http://www.imprimatur.alcs.co.uk.

[51] - Godfrey Rust. Metadata: The Right Approach. *Op. cit.*

[52] - http://www.parc.xerox.com/istl/members/baldonad/medoc97-infobus.pdf, at pp. 9 and following.

[53] - http://hosted.ukoln.ac.uk/biblink/.

[54] - Available at http://hosted.ukoln.ac.uk/biblink/wp1/d1.1/.

[55] - The National Library of the Netherlands is quite active in this field. It is also building a repertory of all online resources available in the Netherlands. See http://www.konbib.nl/donor/.

NEDLIB is not a metadata project as such. Its chief aim is to "construct the basic infrastructure upon which a networked European deposit library can be built."[56]

Further work on NEDLIB might provide useful guidance on the use of metadata in transactions between librarians and publishers.

2.2.2.2 Other Fields

In the music field, in the framework of its Common Information Systems (CIS) Project, CISAC has developed standards for metadata on musical works to be included in the above-mentioned ISWC database. While access to the database is restricted to CISAC members, the fact remains that a de facto standard exists.

In the audiovisual field, the IDA effort already mentioned may also lead to a standardization of metadata by CMOs active in this field, both on the authors and the producers' side. In addition, there are also various metadata repositories concerning the film industry, some of them available online[57]. It is probably fair to say that there is also an "industry practice" concerning film credits, at least in the so-called Guild Agreements that apply to a significant part of the American film industry[58].

In all those cases, however, and the same is true of other sectors that have good repositories of metadata (e.g., visual arts and photography), there is no standard for data concerning *rights ownership, licensing and trading*. Thus, while the metadata may be used to identify a particular piece of content, it may not be sufficient or even useful for electronic commerce transactions. If, for example, the rightsholder is not the "original" rightsholder indicated in the bibliographic metadata, the data could do more harm than good.

2.3 Technology Issues

2.3.1 Synergy Between Law and Technology

Protection of rights management information requires a synergy between law and technology. An older example is the Serial Copy Management System (SCMS) technology which was used to limit the number of generations of copies of audiocassettes. This type of system may be extended to other carriers, but it constitutes a nonspecific approach to rights management and should be considered mostly as an anti-piracy device. It will be supported on the legal side by the new WCT and WPPT provisions dealing with circumvention[59].

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[56] - http://www.konbib.nl/nedlib/.

[57] - See e.g., http://www.loneeagle.com/eaglei/index.html.

[58] - One could also mention the WIPO Film Registry which did contain rights ownership information.

[59] - Article 11 of the WCT reads:
"Contracting Parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law."
See also Article 18 of the WPPT.

While in a number of cases, content providers may be satisfied that a copy of a manifestation (possibly with watermarking or other similar identification) is made available to a user against payment, knowing that such copy may be reused, to offer full control over commercial distribution to content providers, the new systems should ideally be software-based and freely available to the public at large.

Yet, in light of the concerns expressed by the user community, particularly in the United States during the recent debates surrounding the implementation of the two WIPO Treaties, one wonders whether providing rightsholders with full information and control over "who is using what" is the appropriate solution. A case in point is the technology of "digital containers" (e.g., IBM's® "Cryptolopes"®[60], Intertrust's® "DigiBoxes"® and the more recent "Intertrust Commerce Solutions"[61]), most of which have been slow to penetrate the market for digital delivery of works protected by copyright. Those containers allow manifestations to be delivered with rights management information that can be dynamically updated. Along the distribution chain, the system "reads" rights management information linked to a specific copy of a manifestation and ensures that any use of the material is compatible with the rights in question. Some information on usage of the work is then returned up the distribution chain.

User groups sound similar warnings concerning so-called "intelligent agents", i.e., pieces of software that act on behalf of a user and try to meet certain objectives or complete a task without any direct input or direct supervision from the user[62]. If a user/consumer is using an intelligent agent supplied by the access provider or a rightsholder, such agent could return to the access provider or rightsholder information that the user considers confidential or private. In addition, from a copyright perspective, the absence of standards for metadata, identifiers for works, manifestations and products and for ECMS generally means that such agents might perform acts that infringe intellectual property rights.

