Digital Rights Management

Final Report

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1 General Introduction

1.1 Background and Rationale of the Report

Following the approval of the European Union Directive 2001/29/EC on the harmonisation of certain aspects of copyright and related rights in the context of the Information Society, the European Commission requested that CEN/ISSS examine the state of the art in standardization in this general field.

CEN – the European Standards Committee – is one of three formally recognized European Standards Organizations, and ISSS – the Information Society Standardization System – is the Department responsible for standards activity within CEN for information and communications technologies (ICTs).

ICT standardization is a very complex environment, characterized by multiple initiatives, often within *ad hoc* consortia. In addition to its own standards activities, CEN/ISSS has undertaken several initiatives to provide overview reports on specific topics with the objective to help the market, including end-users of the standards, to understand the detail of what specifications are available and how they inter-relate, and make appropriate recommendations.

The European Commission suggested such a Report on Digital Rights Management standardization, with a view to identifying in that context the current status of DRM usage and possible means to ensure effective implementation of DRM in the marketplace.

A Group (CEN/ISSS DRM Group) open to all interested parties was therefore established in October 2001, and has prepared the present Report. The Group is responsible to the CEN/ISSS Forum (a strategic body of CEN Members and Chairs of CEN/ISSS technical standards groups) but the specific contents of the Report are entirely the DRM Group's responsibility.

The Report is derived from the individual and voluntary contributions of the Group members, who provided text inputs concerning the issues and standardization initiatives. A paid Editor has compiled the overall draft.

The draft Report was placed on the CEN web-site for public comment and consideration by an Open Meeting which was held in Brussels on 7 February 2003. Comments received on the report are listed at Annex D, with a Resolution of Comments Table (Annex E)

The report was subsequently considered at a meeting of the Group on 20 March 2003 and finally approved by it on 24 October 2003

Methodology

After the DRM Group had been established, it was decided to appoint an Editor for the Report. A job description for the Editor was agreed by the Group and the post

was advertised in the usual way. 5 people applied for the job and, after consideration of the applications, Chris Barlas was appointed.

In order to ensure that the Report was compiled and drafted in accordance with the wishes of the DRM Group, an Editorial Group, answerable to the full DRM Group was established. The Editorial Group met from time to time during the compilation of the Report. Membership of this Group can be found in Annex A to this Report.

The first task of the Editorial Group was to oversee the drafting of the Report outline. It was thought that an outline would be the most constructive way of creating the Report in the absence of a paid author. The outline was closely modelled on the Terms of Reference and contained a series of questions in which the DRM Group was interested. The main advantage of the outline was that it encouraged contributors to make submissions to a template, which materially assisted the Editor in his task. The template can be found with the Terms of Reference in Annex B.

A list of those contributing to this Report can be found in Section 7.

2 Terms and Definitions

N.B. The terms and definitions used in the Report are intended solely for the Report.

2.1 A Definition of Digital Rights Management

During the consideration of the Terms of Reference for the Report, the Group had considerable discussion in an attempt to create a definition of Digital Rights Management. Several versions were proposed, but the Group has not yet approved any single definition.

The following definitions have been suggested by contributors to this Report. All terms and definitions are intended solely for discussion purposes in connection with this Report.

Contributions were requested, which might provide:

- Short definitions

- Methodologies for creating a definition

- Reference models

- DRM glossaries

2.1.1 DWS

It is important to make a distinction between DRM (Digital Rights Management), DRM technologies, DRM platforms and DRM solutions as defined in the following:

Digital Rights Management (DRM): The management of rights to digital goods and content, including its confinement to authorised use and users and the management of any consequences of that use throughout the entire life cycle of the content.

DRM Technology: Encryption technology that permits content owners to control user access to digital content, including the issue of licenses and decryption on the client device.

DRM Platform: A framework that enables control and management of user rights and business logic, integrating DRM technologies with additional components such as rights locker, subscription management, etc. across multiple devices.

DRM Solution: An end-to-end application incorporating technology and services for digital distribution, enabling a firm to implement business models for consumption of content.

2.1.2   EBU (European Broadcasting Union)

It is important that clear definitions are adopted that distinguish between "copy protection" and "rights management" highlighting their respective boundaries. This is essential to the definition of appropriate corresponding technological measures in the light of a clearer operational and legal framework:

Copy protection: A copy protection system is designed to signal the extent of allowed copying and serial copying, if any, that is defined by the associated "usage information" with respect to any instance of delivered content, and to implement and enforce the signalled behaviour in consumer equipment.   The notion of copy protection can be extended to control the movement of content within and outside the user domain, encompassing re-distribution over the Internet. *Copy control is not conditional access* that controls authorised consumption of content.

NOTE 1: A copy protection system must be capable of operating independently of any CA system. In particular, the specification and design of a copy protection system shall not depend upon any assumptions about the functionality of a CA system or the implementation of/presence of a CA system. The control of copying of content shall remain under the independent control of the copy protection system. A CA system shall not override the control of the copy protection system.

NOTE 2: The notion of content protection should be avoided. It is vague and indifferently refers to copy protection or access control, which are different by nature. The notion of "unprotected" content is often misused for e.g. Free-to-Air as content may not be scrambled on air, but still carry copy protection signalling.

Rights management: Rights management covers the processing of rights information for the electronic administration of (inc. contractual) rights, including e.g. content tracing and financial recovery. By its nature, rights management requires access to commercially sensitive information (in opposition to copy information and usage signalling).

Methodologies for creating a definition: There will certainly be alternative proposals for these definitions. Consensus is needed and clarity is required prior to studying / adopting the appropriate technological measures for copy protection and/or rights management.

Reference models: The European Broadcasting Union noted the difficulty to define reference models for copy protection and rights management in DVB and TV-Anytime.

DRM glossaries: DRM glossaries can cover a wide range of issues belonging to either copy protection or right management.   The following basic definitions of concepts and roles are currently in use in standardization:

> *Content Creator*: Generates new content, sets usage rules and licensing terms

> *Content provider*: distribute/brokes content, sets usage rules and licensing terms

Rights/content owner: Owns rights to content, sets usage rules and licensing terms

Service provider: Aggregates content, packages and delivers content, applies content provider rules and adds own rules, processes transactions, captures and aggregates usage information, applies persistent protection

Consumer: uses certified equipment, activates service, searches for services, consumes content according to usage rules (watching, viewing, copying, passing on to a friend), sets preferences, generates usage information, initiates transactions

Manufacturer: Makes certified compliant equipment, manages revocation and renew broken software

Free-to-Air Broadcasters: public and commercial broadcasters delivering content unscrambled. Copy protection is ensured through signalling. Broadcasters are often simultaneously content creators, content owners, content providers, services providers and content distributors.

Authorised domain: The devices, networks and interfaces which are used for purposes of consuming content both inside and outside the home and are owned/rented, or otherwise under the control of that consumer.

Acquisition: The point of acquisition is the point where content enters the authorised domain

Storage: storage consists of holding a copy of content, temporarily (e.g. for Pause and Play) or persistently (e.g. a personal backup copy) using local or remote storage capacity

Copy: Copy Includes any reproduction, duplication, replication, recording storage, or capture of signals or data for whatever purpose or whatever duration.

Consumption: The point of consumption is the point at which the user e.g. watches video (typically a display) or listens to audio (e.g. loudspeakers)

Re-distribution: the point of re-distribution is the point through which content leaves the authorised domain, in particular towards the Internet.

2.1.3 EDiMA

The term DRM means the chain of hardware and software services and technologies governing the authorised use of digital content and management of any consequences of that use throughout the entire life cycle of the content.

By "life-cycle" EDiMA means the distribution chain stretching from the creator to the end-consumer(s) but DRM is also a tool to manage peer to peer networks or super

distribution, in other words DRM doesn't stop at the end-consumer. The chain participants can be grouped according to their functions:

Content owners: independent creators or studios, recording companies or those entities who own the copyrights to the content.

Content Providers/distributors: operators, aggregators, distributors and end-providers whose main business is to distribute content through licensing arrangements with content owners.

Infrastructure: Content Distribution Networks (CDN), Network service providers (e.g., ISP), Content servers (e.g., streaming servers)

Business partners: advertisers, security solution providers, billing services, database handlers

Electronics Manufacturers: PC, portable device, chipset, mobile terminals, firm/hardware manufacturers

Users/consumers: can be either in the B-2-B or B-2-C category

2.1.4 ENPA

DRM refers to the technologies and/or processes that are applied to digital content to describe and identify it and/or to define, apply and enforce usage rules in a secure manner.

ENPA favors a broad definition of DRM as it should cover all different types of DRM systems and correspond to the different needs of the various right holders, including newspaper publishers.

2.1.5 FEP

DRM can be separated into two distinct layers:

- The identification and description of intellectual property, rights pertaining to the works and parties (digital rights management)

- The (technical) enforcement of usage restrictions (digital management of rights)

DRM may therefore refer to the technologies and/or processes that are applied to digital content to describe and identify it and/or to define, apply and enforce usage rules in a secure manner.

However, FEP believes that the standardization process should be limited to the initial identification and description layer and not to the standardization of encryption technology or architecture.

Two dimensions of interoperability need to be examined:

a) The ability of different types of content – text, music, audio-visual - to "converge" or combine within a single consumer product (e.g. some content, while primarily text, could incorporate video sequences etc.). This would require the different content sectors to use a "common language" (vocabulary, grammar) within a flexible but common identification and description format so that they can exchange or take each other's type of content without having to translate or interpret each other's "rights language" – referred to as an International interoperable standard (e.g. the system being developed by MPEG 21).

b) This capability is of interest to all sectors of the publishing industry (trade, educational, STM) who may want, now or in the future, to develop business models for electronic content which may include convergent links to music or audio-visual product.

c) The ability of content to be accessed via different delivery systems – eBook Reader, PC, Television etc. This will require "platform independent standards" which will enable the different types of machine to receive or exchange the same content packages – and this must incorporate (not precede or be independent of) the International Interoperable Standard format as developed by the Content sectors.

This standard setting process is therefore about developing essential enabling tools – and the conceptual links are technology–standards–market exploitation–business model–opportunity.

2.1.6 IFPI

Digital rights management refers to the technologies and/or processes that are applied to digital content to describe and identify it and/or to define, apply and enforce usage rules in a secure manner".

It is imperative that the definition includes:

- Both copy and access-protection technologies (in respect of content)

- Player technologies that provide access by utilizing copy and access-protection technologies

- Both protection and identification technologies, i.e. not only pure control technologies, but also all their components, including rights management information, rights definition language, and digital certificates and encryption used to enforce the rules and control access to the mechanisms;

- All usage rules, irrespective of whether they are prescribed by a right holder or another body.

The definition provided by IFPI ensures that all these elements are covered.

2.1.7   IPR Systems

DRM includes a range of functions to support the management of intellectual property for digital resources. These functions include description, identification, trading, protection, monitoring and tracking of digital content. DRM systems also support the expression of rights offers and agreements (e.g. licenses) for content and all the parties involved (including rights holders).

2.1.8   MPA

DRM is an access and copy control system for digital content, such that:

The DRM securely conveys and enforces complex usage rights rather than simple low-level access/copy controls. For example, simple low-level access/copy controls are typically: "read", "write", "execute", and "delete", while complex usage rights may include: "play three times using copy-protected outputs", "print three times", "modify, subject to approval", "extract a 3 second clip", "copy securely within an authorised domain", etc.

The DRM utilises a feature-rich rights expression language to declare and grant usage rights.

In more specific terms, the MPA defines DRM as a content protection technology that provides both access/copy control as well as rights management by encrypting both the content and the associated usage rights information into a container, which only a trusted player/viewer can unlock. Once unlocked, the trusted player/viewer allows the user to consume the content consistent with the rights securely associated with the content.

Digital rights management refers to the technologies and/or processes that are applied to digital content to describe and identify it and/or to define, apply and enforce usage rules in a secure manner.

As noted above, the proposed DRM definitions recognise that such systems go beyond the notion of technological measures.

2.2   Definitions of other significant terms and concepts

While a definition of digital rights management is a requirement for the Report, there are other terms and concepts that need to be clarified and explained in the technical DRM environment

2.2.1 Compatibility

EBU (European Blind Union)

A solution is only truly "compatible" with different users' equipment if it can be accessed in a variety of ways, including conversion of text to tactile presentation, conversion to audio, or enlargement , or adjustment of features such as colour and font.   Access in this way is often achieved through screen reading technology which involves the addition of a further device (braille display) or layer of software (speech synthesiser) along the chain from originator to end-user. This may not be so in the future, but DRM solutions should always be designed in the light of today's technology rather than tomorrow's promises. It should also be remembered that the latest technological solutions are not instantly purchased by every consumer.

EBU (European Broadcasting Union)

Copy protection and rights management solutions must be compatible with a wide range of business models, including vertical and horizontal markets, and delivery media.

EDiMA

Compatibility is the ability of a DRM technology to integrate with existing network infrastructures.

ENPA

A DRM system should be compatible with:

- The type of media (Internet, e-mail, Intranet...)

- The type of content (e.g. text, image, video…)

- The format

- The computer system and the other devices: the DRM system should be able to be executed on the different computer systems and devices.

- The level of security that the publisher requests: the DRM system should consider the different ways of infringing usage rules, which include copyright rules, related to this content and of circumventing the technical measures which protect it. The existing and future business models of newspaper publishers: publishers propose different types of online services to their readers, for example daily online newspapers, press clippings, and archives. These are constantly evolving. The added value of newspapers articles can also be variable. DRM should therefore be compatible with existing and future business models, established by publishers.

FEP

A DRM needs to be able to be used with different machines, computers or other devices, without the need for special modification. Also, content providers should be able to supply their content and metadata in standard formats to all providers of DRM solutions, who should not impose proprietary formats.

IFPI

Compatibility is the ability of system components to be used in combination, e.g. allowing DRM components embedded in the content to be used in combination with a DRM system in a playback device to permit (a) usage rules to be accessed and acted upon and (b) content to be correctly processed, rendered, transferred etc.

MPA

Compatibility is the ability of a device, system, or data to operate with another device or system without modification but also as a device, system, or data that conforms to well defined formats, protocols, or standards.

European Blind Union

A solution is only truly "compatible" with different users' equipment if it can be accessed in a variety of ways, including conversion of text to tactile presentation, conversion to audio, or enlargement , or adjustment of features such as colour and font.   Access in this way is often achieved through screen reading technology which involves the addition of a further device (braille display) or layer of software (speech synthesiser) along the chain from originator to end-user. This may not be so in the future, but DRM solutions should always be designed in the light of today's technology rather than tomorrow's promises. It should also be remembered that the latest technological solutions are not instantly purchased by every consumer.

2.2.2   Compliance

European Broadcasting Union

The European Broadcasting Union believes that product implementations, copy protection signalling and rights information shall be compliant with the standards. Compliance is a pre-requisite to interoperability across implementations accessing content from a wide range of sources. Assessing compliance leads to certification and authentication.

EDiMA

Compliance is the ability of a DRM technology to comply with existing network rules.

ENPA

A DRM system should ensure that the users comply with usage rules, which include copyright rules, and enforce these rules. Copyright rules are defined in the recent European directive and the Member states' legislation implementing it.

This is the minimum compliance that must be observed by all DRM systems. DRM can be further refined by the right holders depending on the licence they decide to grant and depending on their business models.

FEP

DRM standards should facilitate user compliance with conditions of use by clearly identifying the content, rights and parties involved. DRM needs to comply with technology and vice versa technology has to comply with DRM. It is obvious but needs to be re-stated.

IFPI

Obedience to a command or rule in accordance with a specification or standard.

MPA

A system is compliant to a specification if it satisfies all mandatory requirements of that specification. Often, DRM systems must satisfy requirements for general functionality, robustness rules, and compatibility.

Mandatory requirements are typically denoted by the word "shall" or "must".

Compliance also refers to rules, means, mechanisms, etc. that need to be in place to ensure that a particular standard is correctly implemented (e.g., IPR licensing, regulations etc). Compliance Rules address issues such as the persistent secure storage of content.

2.2.3   Content Identification

ENPA

Content identification enables to:

* View the information on the usage rules, including copyright rules, relating to the content;

* Check the usage rules, including copyright rules, associated with the content and the users of the content.

in such a way that :

- the authenticity of the content can be guaranteed

- the identification can be uniquely bound to the content and, if applicable, the users

- the newspaper label should be preserved as a reference of quality. It is important that the user has the guarantee that the article received is not an illegal copy of the protected content.

European Broadcasting Union

Content identification is one of the many pieces of content-related information (metadata). There are different content identification schemes with some of them defined as globally unique. The conditions under which content identification will be used for rights management remain to be defined. As an example, content identification are often considered as concise but their size (dictated to offer globally unique identification for large quantity of content over time) is for example not necessarily compatible with e.g. watermarking payloads.

FEP

Identification and description of intellectual property were first developed by publishers for the printed editions (the International Standard Book and Serial Numbering). For the digital world, publishers are largely involved in developing the Digital Object Identifier (DOI).

MPA

Content identification is the process of uniquely identifying an item of content, typically utilising a unique index called an "identifier". Note: The process of cryptographically confirming an identity is called "authentication".

2.2.4 Interactivity

EBU (European Broadcasting Union)

Interactivity is the human intervention or interaction required to operate a system, e.g. when adding a new device, removing a device, recording, copying or viewing content, renewing the system (e.g. under request of an operator or manufacturer).

EDiMA

Interactivity is the level of control one has over the use or management of content.

ENPA

DRM should enable interactivity between the publisher and the user. Publishers need to know how users behave when they use online articles. It will enable them to adequately respond to their demands and prevent piracy.

FEP

Finally the FEP sees interactivity as involving or allowing the exchange of information between two technologies, processes, components or two parties.

IFPI

Allowing a two-way flow of information e.g. between a system and a user, or between two processes within a system.

MPA

Allowing a two-way flow of information e.g. between a system and a user, or between two processes within a system.

2.2.5   Interoperability

EBU (European Blind Union)

In the same way as for compatibility, a solution is only truly "interoperable" if it can be accessed on devices or through programmes providing non-visual interfaces.

EBU (European Broadcasting Union)

In a multi-provider multi-implementation environment, interoperability is required to allow sharing common resources such as consumer devices. Interoperability is a key to users accessing a wide range of services and service providers reaching the largest possible audience.   Market evolution will require more interoperability between vertical and horizontal markets.   The horizontal consumer electronics market will be an important source of equipment (different implementations from different manufacturers) to be inter-connected to proprietary devices under the control of vertical operators.

EDiMA

Interoperability is the ability to reconcile content with platforms/ technologies/devices.

ENPA

For newspaper publishers, interoperability should be understood as the respect of competition between companies which provide DRM systems. Newspaper publishers should always have the possibility of choosing between various DRM technologies. Competition rules exist at national and European levels and should be applied in this area. Interoperability is also important for the users.

FEP

Interoperability is the means to enable two or more technologies, systems or processes to work together.

IFPI

Interoperability is the ability of system components of different origin to be used in place of each other whilst maintaining a defined level of functionality and security.

MPA

Interoperability is the ability for content and rights usage rules to be supported, properly interpreted, and enforced across multiple DRM systems and end-user devices. Interoperability can also refer to:

- Interoperable devices or systems that are mutually compatible (i.e., device A is compatible to B, and B is compatible to A)

- Interoperable devices or systems that can integrate together to form a single system or network, often for the purpose of sharing or distributing data, functionality, or control

- Interoperable devices, systems, or datasets that are functionally equivalent and interchangeable

- The ability of a device or system to replace another device or system without affecting functionality or external interface

Thus, compatibility (see above) could be considered a one-way relationship (A is compatible to B), while interoperability is a two-way relationship (A is compatible to B, and B is compatible to A). There are other subtle differences in the terms, described above.

2.2.6 Renewability

ENPA

Renewability refers to the ability of DRM to evolve with the different types of content, technological evolution and the evolution of publishers needs.

European Broadcasting Union

The goal of renewability is to fully recover from a breach of security. Renewability is required after hacked systems have been revoked. Technological measures shall be designed to allow cost effective recovery. Revocability and renewability must be user friendly and access to pre-recorded content must be maintained.

Revocability mechanisms also allow detecting and revoking non-compliant devices.

FEP

Renewability is when content is automatically transferred from one format to another.

Final

IFPI

In respect of security systems, if the security is compromised (e.g. by attack or through exposure of a key) renewability describes methods for recovery (e.g. by software update or use of another key). This approach is widely used in mobile telephony, pay TV and many IT systems.

MPA

Renewability refers to the capability of content protection systems (DRMs or technological measures) to recover from a security breach. The ability to replace system components (including software, hardware, crypto keys, and known secrets) in order to strengthen security, protect against specific known attacks, or improve functionality.

2.2.7 Robustness

EBU (European Broadcasting Union)

Tamper robustness and associated system complexity must be adapted to the desired level of security developed in consideration of the threat being addressed.

EDiMA

Robustness is the level of the strength of measures to ensure protection.

ENPA

Robustness of a DRM is its ability to provide the level of security requested by the publishers. It should be able to preserve and enforce usages rules, which include copyright rules, of the content and to ensure its authenticity in various contexts and for different types of usages. This notably includes the preventing and stopping of copyright infringements and avoiding the circumvention of technical measures. For example, a watermark applied to an image should preserve its authenticity even when the image is saved in another format, resized, or rotated.

The robustness of a DRM system applied to content should be ensured on Internet, Intranet, stand-alone computer and other digital environments.

FEP

Robustness means that a system cannot be circumvented and which can resist hackers' attacks. Which can react (be fixed and modified) so that a successful attack will not led to a break-down of the technology, system or process.

IFPI

The ability of a security system to withstand attack, e.g. the ability to resist finding a key through brute-force searching.

MPA

The ability for a security system to (1) be resistant against tampering and malicious attack that would compromise the security of the system, and (2) maintain confidentiality, integrity, and availability of the protected data. Robustness Rules define a secure and reliable infrastructure for e-commerce. Robustness rules generally serve to ensure that technology standards are implemented in a tamper-resistant way. An example of a robustness rule is a prohibition against content being available in the clear on user accessible buses.

2.2.8 Standards

ENPA

ISO states that: "Standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose".

Standards should be industry led initiatives, voluntary, approved and recognised by newspaper publishers and adapted to their needs. Standards could play an important role regarding interoperability.

MPA

A standard describes a set of requirements and specifications that are approved by a recognised standards organisation (e.g., MPEG, ETSI). Typically, a standards organisation allows participation by all entities (companies, industries, etc.) that may be affected by the standard.

2.2.8.1 Formal standards[1]

EDiMA

A formal standard is an industry-wide agreed standard and/or a standard imposed by the legislator.

ENPA

A formal standard is documented and accepted by a well-known and recognised standards organization.

IFPI

A formal standard is a standard described by a standards body such as ISO.

MPA

Formal standards that are: (1) established by a standards organisation that allows open participation by any interested parties, and (2) based on an obligation that any intellectual property implicated by the standard must be licensable under fair, reasonable and non-discriminatory terms.

2.2.8.2 Open Standards[2]

EBU (European Broadcasting Union)

Copy protection and rights management solutions must be based on open standards, under the intellectual property rights umbrella of recognised standardisation bodies. Open access to these standards must be reinforced by fair, reasonable and non-discriminatory licensing terms.

EDiMA

Open standards are a standards framework as opposed to structure.

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[1] Note by the CEN/ISSS Secretariat: "formal standards" are correctly the products of officially-recognized organizations at national (e.g. BSI, ANSI), regional (e.g. CEN, CENELEC, ETSI) or global levels (ISO, IEC, ITU, UN-ECE). Formal standards have undergone a full consensus process, including vote at national level. The formal standards bodies also publish, especially in the ICT domain, other consensus documents, that do not have formal standards status. The products of standards consortia (sometimes described as "industry standards") do not have the status of formal standards.

[2] Note by the CEN/ISSS Secretariat: There is some confusion over the commonly used term "open standards", Note that the IPR policies of formal standards bodies and of many consortia allow royalty payments provided the IPR holder grants licences on fair, reasonable and non-discriminatory terms and conditions.

ENPA

An open standard is a standard that is made publicly available, and the definition and maintenance of which are made open to anyone willing to participate.

IFPI

Open standards are standards that provide published specifications, and which utilise technology that can be licensed on reasonable and non-discriminatory terms.

2.2.8.3 De facto Standards[3]

EDiMA

De facto standards have developed through process as opposed to through agreement.

ENPA

A de facto standard is widely accepted and used in practice by related users and actors on the market.

IFPI/MPA

De facto standards are a set of requirements and specifications widely adopted across industry sectors before actually becoming a formal standard. These may be proprietary or adopted following common use.

2.2.8.4 Proprietary Standards

EDiMA

Proprietary standards are standards belonging to a given entity.

ENPA

A proprietary standard is maintained by its owner at his own discretion. It may or may not be made publicly available.

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[3] Note by the CEN/ISSS Secretariat: a *de facto* standard used to be taken as an informal standard that had achieved market acceptance above any competing solutions, but latterly it has come to mean a market solution that has not undergone any open consensus process, either in a formal standards body or a consortium.

IFPI

Proprietary standards are maintained by a proprietor, usually a commercial entity. Proprietary standards may additionally be open or de facto standards.

MPA

Proprietary standards are a set of requirements and specifications that are (1) established and asserted through a closed process, typically performed by a single company or consortium rather than an open standards body, and (2) typically based on proprietary intellectual property.

2.2.9   Rights

EDiMA

Rights are the legal permission for a consumer to use content

2.2.10 Additional Definitions – European Broadcasting Union

In addition to the definitions provided above, the European Broadcasting Union proposes the following additional definitions.

Authentication

Authentication is equivalent to certification for content. Copy protection and rights management systems will work on the assumption that the user has access to authorised authenticated content that comply with the copy protection signalling and rights management information defined in standards. Authentication adds to security.

Certification

Implementations shall be certified compliant. Certification can be delivered through third party testing or through self-certification using agreed testing procedures.

Complexity

The implementation costs of such a system should not be prohibitive to its widespread adoption. Complexity of implementation, maintenance and technologies must therefore be in ad equation with the threat model under consideration providing an appropriate level of security.

Legacy

Solutions shall take into account legacy and the necessary transition/ migration from legacy to a situation of seamless end-to-end compliance. Proper legacy handling must not be underestimated.

Market fragmentation

Market fragmentation often results from the deployment of competing (proprietary or open) solutions proposing similar features.

Scalability, upgradeability

Scalability is necessary to adapt technological measures to the threat and help in the gradual timely introduction of adapted technological measures, whilst upgradeability allows further improving these measures to offer new solutions to new threats.

Threat

There are different sorts of threats from occasional unauthorised copying to industrial piracy. Threat models being considered in standardisation consist of analysing content acquisition, storage, consumption and exchange in order to develop solutions to "keep the honest viewer honest".

Voluntary vs. mandatory

The market introduction of technological measures for copy protection and rights management shall be based on the voluntary adoption of standards.

3   Inventories of Interested Parties and Standards

3.1   Significant parties

In order to develop an inventory and database of all worldwide significant parties, contributors were requested to provide information about companies, organizations and other involved bodies relating to the development, control, monitoring, consumption and exploitation of DRM technologies and services relevant to section 4.2.

3.1.1   Consumer involvement

The European Blind Union states the following:

"It is essential that consumers have an equal voice in the establishment of any standards or conventions. Many argue that the market will ensure this automatically, but we do not accept that the market always operates in the interests of minority groups.

For consumers to have a strong voice, it may be necessary for their involvement to be encouraged or subsidised by public authorities. Consumer bodies are generally less well resourced than industry interests, as well as being more broadly focussed. This is illustrated by the fact that there were three bodies representing consumers at the open meeting on 7th February, but only one of those (ourselves) had been able to give this issue sufficient priority to contribute to the preparation of the draft report.

The specific interests of groups such as libraries and educators do not appear anywhere in the report."

3.2   Significant DRM standardization activities

A template was used to gather information on standardization activities relevant to digital rights management.

The following templates were received and are set out in Annex C.:

1   CISAC

2   CPRM/CCPM

3   CPTWG

4   CSS&DVDCCA

5   Daisy Consortium

6   Digital CP

7   DTCP

8   DVB

9   DVD

10 EDITEUR

11 EBU (European Blind Union)

12 ECMA

13 EVA

14 IDRM

15 IEC-OPIMA

16 ISO

17 ISO/IEC JTC1

18 ISTC

19 ISWC

20 IEEE

21 IETF

22 INTERPARTY

23 Keitaide Music Consortium

24 OASIS Rights Language

25 ODRL

26 OMA

27 Open eBook Forum

28 TVAF

4 Description of DRM technologies and Implementations

In order to document current DRM technologies used for the online and offline delivery of content, contributor have been requested to provide information about major commercially available DRM technologies.

This list of functionalities is not intended to be exclusive and contributions concerning other functional aspects of DRM are welcome.

4.1 DRM Technologies – Identification Systems

4.1.1 Digital Object Identifier

The Digital Object Identifier (DOI) is a system for persistent identification and interoperable exchange of intellectual property on digital networks. The International DOI Foundation, a non-profit organisation, manages development, policy, and licensing of the DOI system to registration agencies.

DOIs may be used to identify any intellectual property entity, including those already identified by systems such as ISBN, and can be used compatibly with ISBN.

Structure of a DOI

The DOI has two components, the prefix and the suffix, which together form the DOI. There is no limitation on the length of a DOI. A DOI may be assigned to any item of intellectual property, which must be precisely defined by means of structured metadata. The DOI itself remains persistent through ownership changes, and unaltered once assigned.

A prefix is assigned to an organisation that wishes to register DOIs; any organisation may choose to have multiple prefixes designing imprints, or journals, etc.

Following the prefix (separated by a forward slash) is a suffix (unique to a given prefix) to identify the entity.

The combination of a prefix for the Registrant and unique suffix provided by the Registrant avoids any necessity for the centralized allocation of DOI numbers.

An existing standard identification system number such as ISBN may be integrated into a DOI, by using this as the suffix. In this case, it is course recommended that precisely the same entity be identified by the two systems.

In such case, the DOI assumes the following form

10.8888 / ISBN 88-85025-23-4

where "10" is the number assigned to DOI within the Handle resolution system, "8888" is the registrant number, and the string after the slash is the suffix incorporating the ISBN.

Features of DOI

The DOI system uses a Resolution System which ensures persistence by resolving the DOI to a current associated value such as a URL; users of DOIs need not be aware of changes to URLs in order to use the system. The DOI system is a URI and URN implementation. The Resolution System is the Handle System, an open standard scalable architecture, provided by CNRI. Resolution may be to multiple pieces of data and can be – not mandatory – to the identified entity. Resolution should not be confused with identification: DOI can resolve to information other than the identified entity, and entities not reachable on the network can be identified.

The DOI system uses a Metadata system based on the Indecs (interoperability of data in e-commerce systems) activity, consistent with metadata systems such as ONIX and MPEG-21 RDD. The DOI metadata enables mappings between application areas to be made consistently.

DOI Policy and governance provide rules and mechanisms for implementation which achieve practical implementation in a similar way to ISBN, EAN/UCC codes, Visa numbers etc., by means of a number of Registration Agencies which operate under the same rules as an operational federation.

Added value services may be built using DOI features. These include the use of multiple resolution (associating DOIs with several items of data); associating related pieces of intellectual property (versions, derivations, etc); use with other tools (e.g. OpenURL for contextual local use).

For further information, refer to http://www.doi.org

4.1.2   IDA – International Documentation on Audio-visual Works

This audio-visual right-owners database of directors and writers will be linked to the ISAN database. It allows the tracking of the different categories of right-owners of audio-visual works except the music composers.

IDA contains 200.000 works and 526.000 rights holders. The current contributions to this database are : Suissimage, SSA, KOPIOSTO, Bild-Kunst, ALCS, SACD, SCAM, SPA, SABAM and SACEM.

The main aims of the IDA database are as follows :

- Identify works in both their original and derivative language versions ;

- Identify the right holder of each of these versions ;

- Implement the collective repatriation of rights amongst participating societies for the benefit of works and of foreign authors.

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Information on the IDA database and ISAN can be found on the CISAC website at http://www.cisac.org

4.2   DRM Technologies – Languages

4.2.1   Extensible Access Control Markup Language (XACML)

Extensible Access Control Markup Language (XACML) is an "XML specification for expressing policies for information access over the Internet." XACML design is taking place within a Technical Committee of OASIS. OASIS - Organization for the Advancement of Structured Information Standards - is a not-for-profit, global consortium that drives the development, convergence and adoption of e-business standards. Members themselves set the OASIS technical agenda, using a lightweight, open process expressly designed to promote industry consensus and unite disparate efforts. OASIS produces worldwide standards for security, Web services, XML conformance, business transactions, electronic publishing, topic maps and interoperability within and between marketplaces.

OASIS has more than 500 corporate and individual members in 100 countries around the world. OASIS and the United Nations jointly sponsor ebXML, a global framework for e-business data exchange. OASIS operates XML.org, a community clearinghouse for XML application schemas, vocabularies and related documents. OASIS hosts The XML Cover Pages, an online reference collection for interoperable markup language standards. The OASIS Network includes UDDI, CGM Open and LegalXML.

The purpose of the XACML TC is to define a core schema and corresponding namespace for the expression of authorization policies in XML against objects that are themselves identified in XML. The schema will be capable of representing the functionality of most policy representation mechanisms available at the time of adoption. It is also intended that the schema be extensible in order to address that functionality not included, custom application requirements, or features not yet envisioned. Issues to be addressed include, but are not limited to: fine grained control, the nature of the requestor, the protocol over which the request is made, content introspection, the types of activities authorized.

Activity having "substantial overlap with XACML" includes other DRM standardization efforts: XACL, XRML, DPRL, the W3C DRM Interest Group, Open eBook Forum (OeBF) Rights and Rules Working Group, MPEG (21) IP/rights, etc. See the list below and "Liaison with other standards groups," from David Parrott (Reuters).

As of 2001-06, the XACML TC had five sub-committees: Intellectual Property; Standards And Interoperability; Use Case; Protocol; Representation.

Background

"The modern enterprise is pervaded by information systems and devices. Economies of scale have driven vendors to provide increasingly general-purpose solutions that

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must be configured to address the specific needs of each situation in which they are applied. This leads to constantly increasing complexity and configurability. Furthermore, the devices and systems may be distributed widely in a global enterprise. The task of analyzing and controlling system and device configuration in a consistent manner across an entire enterprise is an enormous challenge, compounded by the fact that, even when systems and devices support configuration by a remote console, there is no common interface standard. Consequently, it is becoming increasingly difficult for an enterprise to obtain a consolidated view of the policy in effect across its many and diverse systems and devices or to enforce a single policy that affects many of those devices and systems. The objective of XACML is to address this need by defining a language capable of expressing policy statements for a wide variety of information systems and devices The approach taken by XACML is to draw together long-established techniques for access-control and then to extend a platform-independent language (XML) with suitable syntax and semantics for expressing those techniques in the form of policy statements..." [*from the Committee Working Draft of OASIS Extensible Access Control Markup Language (XACML)*]

XACML exploits long-established techniques, such as:

Combining independent rules to form a single policy.