A simpler solution (for now) is to mark individual digital copies in such a way that it can be traced to the original user, but only in case of piracy. Watermarking might suffice for that purpose, in particular for manifestations of works that have little or no time-decaying factor (i.e., works whose value does not decrease significantly with time. A Shakespearean play is an extreme example). In all cases, privacy of the user must be maintained (except perhaps where acts of piracy are committed). A more precise solution is suggested in the next section.

Finally, secure payment systems (including options for "micro-payments") would seem to be useful to enable online commerce.

2.3.2 The Protection of ECMS

ECMS themselves need protection. This is why the WCT and WPPT are so important to their future use and development[63].

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[60] - See http://www.crvptolope.ibm.com/products.htm.

[61] - http://www.intertrust.com/press/seybold.html

[62] - From H.A.M. (Eric) Luiijf and P.J.A. (Paul) Verhaar. "Software Agents and IPR/Copyright", September 1998, available at http://www.imprimatur.alcs.co.uk/IMP_FTP/luiijf_paper.pdf.

[63] - Article 12 of the WCT reads as follows:

To work automatically, ECMS need standard identification and delivery formats and tools. With the growing use of digital networks to access protected content, it is highly likely that rightsholders will invest heavily in digital works identification and permanent marking of those identifiers in each manifestation of each work and then each carrier. Worldwide implementation of the WCT and WPPT should ensure that rights management data are not deliberately altered.

2.4 Privacy/Confidentiality[64] Issues

Two of the questions most often asked by users are (1) As a private individual, can I browse/read/watch/listen without giving my identity (and then receiving mail and telephone solicitations, etc.)? (2) As a corporate user (say a pharmaceutical corporation), can I download this scientific article without the whole world knowing that I need this for my Research & Development efforts? There may be legal grounds on which to base a claim for privacy or confidentiality in accessing protected content. In fact, in the United States academic authors have argued that the Constitution protects a right to read anonymously[65]. In many European countries, private data are protected and cannot be used outside of strict guidelines.

An ECMS does not in and by itself protect privacy. But it is probably the best tool to do so. If the rules under which the ECMS operates are so designed, the system would return to rightsholders aggregated information on use of his/her works. For example, the system could say that clearance was granted to use "Scientific Article X" to "11 pharmaceutical companies in the last month", or that "2,345 users in this part of Chicago" downloaded a given musical work. The rightsholder thus gets necessary market data without any risk of confidentiality or privacy violation. As an example, Copyright Clearance Center in the U.S. does not report to rightsholders which articles from medical or scientific journals are used by individual users (e.g., pharmaceutical companies). It only tells rightsholders how often a work was used by, say

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[Footnote continued from previous page]

"(1) Contracting Parties shall provide adequate and effective legal remedies against any person knowingly performing any of the following acts knowing, or with respect to civil remedies having reasonable grounds to know, that it will induce, enable, facilitate or conceal an infringement of any right covered by this Treaty or the Berne Convention:

(i) to remove or alter any electronic rights management information without authority;

(ii) to distribute, import for distribution, broadcast or communicate to the public, without authority, works or copies of works knowing that electronic rights management information has been removed or altered without authority.

(2) As used in this Article, "rights management information" means information which identifies the work, the author of the work, the owner of any right in the work, or information about the terms and conditions of use of the work, and any numbers or codes that represent such information, when any of these items of information is attached to a copy of a work or appears in connection with the communication of a work to the public.

[64] - For the purposes of this section, "privacy" relates to protection of consumer data, while "confidentiality" applies in a corporate environment.

[65] - Anne W. Branscomb. Anonymity, Autonomy and Accountability: Challenges to the First Amendment in Cyberspaces. (1995) 104 Yale Law Journal, 1639. Professor Julie Cohen (University of Pittsburgh) has taken a similar view.

the pharmaceutical industry as a whole. Most CMOs aggregate information in this way and this is perhaps a function whose value has thus far been underestimated by users.