Combining independent policies, optionally from different policy-writers, to form a single policy set.

The parameterization of the algorithm to be used for combining rules and policies.

Attaching an indication of the set of decisions that a rule or policy is intended to render to the rule or policy.

Defining the set of decisions that the rule or policy is intended to render in terms of the name or attributes of the subject, resource and action identified in the decision request.

Specifying in a policy statement a set of actions that must be performed in conjunction with the rendering of a decision.

Stating rule conditions as a logical expression of predicates of functions of attributes of the resource and/or subject.

Providing an abstraction layer between the policy language and the environment to which it applies.

The communication of policies, either attached to the resources they are intended to protect, or separately.

4.2.2 OASIS Rights Language Technical Committee

A Rights Language Technical Committee Proposal published on March 25, 2002 was made to OASIS on behalf of ContentGuard, Hewlett Packard, Microsoft, Reuters, and

Verisign employees. Initially chaired by Hari Reddy of ContentGuard, the proposed TC will "continue work previously done by ContentGuard, Inc. on XrML to define the industry standard for a rights language that supports a wide variety of business models and has an architecture that provides flexibility to address the needs of the diverse communities." The TC will "define a governance and language extension development process for the language that comprehends maintaining an evergreen language while minimizing the impact of change on all market participants." It will also define relationships with complementary standards efforts within OASIS and establish liaisons with standards bodies. ContentGuard, which has copyrights to the XrML 2.1 specification and schema, submitted the Extensible Rights Markup Language (XrML) Version 2.1 to the TC at the initial meeting, March 21, 2002.

Rationale

Rationale for the proposed "worldwide standard digital rights language" is given in the proposal by noting that this language "will facilitate the interoperability of the systems that manage the creation, distribution and consumption of these digital works and services. It will also be an integral tool in declaring and implementing trust and authentication mechanisms... The need for a standard rights language has been recognized in a number of organizations that develop technical standards for different types of content in many different domains. For example: (1) Open eBook Forum -- eBooks; (2) MPEG -- multimedia content; (3) TV Anytime -- multimedia content in a specific domain; (4) Digital Video Broadcasting (DVB) -- multimedia content in a specific domain; (5) PRISM -- periodical print publishing; (6) Society of Motion Picture and Television Engineers --- Digital Cinema; (7) NewsML -- news agency content, print publishing. Additionally, fields such as healthcare (HIPPA compliance) and financial services (SEC regulations compliance) have now recognized the need for the ability to express usage and access rights for documents, records and services."

TC Deliverables

According to the March 2002 proposal, the primary deliverables of the Rights Language TC will be:

To release the rights language Schema with supporting implementation information.

To develop and execute governance process for managing the continuing improvements to the language.

To provide liaisons to other complementary standards bodies.

Policies defining the creation of extensions to the language

Definition of a subset or mapping of the rights language for mobile consumer electronic devices.

Definition of common methods for integration of the rights language with metadata standards, content/service identification standards, and content referencing standards.

Definition of common methods for integration of the rights language with authentication, crypto and PKI standards for econtent distribution and for web services

4.2.3   Extensible Rights Markup Language (XrML)

XrML is a language to specify rights. XrML is an XML-based usage grammar for specifying rights and conditions to control the access to digital content and services. XrML had its roots in Xerox Palo Alto Research Center. Digital Property Rights Language (DPRL) was first introduced in 1996. DPRL became XrML when the meta-language (used to construct the language) was changed from a LISP-style meta-language to XML in 1999.

Since its inception, the language has evolved through industry feedback, critical review, and product implementation. The language has become *comprehensive* by providing a framework to express rights at different stages of a workflow or lifecycle, *generic* by defining a large body of format and business neutral terms (about 100) and using these terms to specify rights to any digital content and service, and *precise* through the development of a grammar and processing rules that enable unique interpretation of the language. XrML is by far the most advanced and mature rights language in use today. Since 1999, the emphasis has been to get the language implemented in real life systems. This experience has resulted in additional system-related features (trust, for example) that are now part of the language.

XrML is:

Based on open standards: XrML is intended to be an open standard activity where industry members can collaborate and contribute their expertise to the language.

Useful for any business model: XrML can be used for many different business models and comprehends multi-tier models.

Interoperable: XrML provides syntactic, semantic, and system interoperability. This interoperability enables XrML to be used as part of a bigger system and comprehends other things such as security.

Extensible: XrML has leveraged open mechanisms to extend the language with new terms. As the industry evolves, there will be activities to standardize terms, create new terms and new business models. XrML has been designed with mechanisms to easily incorporate those terms.

ContentGuard has developed several tools to support XrML. This includes:

XrML Rights Editor: A tool that helps the creation and modification of XrML documents, such as rights templates and unsigned licenses.

XrML Software Development Kit: A collection of Application Programmable Interfaces (APIs) and tools to assist developers in using XrML to build and integrate XrML into rights enabled applications and systems.

4.2.4   IEEE LTSC DREL Project (Digital Rights Expression Language)

The mission of the IEEE Learning Technology Standards Committee (LTSC) and its working groups is to develop technical standards, recommended practices, and guides for software components, tools, technologies and design methods that facilitate the development, deployment, maintenance and interoperation of computer implementations of education and training components and systems.

 LTSC DREL Project (Digital Rights Expression Language): "The IEEE Learning Technology Standards Committee (LTSC) has authorized the formation of a study group on digital rights management. The purpose is to: (1) gather requirements for a digital rights management standard for learning technology; (2) research existing practice and standardization efforts, and (3) recommend one or more projects. In co-operation with CEN-ISSS WS/LT, the IEEE LTSC has sponsored two workshops: 20 June 2002 in Kirkland, and 4 July 2002 in Brussels to kick off this process.

Rationale: "There is a critical need for expressing digital rights in the context of learning, education and training. Placeholders for rights are built into specifications for metadata, repositories, and learner information, but the learning technology standards community has been waiting for applicable standards to emerge from other industries before determining how to use these placeholders. These standards are emerging now, so it is time to determine the best way forward." The 'ltsc-drel' mailing list [LTSC-DREL@ieee.org] "supports the work of the Digital Rights Expression Language (DREL) group within the IEEE LTSC. It is to be used for discussing documents, posting meeting information, and discussing issues directly relating to the work of this group." Subscribe by sending a message to majordomo@ieee.org with no subject line and the words subscribe LTSC-DREL in the message body.

4.2.5 <indecs>2rdd - Rights Data Dictionary

<indecs>2rdd is a consortium based initiative for the creation of a rights data dictionary, supported by a group of major content owners and technology companies and managed by Rightscom. The consortium submitted a major proposal to MPEG-21 in December 2001 in response to an international Call for Proposals.

<indecs>2rdd has now been adopted by MPEG-21 as the baseline technology for the new MPEG-21 rights data dictionary standard, scheduled for completion in March 2003. Rightscom on behalf of the <indecs>2rdd consortium is currently working on the development of the final standard. The new standard will have very significant consequences both for companies seeking to effectively manage information and for technology vendors seeking to develop new tools for the management and exploitation of intellectual property on digital networks." *[From the Rightscom website]*

"What is <indecs>2rdd? It's a dictionary comprising 400+ terms, expected to be extended to 1000+ terms. [It is] a process -- more than a simple listing of words and definitions. [It is] designed to fully incorporate terms from any rights or descriptive scheme or system. When deployed, [it will serve as] a 'Rosetta Stone' that will provide a fundamental level of interoperability among Rights Expression Languages... The effort is coordinated by Rightscom Ltd, with the participation of eight (8) companies: Accenture, ContentGuard, EDItEUR (book industry standards association), Enpia Systems, International DOI Foundation, Melodies And Memories Global (subsidiary of Dentsu), Motion Picture Association, and Recording Industry Association of America." Adapted from "New Standards," by Howard M. Singer.

Excerpts from "Developing the Standards Infrastructure for eContent" (Mark Bide): "Well formed metadata [is] the <indecs> approach: (1) Unique identification -- Every entity should be uniquely identified within an identified namespace; this includes every item of metadata (controlled vocabulary and concise definition) (2) Functional Granularity -- It should be possible to identify an entity whenever it needs to be distinguished (3) Designated Authority -- The author of an item of metadata should be securely identified (4) Appropriate Access -- Everyone requires access to the metadata on which they depend, and privacy and confidentiality for their own metadata from those who are not dependent on it. <indecs>2rdd is a continuation of the original <indecs> project work. [It is] a consortial project, involving both technology and content industries. Formed as a response to the MPEG-21 'Call for Proposals for a Rights Data Dictionary, and accepted as a baseline technology for ISO/IEC 21000-6 (rights data dictionary).

4.2.6 MPEG Rights Expression Language (REL) and Rights Data Dictionary

The Moving Picture Experts Group (MPEG) constitutes sub-Committee 29 of ISO/IEC JTC1 (Information Technology"). MPEG describes, in the a Technical Report, the advancement of important draft specifications within ISO, under the MPEG-21 project. The goal of MPEG-21 is to "define a multimedia framework to enable transparent and augmented use of multimedia resources across a wide range of networks and devices used by different communities. Its scope is the integration of the critical technologies enabling transparent and augmented use of multimedia resources

across a wide range of networks and devices to support functions such as: content creation, content production, content distribution, content consumption and usage, content packaging, intellectual property management and protection, content identification and description, financial management, user privacy, terminals and network resource abstraction, content representation and event reporting."

The MPEG-21 Part 3 'Digital Item Identification' specification (DII ISO/IEC FDIS 21000-3) was elevated to Final Draft International Standard and will become an International Standard following a two-month ballot by JTC 1; DII supports the unique identification of digital items in the MPEG-21 framework. The MPEG-21 Multimedia Description Schemes Subgroup has completed Final Committee Drafts for MPEG-21 Part 5 'Rights Expression Language (REL)' and MPEG-21 Part 6 'Rights Data Dictionary (RDD)'. REL "specifies the expression language for issuing rights for Users to act on Digital Items, their Components, Fragments, and Containers"; RDD "forms the basis of all expressions of rights and permissions as defined by the MPEG-21 Rights Expression Language. The MPEG-21 REL and RDD work together to allow the machine-readable expression of rights associated with the use of multimedia. These parts will be finalized by MPEG over the next year."

Parts 4-6 of ISO/IEC 21000 (especially) deal with rights. Part 4: MPEG-21 Intellectual Property Management and Protection (IPMP); Part 5: MPEG-21 Rights Expression Language; Part 6: MPEG-21 Rights Data Dictionary. See the working documents listing on the MPEG website for up-to-date references and official documents.

4.2.7 Open Digital Rights Language (ODRL)

[May 18, 2002] *ODRL website project summary*:

"The Open Digital Rights Language (ODRL) provides the semantics for a Digital Rights Management expression language and data dictionary pertaining to all forms of digtial content. The ODRL is a vocabulary for the expression of terms and conditions over digital content including permissions, constraints, obligations, conditions,offers and agreements with rights holders. The ODRL is positioned to be extended by different industry sectors (*e.g.*, ebooks, music, audio, mobile, software) and to be a core interoperability language. ODRL is freely available and has no licensing requirements."

"The ODRL Initiative Supporters are focused on fostering and supporting open and free standards for the specification of media commerce rights languages. The ODRL Initiative is a forum used to propose, discuss, and gather consensus for a language that it will subsequently nurture via formal standards bodies. The ODRL Initiative will strive to openly participate in standards groups that allow for the adoption of royalty-free specifications... The ODRL Initiative is committed to supporting MPEG-21 and is a compatible Rights Language that will support open and free interoperability within and across the MPEG-21 Multimedia Framework... ODRL has been submitted to formal Standards Groups... The Version 1.1 update of ODRL will be released at the end of May, 2002."

[September 24, 2002] Open Digital Rights Language (ODRL) Specification Submitted to W3C. W3C has acknowledged receipt of the *Open Digital Rights*

Language (ODRL) Version 1.1 specification from IPR Systems, and has published the document as a W3C Note. The submission request and W3C Team Comment reference the possible chartering of a DRM/Rights Language activity within W3C, but no commitment has yet been made. The Open Digital Rights Language (ODRL) "is a proposed language for the Digital Rights Management (DRM) community for the standardisation of expressing rights information over content. The ODRL is intended to provide flexible and interoperable mechanisms to support transparent and innovative use of digital resources in publishing, distributing and consuming of electronic publications, digital images, audio and movies, learning objects, computer software and other creations in digital form. The ODRL has no license requirements and is available in the spirit of 'open source' software." The ODRL specification is presented in four main sections: Section 2 describes the model for the ODRL expression language; Section 3 describes the semantics of the ODRL data dictionary elements; Section 4 describes the XML syntax used to encode the ODRL expressions and elements; Section 5 describes how additional ODRL data dictionaries can be defined. The Expression Language and Data Dictionary elements are formally defined in two normative appendices: Appendix A provides the ODRL Expression Language XML Schema and Appendix B gives the ODRL Data Dictionary XML Schema.

4.2.8   Open Ebook Initiative Rights and Rules Working Group

"The Open eBook Forum (OeBF) is an international trade and standards organization. Its members consist of hardware and software companies, publishers, authors, users of electronic books, and related organizations whose common goals are to establish specifications and standards for electronic publishing. The Forum's work will foster the development of applications and products that will benefit creators of content, makers of reading systems and, most importantly, consumers."

OeBF Rights and Rules Working Group

[September 17, 2002] In keeping with the WG proposal, the mission of the Rights and Rules Working Group (RRWG) "is to create an open and commercially viable standard for interoperability of digital rights management (DRM) systems, providing trusted transmission of electronic publications (ePublications) among rights holders, intermediaries, and users." See the OeBF Rights and Rules Working Group 'Matched Requirements' which aligns requirements from AAP, EBX, ContentGuard, and Reuters; constructs a set of Unified Requirement where possible. Presented to the OASIS RLTC.

The RRWG selected the XrML-based MPEG REL as the starting point for the development of a Rights Grammar specification for the eBook marketplace in the autumn of 2002. The RRWG has set a schedule to complete their work in the Spring of 2003. OeBF maintains an active liaison with MPEG as well as periodic joint meetings to coordinate their respective development efforts.

4.2.9 Open Mobile Alliance (OMA) Digital Rights Management

The mission of the Open Mobile Alliance is to grow the market for the entire mobile industry by removing the barriers to global user adoption and by ensuring seamless application interoperability while allowing businesses to compete through innovation and differentiation.

Downloading content to a mobile phone has been big business for years, with most mobile users at some time or another downloading icons or ring tones. Analysts at Jupiter Media Metrix have stated that in 2001, users in Europe have spent 590 Million Euros on content for their mobile phones.

Terminal manufacturers have launched Java-enabled phones for the mass market, creating an even bigger potential mobile content market. With the availability of content types today such as Java applications and MIDI ring tones, as well as phones with multimedia capabilities, the whole business of content downloading is set to boom.

Digital rights management protects the rights of all in the supply chain and offers them an extension to the current model of distributing and selling their content. Content owners need to know they will be paid for the use of their content, operators need to be able to bill fairly for content and the whole issue of how to control content distribution must be addressed.

The Open Mobile Alliance (OMA) has tackled these issues with the standardisation work of the OMA Download, which includes:

1. Applying Digital Rights Management (DRM) to content and its distribution, and

2. Enabling controlled (i.e. reliable) delivery of generic content objects.

DRM will prevent illegal distribution of media objects and provide new business models such as preview, superdistribution, gifting, rights updates and more. For example, a user can download a MIDI ring tone or game to his mobile for a day or a week, and be given the option to buy refreshed rights after his original rights have expired.

The new OMA DRM version 1.0 standard will govern the use of mobile-centric content types, whether it is received by WAP download or MMS. This is the world's first mobile DRM standard. OMA DRM version 1.0 was officially approved in October 2002.

The standard provides three DRM methods: Forward-lock, Combined Delivery and Separate Delivery.

Forward-lock – intended for the delivery of news, sports, information and images that should not be sent on to others. This applies often to subscription-based services. The device is allowed to play, display or execute, but it cannot forward the media object. The content itself is hidden inside the DRM message that is delivered to the terminal. A DRM message contains a media object and an optional rights object. In the forward-lock method, the DRM message contains only the media object.

Combined Delivery – enables usage rules to be set for the media object. This method extends Forward-lock by adding a rights object to the DRM Message. Rights define how the device is allowed to render the content. Rights can be limited using both time and count constraints. This method enables the preview feature. A mobile subset of the Open Digital Rights Language (ODRL) is used for these rights objects.

Separate Delivery – protects higher value media and enables superdistribution, which allows the device to forward the media, but not the rights. This is achieved by delivering the media and rights via separate channels, which is more secure than combined delivery. The media is encrypted into DRM Content Format (DCF) using symmetric encryption, while the rights hold the Content Encryption Key (CEK), which is used by the DRM User Agent in the device for decryption.

Superdistribution is an application of Separate Delivery that also requires a Rights Refresh mechanism that allows additional rights for the media. Recipients of superdistributed content must contact the content retailer to obtain rights to either preview or purchase the media.

More information:
http://www.openmobilealliance.org/documents.html

4.2.10 International Standard Audio-visual Number (ISAN)

Known as « Digital Rights Management » (DRM) systems, electronic codes which make copying impossible are applied to those media which contain recordings of music or films. Anyone wishing to make one or more copies from such a medium has to purchase a further code from the manufacturer by credit card. Using this code, the purchaser is enable to produce a certain number of copies according to the amount paid. This system takes account both of the fact that a digital copy has the same worth as an original, and that copies thus produced can be counted individually. FERA participated with AGICOA to the restatement, in the framework of ISO (International Organisation for Standardisation), of ISAN's development (International Standard Audio-visual Number) aimed to facilitate a quick and safe identification of the audio-visual works in the digital environment.

The ISAN concept includes both an ISO standard of international numbering system for audio-visual works, a numbering system, and a works database.

The identification number applies to the audio-visual work itself and is not related to the physical medium or the identification of that medium. It is not related to any process of rights registration and does not help in the identification of right holders. This 16 digits number should be regarded as the as the « identity card » of the work, containing data indispensable to identify each work.

One of the basic ISAN principles is that one ISAN number corresponds to one audio-visual work, whatever the versions of the work used. It could be compared to the ISBN that is applied to books, the only difference being that the ISBN concerns only carrier and not the work.

Currently being developed is a complementary standard, V-ISAN. Its objective, desired by radio broadcasters, is to identify which version of a work is broadcast. V-ISAN will be agreement with the International ISAN Agency.

Information on ISAN can be found on the CISAC web-site at http://www.cisac.org

4.3   DRM Technologies – Formats

4.3.1   Audio Formats (contributed by IFPI)

New delivery formats for audio are being developed actively by record labels and their technology partners.   Several factors are driving the development of new formats:

> The CD is being increasingly undermined as uncontrollable copying from CD to the computer fuels ever-increasing levels of unauthorised internet distribution and burning to CD-R;

> Consumer behaviour seems to indicate market potential for wider disc functionality including multimedia, computer-playback and transfer to portable players;

> New recording formats offer scope for delivering surround-sound, high-resolution audio, video etc.

There are two main alternatives for a new disc-based format: Super Audio CD (SACD) and DVD-Audio.

SACD is the Sony/Philips format billed as the successor to CD. The disc is designed to carry audio, and there is a specification for 'enrichment' data that could include graphics, text etc.

SACD includes five proprietary layers of copy protection, specified within the Sony/Philips standard for the format.

SACD includes a family of three disc formats: SACD stereo, SACD Multi-channel and SACD Hybrid. The hybrid disc carries a 'CD layer' that is completely compatible with the current CD standards. This layer offers CD playback on non-SACD systems, but carries no protection.

Over 650 new titles have been released on the SACD family of formats including Hybrid and Multi-channel discs.

The DVD-A specification is part of the family of DVD specifications that also includes the DVD-ROM specification for computers, and the DVD-V video disc. Actually multiple DVD formats can be combined on the same physical carrier. For example there are many discs in the marketplace that carry both DVD-A and DVD-V content together on the same physical disc.

Almost all the 260-odd DVD-A titles released to market to date have carried different versions of the audio to allow playback in DVD-A players and also in video/home-theatre systems. There are two main copy-protection systems within DVD-A, known as CPPM and CPRM.

For pre-recorded DVD-A, the CPPM protection system (Content-Protection for Pre-recorded Media) is used to protect the audio. This involves encryption on the disc and key-blocks licensed for use in player devices are needed to play the disc.

As well as encryption on the disc and decryption in players, CPPM permits the transport of digital content over an approved secure link for out-board processing, and also the Verance audio watermark, which is applied to original audio. Compliant DVD-A players will not play content on DVD-recordable formats that is marked with the Verance mark, unless the content is encrypted and carried on an original disc or a compliant recordable disc. This system does not exercise control over CD-R copies, and content from any source on CD-R will play on DVD players whether watermarked or not.

DVD-A also provides for recordable media with copy-management to prevent uncontrolled copying. The copy-management system is known as CPRM (Content-Protection for Recordable Media). CPRM allows for re-marking of the Verance mark in the copied audio. CPRM also allows secure export to flash-memory devices, and for other specified uses such as library copies.

4.3.2   Print Formats

Adobe's PDF technology is the company's front-end document technology. Applications, such as the Adobe eBook reader, allow users to purchase content directly from the application. The PDF format is not limited to desktop computers, since the Acrobat Reader is available for the Palm OS and Pocket PC devices.

Microsoft's .lit format, incorporating the Microsoft ClearType technology, is the company's format for its Reader product. A reflow format, it can be derived from a number of industry standard formats, including Microsoft word and Open eBook Publication Structure formatted files.

4.4   DRM Technologies – Delivery

The following section is included courtesy of the BSA's "DRM Landscape" report.

4.4.1 Adobe

Adobe Systems4 develops graphic design, publishing, and imaging software for Web and print production. Adobe offers several application software products for creating, distributing, and managing information of all types.

The Company licenses its technologies to hardware manufacturers, software developers, and service providers, and offer software solutions to businesses of all sizes.

Adobe's DRM offering is focused on two products:

- Adobe Content Server (Version 3.0)
- PDF

Adobe content server (ACS)[5]

Adobe has recently released version 3.0 of its content server, which has been developed to manage, distribute and protect Adobe Portable Document Format-based (PDF) eBooks and digital content. Among other enhancements, the new version allows libraries to develop eBook lending programmes.

The new version intensively uses XML, which allows embedding of PDF documents with images, media content and instructions. This development enables Acrobat files to become interactive documents that tie into back-end business software to process transactions.

The Content Server supports Adobe PDF Merchant DRM technology and EBX digital rights management schemes. Adobe has licensed technology developed by RSA security for the encryption of content.

Major DRM Aggregators using Adobe Content Server as a Technology:

Baker & Taylor has developed ED, a Web-based interface for public and academic libraries, which supports the acquisition and delivery of eBooks.

Info2clear, an European provider of secure digital content delivery systems, has developed SecureAttachment, which is a service based on the Adobe Content Server. The system allows users to send documents electronically as e-mail attachments, without the threat of unauthorized redistribution by recipients.

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[4] http://www.adobe.com

[5] http://www.adobe.com/products/contentserver/workflow.html

OverDrive provides eCommerce and DRM solutions for the secure packaging, protection, and distribution of Adobe PDF (Portable Document Format) documents. Companies such as Barnes & Noble.com, Vivendi, Universal, and WHSmith are using OverDrive's DRM technology to protect and secure their documents.

Digital World Services, the DRM division of Bertelsmann, has developed a document delivery solution based on Adobe's technology.

Publishing and electronic publishing companies such as Baker & Taylor, Ebrary, Follett and RosettaBooks have plans to implement the new version of ACS in their digital distribution systems. Recently, Kluwer, the academic publisher, has launched an eBookstore for academic and research professionals. The portal provides eBook titles in the Adobe PDF format and features subjects such as biology, medical science, chemistry, computer science, electrical engineering, physics, materials science, and social sciences. Each eBooks has been protected for online distribution using digital rights management (DRM) technology via the Adobe Content Server.

Adobe is sharing the top of the electronic text content distribution technology market with Microsoft. Adobe's DRM technology is used by many content creators for their secure distribution systems.

4.4.2   DMD Secure – DMDfusion

DMDsecure[6] is a European developer of server-side DRM solutions. The company's software applications allow content providers, service providers and network providers in several industries such as telecom and broadcast to develop rights value chain for the delivery of on demand or live digital protected content over mediums such as IP based networks, devices and software.

DMDfusion is a DRM solution, which is able to integrate proprietary DRM technologies such as Microsoft's Windows Media Rights Manager, RealNetworks' Media Commerce Suite and Adobe System's Content Server.

DMDfusion is able to generate specific usage licenses for the proprietary systems listed above. DMDfusion has been developed using web services technologies such as the .Net framework, so that it can be included into content encoding facilities, content delivery network infrastructure, commerce applications, billing systems and subscriber management systems.

Additionally, DMDfusion uses the Public Key Infrastructure (PKI) to discern the transaction process from the rights delivery process.

DMDaccess[7] is a server-side component, which has been developed to manage access on a streaming platform and/or a content delivery server.

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[6] http://www.dmdsecure.com/

[7] http://www.dmdsecure.com/products/overview.php

Final

Technology Partners

DMDSecure has reached agreements with several technology partners to develop its DRM solution.

- Microsoft - DMDSecure uses Microsoft Windows Media 9 based technology for the distribution of content over the Internet.
- Adobe - DMDSecure uses Adobe's Content Server for the distribution of text content.
- ContentGuard - The XrML language is used by DMDSecure as a standard rights expression language for all content types.

DMDSecure's clients include: BMG, Arcor, Granada, T-Systems, Akamai, Tiscali, Kluwer Academic Publishers.

DMDSecure is one of the first European companies to offer an integrated DRM solution for rights owners, using core technologies from leading DRM technology companies. The company develops digital content delivery solutions for Sofware based systems, on-demand streaming, hardware devices and mobile applications.

4.4.3 DWS

DWS, part of Arvato Storage Media, a Bertelsmann Company, has developed the ADo²RA System over the past 3 years. ADo²RA is the foundation for DWS' digital distribution solutions and services. When a digital content product is sold, this system grants initial consumer content rights, administers and manages the renewal, revocation and backup of those rights, and securely transfers the secure digital content throughout the digital distribution process.

DWS has made it a goal to address a world of digital content for multiple types of devices and—even more importantly —with multiple operating platforms and DRM technologies.

DWS has pioneered a secure RightsLocker, a conceptual and physical repository combining customer information, rights, and licenses, which allows access to information across devices – and enables fair use, private copying and information sharing/lending.

The platform is built on a modular core which enables flexible configurations including data sharing across networks, enabling access to content from different operators, through international roaming and across mobile and fixed line channels. Complex emerging industry requirements including privacy, technology evolution, standardization and interoperability are catered for. DRM technologies as previously defined can be slotted out, upgraded or replaced as new capabilities become available.

ADo²RA integrates into a single system all the processes of digital information distribution, from content preparation to subscription administration to end-user rights

management and cross-platform download management. ADo²RA provides a complete solution for:

- Account management (including subscription plans)

- Packaging (encrypting content with business and content rules)

- Catalog aggregation, content and offer management

- Commerce system and integration with affiliate systems

- Rights Locker (online storage and maintenance of customer rights)

- Reporting

- Design Goals

The system was designed to meet the following requirements:

- Integration   ADo²RA is designed to integrate with existing legacy systems like billing, account management, customer care, etc.

- Industry Standard   ADo²RA uses proven technologies for internal components. Java, C++, XML, RMI, HTTP, Oracle, MS SQL, Windows 2000 and Solaris are all combined to deliver a stable and reliable system for large-scale transaction processing and customer interaction.

- DRM Independent: Allows integration of new DRM technologies with minimal effort. DWS currently works with Adobe, Infraworks, InterTrust, Lockstream, Microsoft, Mobipocket, Real Networks, SDC and TryMedia.

- Rights Mobility: ADo²RA rights are DRM technology-neutral. This allows the consumer to have content portability across different devices and device types (e.g., portable music player, cell phone, PDA's and PCs) and manage it all in one place with the Rights Locker.

- Modular: Allows us to provide our clients with only the features they need, providing them with a more efficient and economical solution. Components may be added at any time into existing systems to provide specific functionality.

- Regional Support: ADo²RA can handle multiple languages and currencies to support the global demands of Internet offerings. All internal character sets support 16-bit (Unicode or equivalent).

4.4.4 IBM EMMS

IBM has developed the Electronic Media Management System (EMMS) [8] DRM system. EMMS is able to deliver digital content and includes a flexible DRM architecture to protect any kind of digital content.

Sectors served: Download and IP-based streaming in the areas of Multimedia (Audio/Video), music and publishing.

The EMMS system is modular and allows users to integrate one or several modules in their content distribution system. Its architecture is flexible so that modules can be added/removed according to specific needs.
The modules include:

EMMS Content Preparation Software Development Kit (SDK): Can be integrated into custom applications. The EMMS DSK allows software developers to create applications packaged with associated DRM into secure containers for distribution to content-delivery networks, retailers and enterprise portals.

EMMS Content Mastering Program: a content preparation DRM application for music content and its associated promotional material.

IBM EMMS Content Hosting Program: a storage facility for EMMS formatted content.

EMMS Web Commerce Enabler: allows content owners to deploy EMMS DRM content into online retail offerings or enterprise portals. The system supports transaction based pricing and subscription services.

EMMS Clearinghouse Program: this module manages, authorises and reports transactions.

EMMS Client Software Development Kit (SDK): allows business partners to develop client applications, which can download or stream, use and manage content in a tamper resistant environment, according to digital rights specified by content owners.

EMMS Multi-Device Server: allows content owners to develop digital content that can be transferred to other devices, including devices connected to wireless networks.

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[8] http://www-3.ibm.com/software/data/emms/

IBM Content Manager VideoCharger: a storage facility for EMMS formatted content in a streaming environment for audio and video.

IBM has recently worked with Spero Communications and other companies in the UK to launch the free promotional CD of new music and video content from the group Oasis. The CD was distributed to 1.7 million newspaper readers in the UK. Using IBM's EMMS technology, the CD allowed listeners to preview three new tracks, one week ahead of the album's official release date. Users had to register online to obtain a digital key to unlock the tracks, which can be played up to four times or until the end of the launch period. Users were then able to link directly to the HMV music store website to pre-order the new album online. The CD also used IBM's super-distribution system to share the tracks with other users.

ION Systems, an electronic publisher and on-screen reading technologies provider, has licensed EMMS for its publishing product. The EMMS system will provides distribution capabilities and digital rights management (DRM) services.

Ansyr, the PDF viewing and management software developer for handheld and wireless devices has partnered with IBM to implement EMMS within its range of applications.

IBM EMMS has integrated its EMMS DRM with its WebSphere Commerce Suite for Digital Media content management system. IBM is a member of several physical medium technology groups, such as the SD Card Association and the Copy Protection Technical Working Group (CPTWG), which indicates that it is focusing on DRM applied to hardware components.

4.4.5 Info2Clear[9]

Info2clear is a European based DRM company, which helps document authors, content creators and rights owners to distribute their content digitally.

The company has two kinds of customers: media customers and business customers. Info2Clear helps media customers to distribute digital content and also builds the necessary infrastructure. The company also provides technology for B2B document exchange by developing a secure e-mail attachment technology.

Sectors served: Publishing, Music, Video

Get-a-copy[10]*:* is a web-based copyright clearance system developed by Info2clear for online sales of reproduction rights to content. Get-a-copy allows website readers to request the permission to reproduce a newspaper article, pay for the permission with a credit card, and receive the file with the article.

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[9] http://www.info2clear.com/EN/index.asp

[10] http://www.get-a-copy.com/gac_op.htm

Info2Clear uses DRM core technologies from several proprietary DRM systems. Its Get A View DRM service provides integration of these technologies.

It has also developed the SecureAttachment11 service, which allows users to send confidential documents electronically as e-mail attachments. The company has integrated the Adobe Content Server and Adobe Acrobat eBook Reader into its copyright clearance system. Info2Clear is also a Digital Rights Solution provider for Microsoft DRM products.

Info2Clear is also the official distributor of OverDrive's retail eCommerce solutions in France, Benelux, Germany, UK and Spain.

The company has entered into an agreement with UnifiedPost, an electronic document distribution company. Under the terms of the agreement, UnifiedPost will use Info2clear's SecureAttachment technology.

MédiasActu has announced that it will use the get-a-copy service. Get-a-copy will manage the digital reproduction rights of all the content published on various MédiasActu websites.

Info2Clear is clearly focussing its strategy towards providing DRM services to the text industry.

4.4.6 InterTrust

N.B. The situation described in the section below represents the company's situation before the announcement that Fidelio, which includes Sony and Philips and includes other investors, were about to acquire the company.

InterTrust Technologies Corporation[12], incorporated in January 1990, has developed a general purpose DRM, platform, which is a foundation for providers of digital information, technology, and commerce services.

The Company licenses its DRM platform to various partners, which intend to offer digital commerce services and applications.

In January 2003, Sony Pictures Entertainment (SPE) and Phillips Electronics purchased the assets of InterTrust Technologies. InterTrust assets include 26 patents and 85 pending patent applications for software and hardware which can be implemented in DRM products.

The purchase was made for $453 million in cash through a jointly formed venture, Fidelio Acquisition Company. The purchase by SPE and Philips aims to make

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[11] http://www.info2clear.com/EN/services.asp#

[12] http://www.intertrust.com

Intertrust's technology more widely available for the secure distribution of digital content.

The company technology revolves around two types of technologies: Trusted Computing and DRM. Intertrust's core technology is called Rights|System.

Sectors served: Publishing, Audio, Video and Software.

Rights|System[13] The technology can be applied to several types of content including, music, videos, novels, articles, reports and images. Rights|System can be integrated into different business models and allows content owners to decide how the content is delivered. It can be downloaded, burned into CD or DVD and streamed. The system can be applied to several types of devices including standard PCs, set-top boxes, portable devices, and mobile phones.

Intertrust provides several modules for the creation and delivery of DRM enabled content. It includes:

Rights|System Packager: allows content owners, distributors, and service providers to create digital products from content and package them for distribution. The product is available as a standard packager and also as a streaming content packager.

*Rights|System Server***:** InterTrust's server technology fulfills two main goals: to establish and maintain the secure infrastructure for a system and to authorise and deliver rights to users of a system.

*Rights|System Client***:** A set of components, which have been developed to provide a platform for consumers to use protected content on a variety of devices.

It includes Rights|Desktop for PC based systems, Rights|Mobile and Rights|Phone for mobile devices, Rights|PD for personal digital assistant devices, and Rights|TV, which can be integrated into set-top boxes built using MPEG digital signal processor (DSP) chips.