A related issue is how to identify individual digital copies (which presumably have been sold to a specific user), without creating a risk to privacy or confidentiality. If indeed individual copies are identified, using e.g., a watermark containing a transaction code, a viable solution could be to number individual copies, without including data identifying the user who "ordered" the copy in question. Copy numbers could be linked, in a secure database, to the individual users and the link between the copy number and user data would be possible, e.g., pursuant to a judicial order where a given copy has been found on infringing compact discs. The role of trusted third parties acting as aggregators of usage data might be especially important to users. An aggregator or CMO using an ECMS could thus maintain the confidentiality of the link (if any) between a given copy delivered on-line and a specific user[66]. The content owner would receive with the payment for use of his manifestations/works a report on the number of uses, possibly with an indication of the type of users concerned, but not individual users. Without this type of privacy/confidentiality protection, it may be very difficult for electronic copyright commerce to prosper. In other words, properly tuned ECMS that aggregate data so as to protect privacy and confidentiality are probably essential ingredients of the success (or failure) of electronic copyright commerce.

3. ECMS: THE KEY TO ELECTRONIC COPYRIGHT COMMERCE

3.1 Defining Electronic Copyright Commerce

Electronic Copyright Commerce includes at least the two following types of transactions:

1) Online licensing (without content). Here, the user already has the content and wishes to perform a restricted act which requires an authorization; and

2) Online purchase of content protected by copyright, with the necessary rights clearance. Here, the user needs to perform the restricted acts he/she wants to perform in respect of such content; except for rare cases where a full assignment of rights would be available online, this in most cases would be a license transaction.

In both cases, the intellectual property aspect of the transaction is a licensing transaction[67], and licensing essentially refers to contracts. In fact, contracts may be considered the law of electronic commerce--within the parameters of copyright principles and other public policy ("*ordre public*") rules.

Licensing may be very simple. For example, obtaining a license to view/read/listen to a work (as for a consumer watching television) should be a very simple process. This can be done through a combination of an agreement with an access provider (e.g., a monthly fee) and an

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[66] - See the IMPRIMATUR Business Model, version 2. Document IMP/4039-A. Available at http://www.imprimatur.alcs.co.uk/IMP_FTP/BMv2.pdf. at pp. 53-57.

[67] - Online full assignments (transfers) of rights may take place, but they would seem to be the exception.

agreement with a content provider (which may be one and the same company) or with individual content providers on a case-by-case basis (probably as "mouse-click" contracts). These agreements may (a) choose the applicable law (a majority of transactions will probably have at least one "international" ingredient), (b) provide for any applicable waver or override of legislation, (c) determine the scope of access and use, (d) protect rights management information and ECMS as such if necessary above and beyond the legal protection that is instituted as a result of the adoption of the WCT and WPPT, and (e) define the liability of various parties. Naturally, rules of public policy *("ordre public"),* mandatory liability and other such rules continue to apply.

The level at which the needs of all those involved in those transactions, including rightsholders and users, are met should determine the success or failure of these systems. In this connection, it is safe to assume that users (a) do not want to pay an unreasonable price, (b) do not want highly complex and intricate systems, (c) want protection of their privacy/confidentiality and (d) most importantly, prefer a single licensing checkpoint per transaction, the famous "one-stop shops". As regards content providers, they are probably looking for efficiency and control over reuse of material, as well as accuracy of data, notably to re-focus marketing strategies as needed.

ECMS should also be flexible enough to allow users to access material in such a way that they know what they are buying. For example, a viable commercial model might allow users to browse part of the content for free (a few pages of an article, 30 seconds of music, a film "trailer", etc.), or the work at a reduced graphic resolution (e.g., for photographs), while full viewing/reading/listening would require a payment. The highest level of right, i.e., the right to commercially reuse the material, would require a higher level of clearance.

The challenge of ECMS is to make all this possible in a user-friendly way. ECMS may be managed by content providers themselves but in most cases intermediaries will probably be involved. They will act as central access points (performing or allowing a user to perform a "discovery" function of available material from several content providers). Not all intermediaries may be able to manage rights at the level required to satisfy rightsholders[68] while maintaining the necessary degree of privacy/confidentiality of users. In short, rights management is in many cases a different operation, a different business. It would seem to be more efficient to entrust rights management to rights management agencies, in particular those with experience in the transactional model. This could include several of the existing CMOs if they are able to develop the right ECMS solutions.

CMOs should be efficient and trusted by both content providers and users. They could be one-stop shops with information on available and unavailable rights and content ("metadata") and available licensing options, and may also provide access to content (directly as agent of a content provider or by linking to a proper source). Their principal function in that model would be to ensure efficient clearance of rights involved in the transaction. As "trusted third parties", they would be best placed to store information on, e.g., the link between a particular

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[68] - As is rightly explained in the IMPRIMATUR Business Model, "the ability of Rights Holders to track the use of their digital creations across networks and the frequency of their use is a critical requirement of an ECMS." IMPRIMATUR Business Model, Version 2. Document 4039-A. *Op. cit.*

copy of a manifestation and a particular user, as users might feel more "secure" (i.e., that their privacy/confidentiality is better protected) than if such information is contained in the various databases of individual content and/or access providers.

To quote the IMPRIMATUR Business Model, where it refers to the findings of its recent Consensus Workshops:

> "The findings of the workshops supported the view that the critical link between the ECMS and the virtual trading environment is the licensing transaction between the Rights Holder and the Media Distributor[69]. With this in mind, Rights Holders and their agents, including licensing societies, must ensure that the mechanisms which they may employ for licensing do not inhibit the availability of creations and hence stifle electronic commerce with consumers. The relationships between the roles for accomplishing licensing and trading must be as seamless as possible."

In short, while other functions may emerge, such as online advertising of available content and rights, most transactions are likely to be licensing, with or without content delivery. Licensing probably needs to be performed both on a blanket basis and on a per transaction basis, given the type of marketplace described in Part 1, and at least with respect to licensing through individual transactions, to provide efficient access at a reasonable level of cost, the system must be automated. ECMS are the key to that automation process.

3.2 Examples of Working ECMS

A full ECMS as defined above includes a work and rights database, and a licensing function. Ideally, at least for certain types of content, it also offers a link to the content itself, thus allowing the user to clear the rights and obtain the content in a single set of transactions.

There are a number of working ECMS in operation today, even though the field is still fairly new. In fact, a major report prepared in July 1996, in the framework of the Electronic Library project concluded that ECMS technology was still immature[70]. In its list of ECMS, it referred to a number of non-automated systems and demonstrators. Two years later, there are a number of working systems. While it is not possible to mention them all, some examples might help to illustrate the reality of the issues mentioned in this study. We will not mention systems developed by rightsholders themselves, even though a number of online delivery systems operated by a single rightsholder are available. Generally speaking, the rights management component of those systems is less interesting, because the system is operated only by the rightsholder concerned. An ECMS seems more interesting when it functions as a rights management portal between a plurality of rightsholders and a large number of users.

The following is a series of examples on working ECMS. The list is obviously not intended to be exhaustive.

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[69] - Capitalized terms are defined in the Business Model. See previous footnote.

[70] - Bill Tuck. Electronic Copyright Management Systems: Final report of a scoping study for eLib, July 1996. Available http://www.sbu.ac.uk/litc/copyright/ecms.html.

3.2.1 ALCS/ByLine

ALCS, the UK–based Author Licensing and Collecting Society, has developed an ECMS solution for online syndication of newspaper and other articles[71]. Combining an ECMS solution with online delivery, users can search the ByLine database and download, with rights clearance (with authority from the author of the material), already published articles for use in their own publication. The system is automated and articles are individually priced. ByLine has been termed the "Global Bank of Journalism".

ALCS is also the coordinating partner of the IMPRIMATUR Project.