Software development kits (SDKs): These include the Rights|Audio SDK, the Rights|Video SDK, the Rights|Desktop SDK, and the Packager SDK.

InterTrust has, during this year, integrated its technology into several video-on-demand systems providers.

It has implemented the InterTrust Video Architecture (IVA) into the Sun platform, which is an integrated technology suite for IP-based digital media distribution applications. The IVA platform is based on Intertrust's Rights|System technology.

The company has also announced that the digital video systems provider Seachange is now implementing InterTrust's Rights|System DRM software in selected

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[13] http://www.intertrust.com/main/technology/index.html

applications of SeaChange Interactive Television Systems, which support IP-based video-on-demand (VOD). The move will allow Seachange customers to launch new services in personal television.

Additionally, the DRM company has entered into a licensing agreement with Mitsubishi, who will incorporate the InterTrust Rights|System products into Video on Demand (VOD) applications in Japan and has reached an agreement with UK based set-top boxes developer Pace Micro Technology plc to develop DRM-enabled digital set-top boxes for broadband IP operators.

InterTrust has also reached an agreement with consumer electronics company, Sanyo. It will incorporate its Rights|System DRM into Sanyo's upcoming Digital Memory portable music player.

According to the various agreements Intertrust has reached, it is clearly focussing towards integrating its DRM technology into consumer electronics devices.

The recent acquisition of its portfolio of patents by Sony and Philips is a major development in the DRM marketplace and it will be interesting to see how Sony and Philips will use these assets.

4.4.7   Liquid Audio

Liquid Audio[14] has developed an open platform for the digital distribution of music over the Internet. The company's software products and services allow artists and record companies to create, syndicate and sell recorded music with copy protection and DRM. Liquid Audio has also created the Liquid Music Network, which regroups music related Web sites and retailers, which can offer digital music through Liquid Audio's catalogue of syndicated music. The system allows consumers to preview and purchase digital music online. Consumers can then transfer downloaded music to recordable compact discs and to digital consumer devices.

The online music company has recently announced that it will sell its patented digital rights management (DRM) and secure file-transferring technologies to Microsoft. It is reported that Microsoft will pay $7m in cash for the patents. As part of the sale, Liquid Audio will receive a royalty-free licence to continue using the patents.

Liquid Audio also had plans to merge with Alliance Entertainment, a company based in Florida, which distributes video games, CDs, DVDs and videotapes. However both companies have recently mutually agreed to end merger plans. This was largely due to the concerns of Liquid Audio's shareholders over the proposed merger.

Most recently, the company's board of directors has decided that it will dissolve the company and distribute its cash reserves to shareholders.

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[14] http://www.liquidaudio.com

The company has been awarded several patents for the technology used in its proprietary architecture for mastering, serving, and distributing copyright-protected, digital music via the Internet.

Sectors served: Music

Liquid Audio's solution[15] is based on an open technical architecture, which supports digital music formats such as MP3, Dolby AC-3, ATRAC3, and Windows Media.

The company's products and services are separated into three major areas: creation, distribution, and clearing and reporting.

Creation: Liquid Audio provides an audio content encoding service, which includes:

- Compression: makes audio content suitable for digital distribution.
- Security: Provides various security and licensing options such as territory restrictions, expiration dates, variable pricing and device output options. Liquid Audio uses its own DRM technology but also provides third-party DRM support for other proprietary DRM formats such as Microsoft's Windows Media.

- Metadata: the company also offers a Metadata creation service.

Distribution: Liquid Audio is able to broadly distribute music content via its Liquid Music Network, which includes e-tailers such as Amazon.com, BestBuy, CDNOW, Sam Goody/Musicland and Yahoo!

The company also provides a hosting facility.

Clearing and Reporting: The company provides an online clearinghouse service for record labels, including financial clearing, revenue distribution and rights reporting functions.

Additionally, Liquid Audio provides a usage reporting service, which tracks online sales activity and effectiveness of promotions.

The company has recently released an integrated solution for securely managing digital audio distribution, including metadata, named Distra. The application can support several audio formats and uses Liquid Audio's security and digital rights management (DRM) system to protect files.

MusicRebellion.Com has entered into a licensing agreement with Liquid Audio. Under the terms of the agreement, about 200,000 music tracks from Liquid Audio's catalogue will be offered on the MusicRebellion.com website and will include content from BMG and EMI Recorded Music. The price of online music downloads will be

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[15] http://www.liquidaudio.com/services/distribution/

determined by the Digonex e-commerce system, which is able to automatically adjust prices according to consumer demand.

E.Digital Corporation, a digital music devices developer, has announced that it will use Liquid Audio's music player on its soon-to-be-launched music Web site.

Sanctuary Records Group, a division of UK-based media and entertainment group Sanctuary Group plc has entered into a digital distribution agreement with Liquid Audio. Sanctuary will use Liquid Audio's online music distribution technology to make both new releases and catalogue titles available to users online. Users will be able to download music titles on-demand or through a monthly subscription service.

The company has announced an agreement with Roadrunner Records (the label behind the artists Nickelback and Slipknot) to create a new digital music club for consumers at RoadrunnerRecords.com. The service, called "The Vault", offers a specified number of tracks for a monthly fee. Users will be able to buy and download individual tracks, burn tracks to CD and transfer content to portable devices that are enabled by Liquid Audio software.

Liquid Audio was among the first companies to provide a complete music distribution service for the Internet. The future of the company seems today uncertain. This is partly due to the current technology market situation. Liquid Audio also has to face competitors such as Microsoft and RealNetworks.

4.4.8 Lockstream

LockStream Corporation has developed a digital rights management system that secures the distribution of any type of content across all platforms and devices, from mobile handsets and set-top boxes to gaming consoles and personal computers. LockStream's DRM technology was designed to meet the needs of content owners, providing increased content security while enabling new business models without interfering with the experience of end users. LockStream's software is modular, flexible and robust, easily integrated with any current and future distribution platforms. From embedded, web, and wireless clients to Windows, Solaris, Linux and Unix servers, LockStream technology manages all the underlying complexities of secure content delivery and access control, allowing customers to focus on delivering new and innovative content, products and services.

LockStream's DRM secures content while enabling new business models such as super-distribution and subscriptions, without interfering with an end-user's experience. LockStream's software offers unparalleled security and flexibility and was the first to enable digital rights management for mobile phones and the Symbian operating system.

Backed by industry leaders like AOL Time Warner and ING Barings, LockStream was founded in 1999. LockStream is headquartered in Seattle, with offices in London and Tokyo. More information about LockStream is available at www.lockstream.com.

The LockStream solution is comprised of separate client and server side components.

SERVER SIDE COMPONENTS

The LockStream Secure Package Creator Module is a customizable module that gives content developers the ability to take raw digital media files, such as an MP3 music file or a JPEG video file, and secure these files for distribution across any kind of wireless (or wired) network. This Secure Package Creator Module resides either on a content distribution server or on content creation machines for audio mixing, desktop publishing, graphic design, etc. It contains three key components (1) The Object Creator that turns raw media files into objects; (2) The Rule Maker that creates usage license templates; and (3) The Object Protector that turns objects into protected objects that can be distributed securely. The Secure Package Creator Module simplifies distribution with a consolidated system and takes advantage of standards via the XML infrastructure that forms the basis of all LockStream DRM technology.

The License Generator Module allows content owners (and/or distributors) to issue licenses based on the DRM rules established by the Secure Package Creator Module and to manage those licenses. The License Generator functions each time a user seeks to purchase or rent content that has been turned into a protected object. The License Generator registers and manages DRM usage rules associated with such protected objects. It creates and delivers licenses for protected objects and creates and delivers the DRM update responses that confirm the ongoing validity of the content license or change its terms

CLIENT SIDE COMPONENT

The LockStream Secure Package Reader Module enables wireless (and wired) distribution of digital media by preventing unauthorized access or duplication while not degrading the content user's experience. The Secure Package Reader is integrated within wireless devices such as cell phones, PDAs, or music players, or on the desktop. Ring tones that play only on the mobile phone of an authorized purchaser, or memos that cannot be forwarded to the PDA of an unauthorized viewer are just two examples of how this technology keeps digital content secure.
The LockStream Secure Package Reader Module consists of two components that developers use to build LockStream DRM support into a multitude of devices, platforms, and networks.

4.4.9 Macrovision

Macrovision[16] is developing digital technologies to combat widespread piracy and offering solutions that allow customers to control the use of digital content and software.

The company is well known for its copy protection systems for VHS, DVD, and digital pay-per-view platforms, which prevent unauthorised copies from being created on home recorders.

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[16] http://www.macrovision.com

It has expanded its scope of activities to several areas, including CD copy protection with DRM extension, digital video watermarking, video DRM, pay-per-view (PPV) technology and electronic licensing for software delivery.

The company has acquired the assets of Midbar Tech, a CD protection technology company for $30m in cash and TTR Technologies, a provider of music copy protection and DRM technologies, for $5.25m.

The company faces competition from SunnComm and Sony in the field of CD protection technology.

Recently, Macrovision has formed a new division, which will focus on audio piracy.

Sectors served: Audio, Video and Software

Macrovision's has developed MacroSafe[17], a DRM solution for audio video content delivery. The solution includes content preparation, delivery and management. MacroSafe is based on industry standards and can be integrated into an existing e-commerce and delivery systems. The system is able to securely deliver MPEG 2, MPEG 4, MP3 and AAC to computers, set-top boxes, personal video recorders (PVRs), games consoles and Internet appliances. The system uses the Encrypted Licence Key (Kl) system and the XrML language for rights related transactions.

The system is typically used by content owners in applications such as secure Internet movie download, datacasting for video-on-demand (VOD) and streamed real-time IP broadcasts.

Macrovision's integrated MacroSafe DRM system was officially launched in Europe at the IBC 2002 convention; therefore, the system is recent.

Macrovision Corporation DRM solution has been integrated with InterVideo's WinDVD, a popular software DVD player. The integration of Macrovision MacroSafe will bring the following features to the WinDVD application:

It will be able to identify content encrypted and protected using the MacroSafe system and will determine whether users are allowed to view the content. Additionally, it will include a mechanism that prevents unauthorized peer-to-peer file sharing.

One of the strengths of MacroVision resides in the fact that the company has been established in the content protection market for a long time and therefore is well funded. The company's decision to provide an integrated DRM solution is well suited.

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[17] http://www.macrovision.com/solutions/video/drm/overview.php3

4.4.10 Microsoft

The software company[18] has developed DRM systems for three main areas: text publishing and audiovisual.

Microsoft Windows Media Rights Manager

It is the company's end-to-end digital rights management (DRM)[19] system for the secure distribution of digital media files. The current version, Windows Media Rights Manager version 7.1 allows developer to create several types of DRM solutions. This system focuses mainly on the delivery of audio and video content.

The system provides the following features:

Secure Distribution of Digital Media: digital content can be exchanged through networks in a secure manner.

Persistent Protection: Windows Media Rights Manager uses a license key to lock digital content and is able to maintain protection if the media is distributed further down. The Rights Manager uses encryption schemes, which prevent digital media files from being exposed to piracy or other illegal use.

Security: Rights Manager can make each player a unique item by linking the player to the host computer. The Rights Manager also includes a feature called Secure Audio Path, which prevents digital media streams from being captured within a PC. The latter is only available for Windows XP and Windows Millennium operating systems.

Secure End-to-End Streaming and Downloads: Microsoft uses secure cryptographic protocols to ensure that media files are protected during the download and streaming processes.

Licensing and rights management: Windows Media Rights Manager includes licensing rights features. Microsoft has developed a system that allows distributed licenses and media licenses to be issued independently of the actual media file.

This feature allows content owners to check whether the user has an appropriate license each time a digital media file is played. Since the licenses and media files are stored separately, licensing terms can be changed for specific digital content files without the need for repackaging.

Subscription Models: the system allows content providers to set the duration and the conditions of a licence.

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[18] http://www.microsoft.com

[19] http://www.microsoft.com/windows/windowsmedia/drm.asp

Controlled Transfer to Portable Devices: Windows Media Device Manager includes a feature that allows the secure transfer of protected digital media files to Secure Digital Music Initiative (SDMI) portable devices or media.

The Windows Media Rights Manager can be implemented into Microsoft .NET framework.

Microsoft's digital content delivery system is known as Windows Media 9 Series, which includes Windows Media Rights Manager. Windows Media 9 provides client side utilities such as a multimedia player software application.

Additionally, a SDK version of Windows Media is available for licensing for software developers.

Windows Media 9 includes technology for devices other than PCs and thus clearly indicates that Microsoft is expanding its media delivery system to external devices such as DVD players, set-top boxes and various portable devices.

Digital Asset Server (DAS)

The Digital Asset Server[20] is Microsoft's DRM solution for the epublishing industry. The solution includes a front and back end.

The front end, known as DAS eCommerce can be installed on an eBookstore site. It is able to identify the DAS provider and initiates the process of secure transactions and downloads of eBook by consumers.

The back end, known as DAS Server, can be installed within the DAS Provider server architecture and is used to secure and download each purchased eBook by the consumer.

The Microsoft Reader 2.0 is used to read eBooks in the proprietary .Lit format. Microsoft Reader is available for PCs and Pocket PC devices.

Movielink, the joint venture backed by Sony Pictures, Viacom's Paramount, Metro-Goldwyn-Mayer, AOL Time Warner's Warner Bros and Vivendi Universal, which has developed an online movie rental service, has entered into an agreement with Microsoft to implement the Windows Media DRM technology and the Windows Media 9 Audio and Video technology into the Movielink service.

Microsoft is also providing technology for the Pressplay online music service, which is backed by Vivendi Universal and Sony.

The Windows Media Rights Manager is used by companies such as DMDsecure, iBEAM Broadcasting Corp., Liquid Audio, On Demand Distribution (OD2),[21] and RioPort. Software applications such as MusicMatch, RealJukebox, RioPort's Audio Manager, Sonic Foundry Siren, Voquette Media Manager, AOL WinAmp, and Yahoo, have licensed Windows Media DRM in the Windows Media Format SDK to support the playback of secure audio and video. Additionally, chip manufacturers such as Atmel, Cirrus Logic, Intel, PortalPlayer and Texas Instruments, have licensed Windows Media technology and DRM.

The Digital Asset Server, is being used by eBookstores worldwide. Companies such as Barnes and Noble.com are using Microsoft's Digital Asset Server and the Microsoft eBook reader as client software. Microsoft has also entered into agreements with Amazon.com in the US, Mondadori.com in Italy, Groupo Planeta in Spain and Latin America, Vivendi Universal in France, Kinokuniya in Japan, and AdLibris in Sweden.

Companies such as Lightning Source, Overdrive Systems, and ContentGuard are developing solutions using the Digital Asset Server.

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[20] http://www.microsoft.com/reader/info/das.asp

[21] A UK based online music content distribution company, which will be covered in this document.

By intensively licensing its Windows Media 9 technology, Microsoft is becoming a leader in the arena of digital content distribution for audio and audio visual. It has reinforced its position by acquiring Liquid Audio's portfolio of patents. On the publishing side, its Digital Asset Server technology is widely adopted, though with less throughput than Adobe's Content Server.

Microsoft has progressively become a competitor of RealNetworks on the audio/video distribution market and has always been a competitor of Adobe on the epublishing market.

4.4.11 On-Demand Distribution (OD2)

OD2[22] is a European provider of online music services. The company manages a catalogue of music content from several record labels and has developed a system to sell and promote it via on-line retailers. The company has developed an online distribution system and associated software for the music industry.

Sector served: Music

The company provides the following technology related services[23]:

> *Encoding/Encryption*: the service can encode music to various audio formats such as Windows Media Audio and MP3. Associated DRM can be added during the conversion process.

> *Hosting:* the company provides a range of hosting services.

> *Secure delivery of promotional and paid for downloads:* the company can manage both the commercial and technical interface of e-retailers.

> *Royalty management:* the company provides a service, which issues an electronic licence for every track sold online. OD2 also provides a web-based interface, which allows content owners to track sales, and to manage royalty distribution.

The company has developed its systems based on the SDK version of Windows Media. Its Digital Rights Management (DRM) technology is based on Microsoft Version 7 Rights Manager.

The client side system, called WebAudioNet, allows users to stream, download, burn and transfer music content to a range of portable devices.

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[22] http://www.ondemanddistribution.com/eng/home/home.asp

[23] http://www.ondemanddistribution.com/eng/services/copyright.asp

OD2 provides its services to many European online music portals including, HMV.co.uk, MSN.co.uk, Freeserve, Tower Records Europe, Tiscali, MTV Online, Fnac.com, V2 and Ministry of Sound.

The company has also entered into distribution agreements with several record labels. Recently, OD2 has announced it will distribute a collection of 50,000 tracks from Universal Music's catalogue to several European music Web sites such as HMV.co.uk, MSN.co.uk and Freeserve.co.uk. The company has reached similar agreements with Warner Music, BMG and EMI.

OD2 is also known for its marketing efforts, such as the "digital downloads day", which offered a £5 credit to users wanting to try the OD2 distribution network. It also recently reached an agreement with Virgin and The Times newspaper in the UK. The Times readers were able to download tracks from Peter Gabriel's new album before its official release on September 21. A unique PIN number included in the newspaper allowed users to register via a website, which then unlocked eight of Peter Gabriel's tracks.

OD2 is starting to have a strong market presence in Europe.

4.4.12 OverDrive

OverDrive[24] is a provider of enterprise digital media solutions, most notably Digital Rights Management (DRM) technology, for a variety of digital publishing and eBook systems. The company also provide Internet solutions for digital asset management and eCommerce as well as consultancy and digital conversion services.