3.2.2 IMPRIMATUR

IMPRIMATUR, the aforementioned European Project now in its final stages, plans to deliver a beta ECMS for rights clearance and delivery of music and photographs[72]. The system has not yet been released for public consumption but a demonstrator CD-ROM is available. It issues unique numbers, manages rights (including the payment function) and provides access to content on the World Wide Web.

One of the final parts of this project is the "Liquid Audio Trial". Its aim is to build software to interface between the Liquid Audio Inc. digital delivery system and the ECMS developed by the UK Music Alliance (that is, the alliance between the Performing Rights Society (PRS) and the Mechanical Copyright Protection Society (MCPS)). The purpose is to experiment with the trading of copyright in an electronic environment. Music will be streamed to personal computers.

3.2.3 CCC/IFRRO

US-based Copyright Clearance Center (CCC) offers rights management services to authors and publishers. Rightsholders can enter their rights data in the CCC database. Authors can search their own data set, with access through the World Wide Web[73]. Rights clearance for university photocopying of "coursepacks", electronic course content and for general photocopying licenses for business users may be done entirely online using an ECMS[74]. Prices for each work and each type of use are set by rightsholders. CCC also offers online licensing commercial republication of specific titles on behalf of individual rightsholders[75].

CCC is a member of IFRRO[76]. Several IFRRO members offer an online interface to obtain licenses. While most of the processing is still done offline, there are plans to implement full online (automated) licensing in the coming months. Examples include the UK Copyright

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[71] - See http://www.universalbyline.com/scoop.html.

[72] - See http://www.imprimatur.alcs.co.uk/technica.htm. For the image-related site, see http://imprimatur.die.unifi.it/.

[73] - See http://www.copyright.com/authors/.

[74] - http://www.copyright.com.

[75] - See http://www.copyright.com/inc.html or http://www.copyright.com/mit.html.

[76] - See http://www.copyright.com/ifrro/.

Licensing Agency's Rapid Clearance Service (CLARCS)[77] and the Australian Copyright Agency Limited's Copyright Express[78].

3.2.4 M*i*ra

The Media Image Resource Alliance (M*i*ra) is an online digital stock agency. Users can browse, download and clear rights to use professional quality images. The entire licensing function and access to content is done automatically online via an ECMS. M*i*ra was created by the American Society of Media Photographers (ASMP), CCC and Applied Graphics Technology (AGT). Photographers and other rightsholders provide images directly to M*i*ra, set prices and conditions for use[79].

3.2.5 Xerox

Xerox Palo Alto Research Center (PARC) has developed rights management language that could be used to build an ECMS.

Mark Stefik, a well-known Web and computer expert working at Xerox's PARC argues in a book soon to be released[80] that the only way for copyright to survive as a significant form of intellectual property is for copyright chips to be inserted in implements used to access content protected by copyright. Users would download the material and use it according to their specific rights clearance (e.g., one-time viewing, storage, right to copy, etc.) and the ECMS function would be enforced by the copyright chip. Those chips would have to contain the instructions necessary to communicate with the provider's ECMS and this in turn seems to require either (a) totally separate channels where providers control the ECMS environment including the copyright chips in the devices used by users, or (b) a totally interoperable system. For the former to work, it seems that users have to accept a central access point where a proprietary copyright chip would be in place. The question is: is it likely that every type of hardware or software used for access can be made to the specification of a given copyright chip. Users would probably not accept to have to deal with such single access points and single provider environments. The answer may be that an industry standard will emerge because it must. A sign of this may be the agreement on the Digital Transmission Content Protection (DTCP), "a method they had developed to protect copyrighted content transferred over digital interfaces from illegal copying"[81] unveiled in Tokyo on September 24, 1998. It is backed by five large companies, namely, Hitachi Ltd, Intel Corp., Matsushita Electric Industrial Co. Ltd., Sony Corp. and Toshiba Corp. Together they formed a Digital Transmission Licensing Administrator, an independent licensing authority to implement the DTCP.

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[77] - http://www.cla.co.uk/www/clarcs.html.