Sectors served: Publishing

OverDrive has developed the following technologies.

> *Content Reserve*[25]**:** also known as the Global Digital Content Network. Publishers can manage the wholesale distribution of their eBook inventory, by uploading a single copy of each title and all associated marketing, pricing and DRM information into their Content Reserve account. Ebook retailers can then select titles to build their catalogue and merchandise the titles from Content Reserve's inventory. When a retailer completes a sale, Content Reserve DRM servers distribute the product to the customer, protecting the rights of the owner. The whole process uses the Internet.

> *The MIDAS technology:* uses Microsoft's Digital Asset Server (DAS) as a core technology, allows bookstore to develop online eBook distribution services with embedded DRM technology. The system also allows the integration of additional eCommerce features such as e-commerce solutions for eBook

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[24] http://www.overdrive.com

[25] http://www.overdrive.com/contentreserve.asp

catalogues, inventory management, real-time credit card processing, and shopping cart applications.

Digital Showcase: Overdrive's digital showcase allows small publishers and independent writers to launch their own eBook store. Users can choose to use DRM technology from Palm, Adobe and Microsoft.

Overdrive also uses the technology of other providers. The company has developed strategic partnerships with Adobe, AT&T, Microsoft Corporation and Palm Digital Media

Overdrive recently partnered with retailer OfficeMax in the US to develop an online digital library. It also partnered with WHSmith Online in the UK to launch an online eBook store.

The company also entered into an agreement with Info2Clear, who is now selling and distributing Overdrive's retail eCommerce solution to parts of Western Europe.

In September last year, Contentguard's XrML rights expression language was integrated into Overdrive's authoring and conversion workflows.

OverDrive has recently developed a service for the library market based on the Adobe Content Server. It allows libraries to create eBook collections for downloading and offline reading by end-users whilst protecting against unauthorised distribution.

4.4.13 Palm Digital Media

Palm Digital Media (PDM)[26] is a division of PalmSource, the software-licensing unit of Palm. PDM has developed several eBook products for the palm OS, including the Palm Reader for desktops and handheld devices.

Palm has also developed a DRM infrastructure for the secure distribution of eBook content.

Sectors served: Publishing

The Palm Retail Encryption Server is the central "hub" of Palm's DRM. A recent update of the software application allows libraries to develop eBook lending programmes. The DRM process uses a hardware identification number, which has been assigned by the Palm Reader eBook application to a handheld or desktop computer.

The server uses the identification number to lock an eBook to a specific device. The Palm Retail Encryption Server can also assign temporal conditions to eBooks such as an expiration date. Palm reader files use a proprietary format and are encrypted, which protects them against unauthorized distribution.

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[26] http://www.palmdigitalmedia.com/

Palm Digital Media has been running its own online bookstore, which provides a collection of eBooks from major publishers.

Palm Digital Media has licensed its Palm Retail Encryption Server Software to two German Internet retailers, envi.con KG and mukom, e.K. The licensing agreements will allow the two online retailers to develop Internet bookstores offering German language editions of Palm Reader eBooks, which will be protected by Palm Digital Media's digital rights management (DRM) technology. It has also entered into an agreement with OverDrive, which will integrate the Palm Retail Encryption Server Software into its Content Reserve B2B system.

Palm Digital Media is, along with Adobe and Microsoft, an important player in the eBook market.

4.4.14 RealNetworks

RealNetworks[27] provides software products and services for Internet media delivery. It was one of the first companies to develop streaming media systems for the creation, real-time delivery and playback of audio, video and multimedia content over the Internet.

The company also provides a network of websites and subscription services, which offer access to exclusive content.

Sectors served: Audio, Video and Games

Media Commerce Suite

The Media Commerce Suite is a secure media delivery platform, which includes rights security and rights management functions. The system allows the creation of several business models such as subscriptions, video on demand (VOD). It includes security features to protect content from being pirated or against unauthorized access. It also allows content to be deployed on desktops, portable devices and set-top boxes.

The Media Commerce Suite[28] includes four main components:

> *RealSystem Packager:* this software application allows content providers to prepare media files and products for digital distribution or broadcasting.

> *RealSystem License Server:* a server based on the HTTP protocol, which is able to generate licenses that permit access to secured media.

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[27] http://www.realnetworks.com

[28] http://www.realnetworks.com/products/commerce/features.html?UK=X

Media Commerce Upgrade for RealPlayer: this application is a client side programme, which is able to identify secured RealMedia files (.rms) in a trusted environment.

RealSystem RealServer secure file format plug-in: this plug-in application is able to interact with existing content delivery mechanisms such as a retail Web server and a back-end database.

The client side of the system are the RealVideo and RealOne players. RealNetworks has also launched the RealOne mobile player, which can be installed on various handheld devices.

RealNetworks has recently reached an agreement with Envivio, a provider of MPEG-4 broadcast and streaming solutions, to develop a new product, called Mobile Producer, which will allow audio and video content producers and wireless carriers to convert content into an MPEG-4 stream, so that it can be used on the next generation of mobile phones and handheld devices.

Movielink, the online movie service backed by Sony Pictures, Viacom's Paramount, Metro-Goldwyn-Mayer, AOL Time Warner's Warner Bros and Vivendi Universal has recently announced that it will implement the Media Commerce Suite along with its RealVideo and RealOne Player technologies into its service.

RealNetworks has also reached several agreements with content providers to develop its own service, RealOne SuperPass, and using its own technology. Recent examples include a video on-demand (VOD) service over the Internet, called "Starz On Demand" was developed in partnership with California-based pay television company, Starz Encore Group. It will offer about 100 movie titles a month to US subscribers via the RealOne subscription service. RealNetworks' digital rights management (DRM) technology will be incorporated to protect content against illegal downloading.

The company has also entered alliances with large US broadcasters such as CNN, ABCNews and CBS.

RealNetworks is also heavily involved in the MusicNet venture, which is also backed by AOL Time Warner, Bertelsmann, and EMI.

This year, RealNetworks has officially launched its RealOne subscription-based service on the European market. Subscribers to RealOne SuperPass are able to access content such as sports, music, entertainment and news from MTV, BBC Worldwide, Wimbledon and CNN.com Europe. Depending on the type of subscription chosen, the service will cost users $14.19 to $21.29 per month.

RealNetworks is a leader in the online media delivery market. Its most important competitor is Microsoft.

4.4.15 SDC

Secure Digital Container[29] was founded in August 1999 to develop and market the concept of digital container technology. The company is a sort of spin off of PixelPark Switzerland.

Sectors Served: Publishing, Audio, Video, Software and Financial Services

SDC has developed a Java-based digital rights management (DRM) solution, called Digitcont, for the distribution of secure digital content to mobile phones, PDA's, set-top boxes and personal computers. Online music providers, online video providers, eBook stores, software applications stores and financial institutions can implement the system.

The system has been developed so that content can be distributed via electronic channels such as the Internet, interactive television (ITV) and WAP.

The company is also including DRM related technologies such as Watermarking and owns a patent (US and EU) for its digital container system.

Digital World Services (DWS) has joined forces with SDC to develop a system for the delivery of DRM-protected music and video downloads to devices such as personal computers and PDA's. A prototype of the solution has been presented at the Popkomm music trade show in Germany.

4.4.16 Sealed Media

SealedMedia[30] is a provider of Digital Rights Management (DRM) to publishers of digital content on the Internet. SealedMedia's technology provides a solution for securing and selling almost any content on the Internet such as text, images, audio and video. The SealedMedia service can be integrated with new and existing web sites.

Sectors Served: Publishing, Audio and Video

The company provides two types of DRM services: Document Security and Digital Publishing.

> *Document Security:* The system protects confidential information by sealing content such as Word, Excel, PowerPoint, PDF and HTML documents, GIF, PNG and JPEG images, MP3 audio, MPEG-1, MPEG-4 and QuickTime video. The system allows content owners to revoke or modify individual or group permissions to access sealed content after it has been distributed. SealedMedia's technology separates rights from content.

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[29] http://www.digicont.ch

[30] http://www.sealedmedia.com

SealedMedia provides DRM systems and services for several business models including models including trial access, pay-per-view, subscriptions and roaming access.

SealMedia's DRM technology provides the following features:

- Access to several media formats within Internet applications.
- Can be integrated into existing processes and workflows.
- Supports several access models and a wide range of popular media formats, end user devices and distribution models.
- The technology can be expanded to new media formats and mobile devices.
- Compatible with content-related standards such as Digital Object Identifiers (DOI) and XML.

SealedMedia appears to be clearly focussing towards the publishing market.

4.4.17 Sony

"OpenMG X", Sony Corporation's digital rights management and distribution technology, consists of the following software modules:

- An encoding module which adds digital rights management information, such as the number of times content was copied or played, to music/movie content and converts them into code at the distributors' end.

- A server module which distributes digital rights management information on content to the users' end.

- A client module for developing application software compatible with "OpenMG X"

Sony has put the client module (#3) into practice and created "MAGIQLIP", the network music player for PC.

"OpenMG X" will be applicable with a widening variety of network connected devices, including PCs and OpenMG related products such as Memory Stick products and Net MD products, as well as PlayStation 2.

This will allow content holders and distributors to widen the ways of secure content distribution to various devices.

As an example, Label Gate Co. Ltd, will soon start a new music distribution service compatible with MAGIQLIP, using "OpenMG X" technology. Furthermore, in the United States, Pressplay and other companies who distribute music over the Internet are considering future distribution services which utilize "OpenMG X".

Sony believes in "OpenMG X" as a DRM technology which support secure content distribution, and is willing to start licensing it to the relevant industries.

As both a hardware manufacturer and content/service provider, Sony aims to connect content producers and end users in providing range of services that distribute high-value content in a secure environment.

4.5   DRM Technologies – Other contributions

4.5.1   Publishing Requirements for Industry Standard Metadata (PRISM)

[October 06, 2000] "PRISM is an extensible XML metadata standard for syndicating, aggregating, post-processing and multi-purposing content from magazines, news, catalogs, books and mainstream journals. It is clear to most observers that the publishing industry needs a standard metadata vocabulary to realize the potential of online publishing and e-commerce in the publishing industry. PRISM provides a framework for the interchange and preservation of content and metadata. PRISM also provides a set of controlled vocabularies with which to describe the content being interchanged. Thus PRISM will provide a common interchange that greatly expands the market for licensed content."

[June 08, 2001] Description: "PRISM is a metadata specification originally intended for use in the magazine industry, where production, repurposing, aggregation, syndication, and archiving are topics of interest. Its utility extends beyond that industry, to any organization that needs to develop such functionality. Rather than reinvent the wheel, PRISM recommends certain practices, such as the use of XML, namespaces, RDF, and the Dublin Core. It then defines a few extra namespaces for more specific information. The 1.0 version of the specification is available from www.prismstandard.org. Interwoven, and several of our partners, have already announced support of the PRISM spec. Other vendors, and content providers such as Time Inc. and Getty Images, have too..." [posting from Ron Daniel 2001-06-08]

Relationship of PRISM to other standards:

RDF: "RDF defines a model and XML syntax to represent and transport metadata. PRISM uses a metadata framework based on a simplified profile of RDF. However, PRISM compliant applications are required to generate metadata that can be processed by RDF processing applications."

Dublin Core: "PRISM has defined some controlled values and recommended practices for using the Dublin Core vocabulary and has added additional terms when necessary."

NewsML: "There is some overlap between the two standards, but PRISM and NewsML are largely complimentary to each other. The PRISM specification does leverage much of the work done in NewsML, making use of a number of elements defined in NewsML."

NITF: "Although NITF has some elements to specify metadata and header information that are duplicated in PRISM, there is a complimentary affinity between the two standards. A number of PRISM elements map to elements in the NITF DTD, and those mappings are called out later in this specification."

ICE: "...there is a natural synergy between ICE and PRISM. ICE provides the second half of the puzzle. PRISM, which aims to provide an industry standard vocabulary for the exchange and reuse of magazine, book, journal and news content, provides the first."

MIME: "Due its widespread adoption and the availability of MIME-aware tools, this version of the PRISM specification recommends MIME as the means of packaging metadata and multiple associated resources in a single transmission."

PRISM Rights Language (PRL). "Collections of PRL statements are known as PRL expressions. The purpose of a PRL expression is to determine if a person or organization may or may not make use of a resource in a particular way. PRL expressions evaluate to a Boolean value that indicates if a particular use is allowed (if the expression evaluates to true) or not (if the expression evaluates to false).... Licensing content for reuse is a major source of revenue for many publishers. Conforming to licensing agreements is a major cost -- not only to the licensee of the content but also to the licensor. For these reasons, PRISM provides elements and controlled vocabularies for the purpose of describing the rights and permissions granted to the receiver of content. The PRISM specification provides those elements in two namespaces. Basic, commonly used, elements are defined as part of the PRISM namespace. A separate namespace is defined for the elements in the PRISM Rights Language (PRL). Since the field of Digital Rights Management (DRM) is evolving so quickly, the working group decided it would be premature to recommend one of the current DRM standards for rights information, such as the eXtensible rights Markup Language or Open Digital Rights Language. The working group expects that a rights management language will eventually become an accepted standard. As an interim measure, the working group focused on specifying a small set of elements that would encode the most common rights information to allow interoperable exchange of basic rights information. To do this, the PRISM rights language makes a couple of simplifying assumption. It assumes that the sender and receiver of content are engaged in a business relation. It may be a formal contract or an informal provision of freely redistributable content. One of the parties may not know the other. Nevertheless, a relation exists and if needed one could make up an identifier for it, such as the contact number. PRL also assumes that its purpose is to reduce the costs of conformance to that relation. The working group explicitly rejected imposing any requirements on enforcing trusted commerce between unknown parties. Instead, the emphasis is on reducing the cost of compliance in common situations. Organizations implementing DRM functionality are advised that several companies have obtained patents on various techniques for implementing such functionality. Implementers of DRM functionality may wish to investigate further, the PRISM working group takes no stance on such patents nor has it investigated it... The PRISM rights and permissions vocabulary is designed to facilitate reuse and clearance processes for parties with established business relationships by explicitly specifying the rights and/or restrictions connected with a resource. PRISM is NOT concerned with digital rights enforcement. PRISM does not specify policy or provide instructions to trusted viewers and repositories on how they should behave. PRISM also does not specify fee or payment details... The design goals of rights and permissions are: (1) To be able to describe reuse rights in a precise and consistent manner; (2) To make simple cases such as no rights or unrestricted use simple to specify; (3) To provide the capability to indicate common types of uses or restriction;

(4) To allow for graceful evolution to future accepted standards for specifying rights..." For related work, see OASIS Rights Language. [from PRISM: Publishing Requirements for Industry Standard Metadata"]

4.5.2 AIT Federated Digital Rights Management (FDRM) Project

Advanced Internet Technologies (AIT) was established by the (United States) Office of Research and Information Technology, in February 2001. The mission of AIT is to promote, develop and apply next-generation technologies to support and enhance education and research. The AIT goals are:

To facilitate and accelerate the process by which advanced information technologies are adopted in higher education, and to develop the functionalities of those technologies to better meet R&E requirements.

To establish a leadership role for The University of Tennessee in the advanced Internet technology arena.

To contribute to the creation of policies to support the judicious and efficacious adoption and use of new information technologies by the academic community.

To pursue collaborations with other institutions, and with regional, national, and international initiatives, sharing similar goals, and to leverage these collaborations towards influencing technology development.

To pursue federal agency and other funding to support our mission and goals.

To collaborate with other units within The Office of Research and Information Technology, and within academic departments at The University of Tennessee, to pursue our mission and goals.

4.5.3   Federated Digital Rights Management (FDRM)

AIT is developing the FDRM project in collaboration with Rutgers, The State University of New Jersey. FDRM evolved from AIT's earlier project called the Secure E-content Attribute Management (SEAM) project; many of the components of SEAM appear in the FDRM architecture.

FDRM is designed for use with any authentication and authorization mechanism, but its current iteration is centered on Shibboleth, the Internet2 Middleware project. FDRM can also, therefore, be termed an application of Shibboleth. The Internet2 MACE group has provided useful feedback in the development of the FDRM design. Currently (July 2002), they are working on a demo of the FDRM functions, both from a user and engineering perspective.

4.5.4   MPA

MPA takes the view that DRM technologies should provide functionality for:

- Content and rights management (client and server)

- Content protection

- Secure wrapping / encrypted containers

- Copy protection for audio and video signal outputs

- Rights expression language

- Authentication of parties, content, software, and hardware

- Persistent identification of content (being able to identify content even after it is removed from its secure container) and persistent recognition of usage rules.

- Tracking, forensics, and audit trails

- Watermarking/fingerprinting for embedding rights/usage rules

- Metadata management

- Key management, distribution, and storage

- Code obfuscation and protection of embedded secrets

- Trust model, including root of trust and certification

- Tamper resistance of software, hardware, and execution environment (including operating system, device drivers, etc.)

- Revocation/renewability of keys, licenses, software, and hardware

- Privacy management

- Cryptographic algorithms

- Security protocols

- Security of license generation servers

- Hardware platform security

4.5.5 Association of Commercial TV

In a Conditional Access (CA) system, access is granted through a simple Yes/No system. To allow this to happen, the end user is given a "key" allowing access. Usually CA involves encryption/decryption functionality.

Some commercial conditions can also associated with the content, e.g. in pay-per-view different tariffs for the program, depending on the subscription level. Modern CA systems have also evolved to cope with persistent digital storage, based on specific usage rules.