[78] - http://www.copyright.com.au/html/xpress.html.

[79] - http://www.mira.com.

[80] - Entitled "The Internet Edge". http://builder.cnet.com/web.builder/no97/Presentations/stefik.html.

[81] - http://www.mediacentral.com/channels/tv/09_24_1998.reutr-story-T249508.html.

The copyright chip or any other similar technology-based solution may raise serious concerns about the applicability of exceptions such as fair dealing and fair use or the purpose-specific exceptions of civil law countries[82].

3.2.6 COPYMART

COPYMART is originally an idea of Professor Zentaro Kitagawa. It was first presented at the University of London in 1988 under the name "CopySale". It received worldwide attention after its presentation in conceptual terms at the WIPO Worldwide Symposium of the Impact of Digital Technology on Copyright and Neighboring Rights held at Harvard University in 1993[83]. It has since been presented to a number of European and international groups, including IMPRIMATUR. A prototype and advanced concept was presented quite successfully at the Fourth International Copyright Symposium of the International Publishers Association (IPA) held in Tokyo in January 1998[84]. COPYMART combines a database of rights information with a database of works and provides an interface between registered rightsholders and customers. COPYMART can process transactions on a work or part of a work, since digital technology allows parts of works to be used and have commercial value.

3.3 Addressing the Need for Interoperability: The Way Forward

It may be difficult if not impossible to develop comprehensive digital sources of content (or "libraries") without interoperable ECMS solutions. This interoperability should include an understanding on metadata (data about the information products that are traded), which in turn implies a common denominator on vocabulary and core elements necessary to permit such trading. When electronic commerce intermediaries (cable and telephone companies, other access providers, digital libraries, etc.) come into play, this need for this interoperability becomes self-evident, for it does not seem realistic to see the world as a series of separate, parallel, watertight delivery systems. Interoperability is Ariadne's thread in the labyrinth of electronic copyright commerce.

Is the past prologue? Will we rebuild Knossus? There are grounds for pessimism. WIPO's Film Register Treaty, which would have allowed rightsholders and users alike to easily find rights ownership information and could have facilitated trade and enhanced transparency in that industry, did not receive the support of major film studios. Perhaps it came too soon and certainly its focus was not digital. The concern at the time was that rightsholders did not need a metadata database due to their reliance on their own data and worldwide distribution networks. Concerns were also raised about possible use of the registry by "pirates". WIPO was on the right track then, albeit addressing different needs. The general purpose was the same: facilitating worldwide rights trading. Without access to standardized rights ownership,

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[82] - See Charles C. Mann. "Who Will Own Your Next Good Idea?". *The Atlantic Monthly*; September 1998; Volume 282, No. 3; pages 57 - 82. Also available online at http://www.theatlantic.com/issues/98sep/copy.htm.

[83] - "Copymart. A New Concept—An Application of Digital Technology to the Collective Management of Copyright*". WIPO Worldwide Symposium of the Impact of Digital Technology on Copyright and Neighboring Rights*. WIPO Publication 723 (E). WIPO. Geneva, 1993. At pp. 139-148.

[84] - Zentaro Kitagawa. "Publishing and Copymart". *The Publisher in the Changing Markets.* Tokyo, Ohmsha, 1998. At p. 83.

licensing (and therefore, a large part of the possible trading) is not possible on a global scale, only within closed networks.

This risk probably explains why the tendency to develop global systems is ever stronger. This said, large entertainment, publishing and other conglomerates have developed or are currently developing proprietary solutions for identification, rights management and delivery of digital content. At first blush, this does not seem compatible with the global digital library or single access point that users are looking for[85]. The reason the Web is so successful is that one can find information using search engines such as Yahoo, Lycos and Excite that can look through the entire network of networks. The success of those "portals" is testimony to the existence of this need for global access points. Yet, is it reasonable to think that in an on-demand digital system the access provider with which a user/customer is in contact should have to deal with multiple identification and ECMS to be able to find material that the user wants? Without interoperability, would the user be limited to a set of products the access provider has negotiated access to and no more? Perhaps even only to content owned by the company that operates the access provider? This would mean that material from a few large companies would be made available to certain groups of users and that users who want access to more than one such sets of material would have to deal with multiple providers, each with a different rights management approach.