In a Digital Rights Management (DRM) system, access is based on specific conditions associated with the consumption of the content. A licence is given to the end user who satisfies (or agrees to satisfy) the specific conditions. The end user (or rather his terminal) can use the licence only after proving its identity as a user satisfying the conditions.

As this transaction normally will take place online, there will be transmission of data potentially involving privacy and/or commercially sensitive information.

One could say that a CA system is the first level of a DRM system, structured to ensure the safe delivery of content to the end-user. The DRM paradigm becomes richer and more important as we move towards persistent digital storage in the environment of the end-user.

A DRM system needs:

- A language to describe the rights of usage associated with a specific content,

- A methods to deny un-authorised access (e.g. CA and encryption) and to protect content in general (this should include the « analogue hole », i.e. analogue content converted to digital, and also digital material that have been converted to analogue for consumption, and that is then reconverted to digital),

- A system to allow all the necessary transactions between end user and rights distributor.

An associated language to describe the content – even if this is not strictly a part of a DRM system - is important to allow the end-user to easily navigate within the available content and to be able to take advantage of the possibilities of a DRM system.

For digital content, from a technical point a view, there is no reason to make a difference between "free to air" and encrypted signals. What is important is to allow both for "free to view" and for "pay to view" content. The protection can be ensured through encryption, if this is the more technically efficient method.

Whereas a single, standardised worldwide technical solution for DRM is probably not advisable from a security point of view, nor credible from a market point of view, a common standardised framework (such as the one being developed in MPEG-21 under the name Intellectual Protection and Management Protection) would facilitate interoperability between terminals, servers and diverse DRM solutions. This diversity of DRM solutions is also necessary to efficiently adapt to the variety of content types, business models and applications: it is quite obvious there cannot be "one size fits all" single DRM solution.

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                                                                    30 September 2003

From a security point of view, the most efficient implementations are probably those that have a strong link to hardware or that are fully hardware implemented (i.e. including the rendering machine).

For objectives of interoperability (the ability for a distributor to use different systems) and interchangeability (the ability for a distributor to change from system to the other) it is also probably necessary to use languages common to all systems, both for the description of rights (and maybe for the description of contents). This works is being done at the moment in different fora and should be encouraged.

Finally, as the implementation of effective DRM solutions relies on both software and hardware, silicon manufacturers should be encourage to incorporate as quickly as possible the necessary elements into their chips (in a standardised way), even before full DRM systems are available or have been agreed upon.

This should be done to avoid the proliferation of a "DRM-incompatible" installed based, even if this means implementing a simpler hardware profile (i.e. not allowing for DRM systems with all the bells and whistles). Of course the relevant DRM software would be downloaded later, but with the possibility to take into account those basic hardware features.

Therefore there is urgency for the industry to agree on this baseline profile, so that silicon vendors can move quickly. This could be done e.g. in a forum like the IPMP group of ISO/IEC JTC1 SC29 (MPEG21).

4.6   DRM Implementations

4.6.1   Colis

COLIS Project - The Collaborative Online Learning and Information Services (COLIS) Project is an international project funded from the Australian Department of Education Science and Training (DEST) and IMS Australia. Amongst its output to date, the COLIS Demonstrator showcases the integration of DRM and Learning Object technologies.

A key principle behind the COLIS Project is the importance placed on the use of real-world test-bed environments and emphasis on practical implementations. The lessons learned provide valuable input into advancing the state-of-the-art for DRM and e-learning technologies.

Phase 1 of the project has shown the interoperability of the Open Digital Rights Language (ODRL), IMS Learning Resource Metadata, and IMS Content Packaging across multiple Learning Object Management Systems (LOMS). The use of ODRL was also critical in determining the access control between LOMS and the single-signon environment. The COLIS project has already produced profiles of the ODRL rights expression language to enable these DRM services.

The COLIS Demonstrator partners include Computer Associates, Fretwell-Downing Informatics, IPR Systems, WebCT, WebMCQ, OCLC, CanCore, EdNA Online, NSW TAFE, CSIRO and Macquarie University.

The COLIS project choose the ODRL rights expression language as the partners had the most experience with this language (over other existing rights language proposals) and its simple yet extensible model was appropriate for learning applications.

4.6.2   DWS

DWS has developed a white-label subscription music service for DRM-protected content called BeFANattic. BeFANattic enables artists to offer exclusive content for downloading with digital rights management (DRM) protected audio and video files. The implementation includes secure streaming (at an higher quality level for broadband users) and unlimited downloading. Secure downloads can be used offline or online, and using the DRM technology, the protected songs can be downloaded as long as the member is an active subscriber. Using the DRM protection, songs forwarded to non-subscribers (called superdistribution) lead to a sign-up page for new members.

Edel Records, a major European music label, is using a fan-focused online subscription service for the music bands Orange Blue and She'loe. The label is creating sections called FanZones on the artists' home pages with protected exclusive content. The content includes news and images, diaries and chats, unpublished recordings and live music videos. The sale of exclusive fan merchandise and tickets is planned after launch.

When purchasing a Maxi-CD, Orange Blue and She'loe fans will receive individual PINs that enable them to enter the respective FanZones and to download exclusive songs, video clips and other content free of charge. Orange Blue's FanZone was launched on August 19 with the release of their latest hit single "Forever". She'loe's FanZone started on August 26, coinciding with the launch of their first single "Head over Heels".

- CD PIN-based - When purchasing a Maxi-CD, Orange Blue and She'loe fans will receive individual PINs that enable them to enter the respective FanZones and to download exclusive songs, video clips and other content free of charge.
- 3-month membership – Fans will be able to purchase a three-month access for 3.99 Euros that provides unlimited streaming and unlimited downloads.
- A similar system is used by Arista act Boyz II Men with an annual subscription price of $24.95 and a half-year subscription of$14.95.
  http://www.orange-blue.net

  http://www.boyziimen.com

  http://www.sheloe.de

Orange Blue is an artist's fan community whose design is based on DWS BeFANattic subscription model. The DWS BeFANattic system has the following features:

a) Token based and paid membership to access the website.
b) Secure music and video downloads and streaming in windows media format.
c) Message boards and chat.
d) Implementation of credit card clearing.
e) Expansion to mobile (SMS, MMS) is envisioned.
f) With BeFANattic, DWS offers artists and labels a new distribution channel. Artists can communicate with their fans on a personal level. These online clubs can get fans involved in the creative process early - for example, by accessing songs and videos before final release, or by determining the title of a song or CD. Most importantly, the offering provides new revenue sources for both the artists and the labels. It also seems a way to make consumers aware of the value of music compared to illegal file sharing networks.
g) Edel and DWS are going a new way of a combined physical and digital offering. The launch of the fan sites are tied to new commercial singles from the acts. Consumers who buy CD-Singles will receive individual PIN numbers that enable entrance to the FanZones. Thereby, the songs can be consumed with today's infrastructure as well. Also, younger music fans don't have to get involved with online payments via credit card etc.
h) Compared to all-you-can-eat subscription services like PressPlay, it seems much easier to collect comprehensive and complete content for one artist, especially when the artist also receives a share or sees their web site as a tool to get closer to their fan community. Nevertheless, it depends to a great extend on the artist interest in providing premium content on a continuing basis.
i) For the price of about one album per year, artist-specific subscriptions have a great potential to generate revenues for artists and labels – and to generate profits even with little subscriber numbers (estimated few thousand paying members to break even when reusing the same infrastructure for multiple artists).

DWS has developed the following service for publishing:

CollegeStoreOnline: Distribution of digital materials to college students at over 300 colleges in the U.S.

- CollegeStoreOnline's outlets include:
- San Jose State University: http://www.collegestore.com/default.asp?store_id=408
- Brigham Young University - Hawaii Campus: http://www.byuh.edu/
- Kansas State University:
- http://www.shopvarneys.com/

- University of California - Berkley, University of California - San Francisco:
  http://www.collegestore.com/default.asp?store_id=5021

4.6.3 EDiMA

EDiMA members employ various forms of digital rights management technologies when delivering digital content. This ranges from distribution of large volumes of digital content to a niche activity focusing on a specific theme. The distributor either distributes content to end-providers (i.e. B-2-B) or delivers to the end consumer (B-2-C). In either case, the content and rights to the content are delivered through a digital rights management system – the DRMs used include those developed by DMD secure, Digital World Services, RealNetworks, Intertrust, OD2, Microsoft to name but a few, and are used to enact the conditions laid down by the right holder in the licence agreed between the distributor and content owner (or a representative) with respect to simulcasting, webcasting, streaming and downloading of content.

Examples of currently live DMDsecure (DMDfusion) platforms:

- T-systems Media Broadcast (Deutsche Telekom)
- Akamai
- Tiscali
- ZX factory

These clients all offer the platform as a service to other B2B or B2C initiatives

Arcor (Vodafone) has used the platform to built a direct B2C Video on Demand application

Examples of commercial deployments of DRM technologies based on Digital World Services' Ado²RA technology are:

BMG Artist subscriptions (http://www.boyziimen.com)

Edel Artist Subscriptions (http://www.orange-blue.net)

Sheloe (http://www.sheloe.de)

Other customers include Orange, Mediamarkt and CollegeStoresOnline.

4.6.4 EICTA

A selection of commercial deployments of DRM technologies include:

Music

> AlbumDirect™ Five major music companies and IBM successfully complete electronic music distribution trial.

> http://www-3.ibm.com/software/data/emms/success/trial.html

Pressplay (Streaming, downloads and CD burns, subscription-based. Content from Universal Music Group, Sony Music Entertainment and EMI Recorded Music as well as independent labels

www.pressplay.com

Musicnet (DRM protected on-demand downloads and streams from among others: BMG, EMI, Warner and Zomba).

www.musicnet.com

E-Music (offering more than 200,000 tracks from 900 labels, subscription-based.)

www.emusic.com

Rhapsody (Unlimited access to a vast library of music on PCs. Content from BMG, EMI, Warner, Sony Music, and Universal Music Group. Building personal collections, burning CDs, Internet radio stations.

www.listen.com

Orange Blue (DRM-protected exclusive content combined with an artist subscription)

http://www.orange-blue.net

BoyzIIMen (DRM-protected exclusive content combined with an artist subscription)

http://www.boyziimen.com

She'loe (DRM-protected exclusive content combined with an artist subscription)

http://www.sheloe.de

Lenny Kravitz (one of the first artists to use DRM for downloads)

http://www.lennykravitz.com/

Liquidaudio – Distribution network for promotions and downloads, e.g. available via

http://www.amazon.com

http://www.bestbuy.com

http://www.cdnow.com

Free protected music downloads via Towerrecords UK

http://uk.towerrecords.com/music.asp

Subscription to 40.000 tracks, 500 streams, 50 downloads or 5 burns for £4.99

http://www.ministryofsound.com/music/downloads/

BigTime with digital media superdistribution from IBM (OASIS promotion CD)

Sony Music Entertainment Japan

http://bit.sonymusic.co.jp

Toshiba-EMI Ltd.

http://www.du-ub.com

Warner Music Japan

http://www.du-ub.com/

Avex

http://atmusic.avexnet.or.jp

Victor Entertainment

http://naah.jvcmusic.co.jp

LabelGate

http://www.labelgate.com/index.html

music.o.co.jp

http://sound.music.co.jp/soundware

music.o.co.jp

http://www.odeondo.co.jp/eshop.html

Pony Canyon

http://www.can-d.com

King Records

http://www.kingrecords.co.jp/kmusic

Tokuma Japan Communications

http://www.tkma.co.jp/tjc/emcolle

SENHA & Company

http://www.beatstereo.com/music

FOR LIFE

http://paradisemusic.co.jp/

The following music labels and artists are providing and selling EMMS-formatted music via music.co.jp.

Music label or artist	Music label or artist
ART UNION	mood
ARCHI	NICHION
Apricot Systematic	kaigan records
3rdeyedisc	MMR
Rebirth	FFA
TWOFIVE RECORDS	Flabel
Yaz Kawasaki	SHIBAURA RECORDS
LITTLE EL NI~no	Japan Central Music
Creative Arts	zetima
HIFUMI Records	ONLY HEARTS
SHINKO MUSIC	Sun Music Publishing
COSMIX RECORDS	JD RECORDS
METROTRON	Web Gendai
BIWA Records	Scarlet
The MUSICCRAFT	Sweet Genome
BARREL HOUSE	STARDUST NET
Tom Musique	AMAX RECORDS
CreMu	METRONOM Records

Horipro	P.S.F.
stardust table	SWIM RECORDS
WATANABE MUSIC PUBLISHING	SHIBURAI

Publishing

College Store Online: Additional materials for print for college students

San Jose State University:

http://www.collegestore.com/default.asp?store_id=408

Brigham Young University - Hawaii Campus:

http://www.byuh.edu/

Kansas State University:

http://www.shopvarneys.com/

University of California - Berkley, University of California - San Francisco:

http://www.collegestore.com/default.asp?store_id=5021

Walters Kluwer: The Kluwer eBook library contains over 400 recently published titles, grouped together by subject area, available individually for download. Adobe Acrobat eBook Reader

http://ebooks.kluweronline.com/Default.asp

Video

CinemaNow (Independent film producer use secure Internet film distribution and sales.)

http://www.cinemanow.com

Intertainer (Movies, TV and music videos to PCs and televisions. More than 70 content providers including Universal Pictures, Warner Bros., DreamWorks SKG, ESPN, PBS, The Discovery Channel, Warner Music Group, EMI Music.

SightSound (SightSound Technologies provides secure video and audio downloading, rental or full purchase).

www.sightsound.com

MeTV (live television broadcasts and pay-per-view movies to consumers on their televisions via broadband)

http://www.metv.com/

Arcor (Video on Demand – viewing rights for 24 hours)

http://www.arcor.de/

Arrownet to offer secure video content to consumers using IBM digital media technology

http://www.arrownet.dk/ (in Danish only)

MOVIELINK

www.movielink.com

Wireless Content Distribution

The following companies are in production with content in EMMS format being delivered via wireless infrastructure.

NTT DoCoMo M-stage music

http://www.nttdocomo.co.jp/p_s/mstage/music/home.html

DDI Pocket Sound Market
http://www.ddipocket.co.jp/sound_market/i_service.html

4.6.5 EVA

Meta-data and identification

EVA members and other collecting societies have created a one-stop-shop for world-wide licenses for works of fine art called OnLineArt (OLA), which will be operational from the end of 2003. " OLA's main field will be the management of metadata. The CISAC's standard for author's name identification, IPI, will be applied which is created for internal use, not for tracking uses on the WWW.

Additionally systems for identification of works are in development within the networks of collecting societies. However, such systems face very serious problems when adapted for the visual field. The reasons are the particularities in creation and distribution of such works.

The exploitation of work categories that are regularly in the centre of the debate on DRMs, such as music and film are based on manuscripts that have been transformed to an exploitable product. Whenever the industries decide to invest in the exploitation, the entire production can be watermarked or encrypted.

Authors of fine art mainly create original works that are sold in the art market. When the artist has become sufficiently popular or even famous to the degree that an interest by industries arises to exploiting his or her works by printing posters, calendars and illustrated books for instance, several decades may have been passed by since the artist first entered the art market. Usually, most works are disseminated and cannot easily or not at all be traced down again. They will be in private households, at anonymous collectors, in museums, galleries and so on.

Also, several artists have developed working methods that make it impossible to build up databases of their entire work. Many artists created works without title. If such works are registered in inventories of galleries who sold the works or of the artists and their estates, such works often have no other mark of further identification as the year of their creation. Even worse: Picasso for instance created in some periods about 20 sketches of "torros" per day. It appears impossible to ensure that each of these sketches receives a different number and that this number could be introduced as the standard registration number in all databanks and archives of museums and universities where a reproduction of the work is registered already.

Tracking

Collecting societies for visual works have made excellent experiences in tracking analogue infringements by visiting year by year the largest event in publishing: the annual Book fair in Frankfurt am Main. Although these societies have on average only a number of staff of about 5 to 15, this regular effort has lead to the surprising effect that no publisher working in the field of fine arts is unaware of the legal situation and the contacts to receive necessary licenses.

In the digital world such efforts obviously have to be less effective. So far, the collecting societies regularly browse through the Internet searching at random by typing in some keywords into search machines and exchanging results between the societies.

The use of the IPI system and work number registration will in future bring some improvement.

4.6.6 FictionWise

FictionWise.com[31], which launched in 1999 with a catalogue of 100 titles, is an independent eBook publisher and distributor. FictionWise, today, provides one of the largest eBook catalogue of fiction and non-fiction titles.

The eBook portal provides a wide range of eBook formats such as Mobipocket, Microsoft Reader, Palm Doc, iSilo, PDF, eBookman, Rocket (RB) and hiebook.

FictionWise's infrastructure allows publishers to sell eBooks with associated DRM in the Mobipocket, Microsoft Reader and Palm Reader formats.

Since a variety of formats are provided on the portal, users of PCs, Macs, Palm OS PDAs, Pocket PC OS PDAs, WinCE PDAs, Symbian PDAs, eBookman Readers and REB100 devices can download eBooks.

Part of FictionWise's infrastrucure was developed by Overdrive.

Users wanting to download eBooks need to open an account and provide their credit card information. Users can also become members of the Buywise Club, which costs $29.95 for one year and offers a 15% discount on eBooks, a free eBook, club specials and quantity discounts.

The system also allows members to rate eBooks. Users can also select their preferred eBook format and download their purchases in a zipped bulk download

4.6.7 GESAC

In general, authors' societies wish to use relevant and appropriate DRMS, which could be, as long as they work efficiently and cost-effectively, a useful tool to assist and enhance the management, administration and enforcement of the rights they are vested in or represent.