Evolution might take a different path. Perhaps one (or two) proprietary ECMS will become a de facto standard used by all rightsholders and access providers. Perhaps market forces will push one single "standard" above all others. The recent war over 56Kbits modem may provide a useful example (as did the much older BETA/VHS fight). There are two incompatible standards for the new, faster telephone modems operating at 56 Kbits. Fortunately, this fight now seems to be drawing to a close, with the adoption by the International Telecommunications Union (ITU) of the so-called V90 standard.

Waiting for a worldwide standard to emerge from several competing proprietary systems may be risky. Hence, solutions that strive towards interoperability and a certain degree of harmony should be preferred. There is a role for key players in finding, analyzing and, where appropriate, helping to develop those solutions. There is a need for a forum where those solutions can be freely discussed and considered. It would seem that this Advisory Committee could identify such a proper forum, and perhaps act as that forum itself.

Additionally, since multiple directories for various categories of works, manifestations and products exist, there seems to be a need for a "directory of directories". This is a simple, yet vital function. It would behoove a well-known, easily accessible and neutral international institution, such as WIPO, to perform this function. An ancillary function would be to create and maintain an Observatory to follow work on identifiers, metadata and related activities and provide updated information, in order to assist in the development of electronic copyright commerce. It thus seems that helping harmonization become a reality and maintaining a directory of directories are two essential functions.

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[85] - The Stanford Digital Library Project is an interesting example. It includes a rights management "service layer". See http://www.parc.xerox.com/istl/members/baldonad/medoc97-infobus.pdf.

Other functions that could be performed at the international level to achieve the above stated objectives include:

– promoting standard identifiers and, where necessary, improving on existing ones. This is true of all categories of works, manifestations and products, particularly of course where no identifier currently exists; this should also be extended to parties (persons). This function could be entrusted to an Observatory;

– maintaining a database of publicly accessible metadata, especially where none is currently available. Today, that is the case for almost all categories of works, manifestations and products and for persons. Notable exceptions include ISSNs and ISBNs;

– last but not least, explore whether a rights ownership database should be set up and whether it should be publicly accessible in whole or in part. Rights available for certain transactions could thus be "advertised" and eventually electronic commerce transactions could take place. This function could be performed by independent organizations acting in parallel but preferably should bring together a network of interested organizations working in concert. There seems to be a need for international coordination in setting up such a structure, at least in facilitating the "meeting of the minds" that would set it in motion. There are prototypes of such networks currently under development.

CONCLUSION

The content is there. In almost all cases, it is in digital form or can be digitized. Networks with sufficient bandwidth are being built and many business users and individual consumers are already connected. They are ready for the content. Many copyright industries and other rightsholders are coming to the view that global networks represent good business opportunities and that digital, though it may be different, is nonetheless interesting commercially. In fact, it may be the only future growth area[86]. To put it simply, digital is inevitable. If most of the ingredients for successful electronic copyright commerce are assembled, the real question is: what do we do now?

Unless we want all content to be available for free without restrictions and to destroy copyright (an option which had been suggested but has now been clearly discredited), rights management solutions must be found. It seems fair to conclude that electronic copyright commerce cannot be based on national statutory schemes but that, within a voluntary licensing environment, both "blanket" and transactional solutions should be available to rightsholders and users. Given the wish for accuracy in usage reporting and targeted pricing, rightsholders might prefer transactional clearance and certain transactions most probably will be handled that way (e.g., purchasing the right to commercially reuse a work). In other cases, a blanket approach might be sufficient (e.g., use of a repertory on an Intranet). This seems to indicate that viable ECMS

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[86] - It must be said that some "newer" rightsholders who started to play that role due to the possibilities of digital technology have (impatiently) held that view since the very beginning.

solutions should be able to function in both types of environment, blanket and transactional. What is similarly clear is that given the multiplicity of players and their wide backgrounds and market practices, it is difficult to see how multiple incompatible solutions could coexist successfully for a long period of time. To avoid this problem, interoperability is needed, and steps that could be taken to achieve that fundamental objective have been suggested.

[Annex 1 follows]

ANNEX 1

MAIN ACRONYMS USED IN THIS STUDY

AAP	Association of American Publishers
AGICOA	Association de Gestion Internationale Collective des Oeuvres Audiovisuelles
AGT	Applied Graphics Technology
ALCS	Authors Licensing and Collecting Society
ANSI	American National Standards Institute
ASMP	American Society of Media Photographers
BICI	Book Item and Component Identifier
CAE	Compositeur, Auteur, Editeur (Composer, Author, Publisher)
CCC	Copyright Clearance Center, Inc.
CIS	Common Information System
CISAC	International Confederation of Societies of Authors and Composers
CLARCS	Copyright Licensing Agency Rapid Clearance Service
CMOs	Collective Management Organizations (including collecting societies)
CMS	Copyright Management Systems
CNRI	Corporation for National Research Initiatives
DOI	Digital Object Identifier
DTCP	Digital Transmission Content Protection
DVD	Digital Versatile Disc
EAN	European Article Number
ECMS	Electronic Copyright Management Systems[87]
EDI	Electronic Data Interchange
FIAPF	International Federation of Film Producers Associations
HTML	Hyper Text Markup Language
IDA	International Database on Audiovisual Works
IDF	International DOI Foundation
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IFLA	International Federation of Libraries Associations and Institutions
IFPI	International Federation of the Phonographic Industry
IFRRO	International Federation of Reproduction Rights Organisations
IMPRIMATUR	Intellectual Multimedia Property Rights Model And Terminology for Universal Reference
INDECS	Interoperability of Data in E-Commerce Systems
IP	Interested Parties (Information)
IPA	International Publishers Association
ISAC	International Standard Agreement Code
ISAN	International Standard Audiovisual Number
ISBN	International Standard Book Number

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[87] - It should be noted that ECMS is also used in many other fields with different meanings: European Center for MSDS-Services and Emergency Call Management Service.

ISMN	International Standard Music Number
ISO	International Organisation for Standardisation
ISP	Internet Service Provider
ISRC	International Standard Recording Code
ISSN	International Standard Serial Number
ISWC	International Standard Work Code
ITU	International Telecommunications Union
MARC	Machine Readable Cataloguing
MCPS	Mechanical Copyright Protection Society
M*I*RA	Media Image Resource Alliance
MPEG	Moving Picture Experts Group
NEDLIB	Networked European Deposit Library
NISO	National Information Standards Organization
OCLC	Online Computer Library Center, Inc.
PARC	Palo Alto Research Center (Xerox)
PDF	Portable Document Format
PICS	Platform for Internet Content Selection
PII	Publisher Item Identifier
PRS	Performing Rights Society
PURL	Persistent Uniform Resource Locator
RDF	Resource Description Framework
SACD	Société des Auteurs et Compositeurs Dramatiques
SCMS	Serial Copy Management System
SGML	Standard Generalized Markup Language
SICI	Serial Item and Contribution Identifier
SISAC	Serials Industry Systems Advisory Committee (US)
SMA	Stanford Digital Library Metadata Architecture
SSA	Société Suisse des Auteurs
STI	Scientific and Technical Information publishers group
STM	International Association of Scientific, Technical & Medical Publishers
TRIPS	Trade-Related Intellectual Property Rights
UPC	Uniform Product Code
URI	Uniform Resource Identifier
URL	Uniform Resource Locator ("Web address")
URN	Uniform Resource Name
W3C	World Wide Web Consortium
WCT	WIPO Copyright Treaty
WIPO	World Intellectual Property Organization
WPPT	WIPO Performances and Phonograms Treaty
XML	Extensible Markup Language

[End of Annex 1 and of Study]