In order to address the Information Society challenges and improve each of their operations (documentation, licensing and collecting royalties, gathering reporting information on the use of works, and distribution of royalties to the members), which are very complex with regards to the volume of works and right holders concerns as well as the large variety of users, authors' societies have been for a long time very

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[31] http://www.fictionwise.com

active in developing and implementing DRM components for managing rights : new standards within CISAC (ISO certified: e.g., ISWC, ISAN) and new tools (Nord-Doc, FastTrack, Argos, sDAE, portals etc.).

Illustration of some technical tools developed by authors' societies:

- FastTrack: it is a decentralised network of 8 Authors' societies: BMI (USA), GEMA (Germany), SACEM (Franc), SIAE (Italy), SGAE (Spain), SABAM (Belgium), SUISA (Switzerland) and AKM/Austro-Mechana (Austria). Founded in 2000 and build on CIS standards, the core projects of FastTrack are:

* A global documentation and distribution network (GDDN), the objective of which is to develop an international interconnected network of databases on musical and audiovisual works, rights owners, contracts and data on sound recording, with the aim to support diary operations of the societies involved such as identification of works and distribution of royalties.

* The online works registration, and

* The Licensing Online system, which will enable each of its members to deliver on line licenses via Internet in a secure, efficient and user-friendly way.

- ARGOS: it is an active Internet based reporting of work use directly from the users (Internet content distributors) of the repertoire. It aims at providing a technical infrastructure which can provide the societies with effective monitoring tools and assure their members an adequate remuneration for the on-line use of their works.

- MONITOR: it is an independent passive monitoring system of radio and TV broadcasts by authors' societies, which employs state of the art technology such as pattern recognition (fingerprint technology) and watermarking technology amongst other that might become available in the future.

ARGOS and MONITOR are connected with the Global Documentation and Distribution Network and the on-line registration and licensing applications developed by FastTrack.

Authors' societies are also actively participating in international fora (MI3P, MPEG 21 in the framework of ISO) in order to promote the development of common, interoperable and secure standards able to respond to their needs for managing, administering and enforcing the rights they represent.

4.6.8 IFPI

Online delivery to date has been dominated by services without any DRM implementation, such as KaZaA, Morpheus and Limewire. Such services proved popular but lacked licenses for the content, lacked security and lacked any kind of commerce infrastructure necessary to run a sustainable business. The challenge for DRM and associated eCommerce technologies is to solve some of the technical problems apparent in the development of legitimate online delivery systems. This in turn should provide a viable and sustainable commercial environment online, upon which different and competing market offerings can be presented to the consumer.

The recording industry has taken a highly proactive stance in the development and deployment of online delivery systems and their component parts such as eCommerce and DRM tools. Initiatives have ranged from standards-setting activity such as SDMI and participation in MPEG, through to development – sometimes with technology partners – of specific technologies required.

For the recording industry, the benefits of developing online delivery systems have been:

- New Market Opportunities. Consumers have clearly demonstrated a market potential for online delivery;

- Ability to Deliver a Solution. The existing consumer-base of installed hardware (such as CD players) does not provide for online delivery or DRM. However, by developing computer-based solutions the recording industry has been working to deliver a partial solution, ahead of consumer adoption of new hardware platforms.

There are also limitations on online delivery systems. Clearly, the technology is complex and is still under development. There have been numerous competing and incompatible solutions. Consumer expectations continue to change – the market has so far seen downloads, streaming and subscriptions whilst yet further alternatives are likely to arise. A major challenge remains in bridging the gap between online delivery systems and hardware and software in the field that lacks support for online delivery - in particular hardware and software which do not yet incorporate support for DRM.

Nonetheless, the options for online delivery are becoming more widely available, especially with the increasing availability of tools such as Windows Media and the RealOne player. Windows Media, (which now incorporates Microsoft's DRM) is now available on a growing range of platforms beyond the Windows PC – for example on Macintosh computers and PDAs. The RealOne player now incorporates support for all the major content formats including Real, Windows Media, MPEG and Apple Quicktime.

Regarding the off-line environment, SACD and DVD-A show that it is possible to design disc formats with effective content protection and copy-management. Whilst the market deployment for these formats is at an early stage, it can be anticipated from the success of DVD-Video that it is possible to achieve significant market

success with a disc format that combines consumer benefits with effective content protection

In summary, a number of different DRM technologies, as described below, are starting to be rolled out, both for off-line and on-line use. Some of these technologies are available only in some geographical locations, like the US. One of the reasons for this limited availability is the licence conditions (rights granted only for certain territories by the relevant right holders). Many technologies concern so far only niche markets or situations (only certain content, or formats, or platforms). The market is still at experimental stage, regarding the technical safety, commercial viability, interoperability of content and platforms. Obstacles and difficulties are getting resolved little by little, but a lot remains to be done. IFPI foresees that it will take a few more years before we see a mature environment for DRM.

Some well known systems for online delivery are set out in the following table, together with their main characteristics:

Rhapsody is a music service operated by Listen.com, with 15,000 albums or over 175,000 tracks from five major labels and over 50 independent labels.

Music content is offered under subscription plans called 'catalogs'. Presently there are two main catalogs: 'All Access' and 'Naxos Classical', both available for a flat monthly fee with no limits on listening. Catalogs may permit burning 10 tracks per month to CD-R. Audio is streamed on-demand through a proprietary player application, and an account can be accessed from any internet-connected computer, using a password. Rhapsody also offers an interactive 'internet radio' feature. The service is available in the US but Listen claims it is working to resolve licensing issues for wider availability. Rhapsody currently delivers audio encoded with Windows Media 8. Streams are protected using a proprietary DRM. Playlists can be programmed and shared between different computers and different subscribers. An 'Authorising' process is used to access tracks in catalogs for which the consumer maintains a subscription. A Rhapsody trial was recently announced in conjunction with web-enabled streaming devices manufactured by Philips, Panasonic and Creative.

http://www.listen.com

Pressplay is an online music service company established as a joint venture between Sony and Vivendi-Universal. Pressplay has distribution affiliates MSN music, Roxio, Yahoo!, MP3.com and Sony's musiclub.

Music is offered under three tiered service plans with differing price points and capabilities. All Pressplay service plans now offer unlimited streaming and downloading for a flat fee, and pricing differences primarily relate to 'portable downloads' and the term of the subscription. Portable downloads were recently introduced in response to market demand, and offer burning to CD-R and transfer to a portable player. Portable downloads do not expire if the Pressplay subscription lapses. Pressplay is accessed using a proprietary interface that incorporates a player application, and downloads can also be played through the Windows Media Player or through MusicMatch Jukebox. Pressplay rights-management rules allow content to

be accessed on different computers (e.g. at home and at work), with password access and authentication via an online transaction. Portable downloads can presently be transferred to devices from SonicBlue, Nike, Sanyo, Compaq, Creative and many others that support Windows Media. Content on Pressplay is encoded using Windows Media using the Microsoft DRM.

http://www.pressplay.com

Musicnet operates as a partnership between AOL TimeWarner, BMG, EMI and RealNetworks. Content from over 50 independent record labels is also offered. The service is distributed through RealNetworks' RealOne MusicPass. A subscription to MusicNet through RealNetworks RealOne MusicPass offers access to over 75,000 tracks. The subscription allows 100 streams and 100 downloads per month, but is bundled with 'internet radio' and other services from Real. MusicNet is presently available within the US but RealOne SuperPass has recently been launched in Europe using the technology from which MusicNet is built. MusicNet streaming and downloads are encoded using the RealAudio format with the Real DRM.

http://www.musicnet.com

OD2 is a European music distribution company that aggregates content from artists and label and offers a service through etailers and other outlets, including Tiscali, Fnac.com, Freeserve and HMV. OD2 offers over 100,000 tracks from major labels EMI, BMG, Warner Music and a number of independent labels. OD2 offers downloads and streams through distribution partners. The recently launched Version 2 service offers a monthly subscription for 'credits' which can be used to obtain up to 50 downloads, 500 streams or burning five tracks to CD-R. An example of the service can be seen at the Freeserve music club.OD2 uses a proprietary technology 'WebAudioNet' to deliver the audio which appears to be encoded using the Windows Media format and DRM.

http://www.od2.com

RioPort is a digital music 'application service provider' offering services to etailers and consumer-electronics manufacturers, including the 'PulseOne' media service. RioPort content partners include the five major labels, independent labels and distributors such as 'Vitaminic'

RioPort offers music retail and consumer electronic services, known as 'PulseOne Web Edition' and 'PulseOne CE Edition'. RioPort also has content partners and runs a promotional download service. Supported formats include Windows Media and Real formats. RioPort has partnerships with BlueMatter, Verance, Intertrust, Macrovision and Microsoft. In addition to the PulseOne media service, RioPort offers security and delivery technologies to device manufacturers. RioPort 'd2d' (direct to device) technology allows devices to download and play secure content, and the technology has been adopted in devices from Nike, Sanyo and SonicBlue.

http://www.rioport.com

Overall, the services are growing in both availability and capability, although adoption within the market is still at a very early stage: in particular the systems described above have a very small market penetration in comparison with regular CD players which do not support secure delivery of content, nor online distribution. Another limitation is that while software for secure distribution can be downloaded by a consumer onto a computer, this does not in any way hinder unauthorised copying, downloading, burning etc on that same computer. In spite of this, it can be anticipated that, at some point in future, authorised and secure online distribution may gain increasing market penetration and provide new market opportunities and consumer benefits.

4.6.9 MovieLink

Previously known as MovieFly, MovieLink[32] is a joint venture between MGM Studios, Paramount Pictures, Sony Pictures Entertainment, Universal Studios and Warner Bros. Studios. The service is currently available to US residents only.

The service launched as a pilot project in November 2002. It provides a collection of 200 movies from the major movie studios.

The system allows users to pay for content with their credit card and download movies on their hard disks. The files are embedded with DRM technology. Once downloaded, the movie file will reside on the user's hard disk for thirty days. If the file has not been played during this period, it will expire. Also, once the file has been played, an automatic countdown of 24 hours is activated. After the 24 hours period, the file will become unusable.

MovieLink has reached agreements with Microsoft and RealNetworks. Under the agreements, both companies DRM technology and players are available to users, thus providing them with a choice.

Recently, Movielink has reached an agreement with telecoms and technology company, Cable and Wireless (C&W). MovieLink will use C&Ws content delivery and storage infrastructure at multiple locations for its online movie service in the US.

4.6.10 Popfile.de

Popfile.de[33] is an online music portal, which was launched by Universal Music in Germany in partnership with T-Online, which provides the infrastructure, in August 2002.

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[32] http://www.movielink.com

[33] http://www.popfile.de/index.jsp

At its launch, the system provided a collection of 5,000 tracks, which will be expanded further. Each track costs 0.99€ and allows users to burn them on CDs.

The music content is streamed from a server to the consumer, using the L3P format, which is the streaming version of MP3. Users wishing to save content to burn CDs or transfer it to portable music devices have the possibility to convert streaming content into Windows Media files.

As a result of the partnership with T-Online, which is the online division of Deutsche Telekom, users can pay for content over their mobile phones and landline phones or have the option to pay for their downloads via their phone bill.

Payment via phone is done using a "Premium Rate Service" to get a one-time ID tag. This is also paid via phone bill of the fixed line or mobile. Only if the mobile phone is using a prepaid card or the caller is using a public phone, the payment is done without a phone bill. The direct payment via phone bill (the third choice) requires prior user registration to get a PIN to access the popfile.de system. In this case the monthly transactions are recorded and added to the phone bill

5 DRM Uptake – Specific Questions

This section contains the answers to a range of specimen questions posed in the original outline.

The Group requested contributions from participants, and suggested these might address the following questions, which are listed in no particular order of priority. The questions posed were non-exclusive and are intended for exemplary purposes only. Contributors were not obliged to restrict their responses to the list provided.

5.1 Standards

Do standards have a role to play in the development of DRM? If so, should such standards be: Global/regional/mandated by government/the product of voluntary, industry led initiatives (either formal ISO or consortial)?

5.1.1 ContentGuard

The development of standards in a number of technologies will lead to more rapid development and deployment of DRM. In addition to the development of a standard rights language, which ContentGuard has discussed throughout this submission, work on identifiers such as the DOI, metadata schemes (numerous), rights data dictionary such as the MPEG 21 RDD, and web services security standards will all facilitate the development of DRM. Standards of this sort should always be voluntary, industry led initiatives. The participants of each industry know best what is needed to meet their particular requirements. While government has a role to play in promoting the development of standards, government should not be mandating the implementation of particular standards.

5.1.2 DWS

Each market should be able to choose the best DRM technologies available. Different market verticals (like music, film and publishing) have different requirements for DRM. For example, the security requirements for medical records are different from pop music. In those verticals relevant to DRM, standards organizations have started to get all relevant parties involved in defining frameworks. Most market participants would prefer open standards to de facto standards. If one company would gain the advantage of a de facto standard in DRM, it would mean higher fees and less evolution in an emerging market. Therefore competition in a fast developing area like DRM will lead to more secure and easier-to-use solutions.

From the government, there should be support for competition and variety within the same framework than the creation of monopolies. At the same time, it would be recommended to support technologies and frameworks that enable interoperability between DRM technologies.

5.1.3   European Blind Union

It would seem to us that widely-accepted standards would ease the task of ensuring accessibility for people with a reading-related disability – if the standards were themselves appropriate.   Since digital technology does not recognise international borders, international standards would seem preferable to standards limited to one region or one country.

5.1.4   EDiMA

Earlier attempts to simplify technology through legislative standardisation fell short of meeting objectives set, primarily because of the ever-evolving nature of technology available in this sector. Developing technologies and strategies to ensure security for on-line distribution is ongoing and shows no signs of being conclusive. Indeed right holders themselves warn against making rash decisions in a fast developing arena. As technology for digital media develops (related to security, ease of use etc.), so too do ways of circumventing it. However, technology to ensure security is consistently developed to combat circumvention. And it is generally the <u>market</u> that will show us where those technologies are required.

Given the speed at which new technologies need to be developed, what can legislative standardisation and/or regulation achieve that technology won't?   The market shows us time and time again that rapid reaction is needed to ensure content security – not a feature of legislative developments or indeed standards agreements. There is always the danger that standards will be set for technology long overtaken by newer forms of technology or indeed circumvention.

While EDiMA clearly understands that outstanding questions arise from copyright law such as the definition of effective technological measures, efforts to prescribe anything more than a methodology to determine effectiveness will most likely be met with stiff resistance.

Policymakers and regulators should submit to market-led engineering of technology and recognise that market forces will take some decisions out of their hands. This is of greater benefit to industry actors and consumers alike than regulation of some or all or the sector. One should bear in mind however, that unless effective legislation is enforced, hackers might get the technological edge. One should also bear in mind that consumer concern will probably dictate some legislation that, unless anticipated by the market, may prove harmful to development, or technologically difficult to deal with, especially in the areas of privacy and fair use.

Competitors pack this fledgling industry with actors weakened by the slightest predatory activity. With a rapidly changing landscape in the industry, it is sometimes difficult to delineate where competition is doing more harm than good (e.g. when a monopoly arises, or a large player is not 'playing fair') and where regulation and/or standards are needed to ensure a level playing field.   While competition is certainly healthy for the development of a wide range of technologies, there is a risk that a few dominant technologies will surface, making a de facto decision for the market as to which technologies will be used in the digital media arena. This would prevent better technologies thriving through new players.

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Whichever of the two of the above scenarios (or indeed a third) come to pass, it will once again be the market that leads the way. However, it is extremely important that technologies be given at least enough room to develop and the market enough time to decide. In other words, anti-competitive measures where decisions as to what technology to use are taken out of actors' hands lead to an imbalance in the sector and reduced choice. Although this same situation should theoretically lead to a greater chance of interoperability among technologies (because there are fewer of them) and ultimately a clearer, more technologically streamlined sector, this could result in a handful of competitors trying to prevent interoperability to enhance their own market share. This is the very scenario in which some form of standard may be useful, if it conforms with consumer needs and requests.

In the context of market forces and consumer demand, while there must be vigilant scrutiny of proprietary standards where they lead to anti-competitive measures, picking or indeed enabling "winners" is not beneficial to the market. If standards are deemed to be required with respect to technology, then that standard must only go as far as to deliver a level playing field and should not, in any way, discourage market entrants from finding their feet in this new sector.

Technological choices made too early in the development of a market could lead to a gap between what is being requested by the end-user and what is being provided by the industry actors. Not only that, but also competitors must come to terms with the fact that anti-competitive behaviour in terms of not allowing interoperability will damage the industry beyond repair. There are undoubtedly some standardisation efforts being done at the very basic building block end of technology (languages, connectivity, etc). The key is not to proceed further down the path where competitive products and services interact. To do so would pre-empt new technology innovation.

5.1.5   EICTA

As virtually all forms of information, across a range of industries, are now digital the need to protect and administrate the distribution of content is becoming a high growth sector. Different markets are evolving at different rates and have particular requirements with respect to Rights Management. For example the requirements for the industrial, defence and medical sectors are different from that of the more consumer orientated music and publishing businesses. This situation results in a range of industry led initiatives to address the specific needs and concerns of individual market segments. It is unrealistic to expect that a single DRM standard could exist to cope with the competitive diversity and virility of the evolving digital ecosystems. Interoperability in this new ecosystem can be achieved in part by a standard rights expression language and syntax complemented by a standard manner to identify the encryption mechanism. An example of this is XrML which was chosen by MPEG-21 and OASIS.

There is a need to ensure that, where practical and achievable, DRM solutions are not tied together with the underlying platform, allowing as much use of available delivery mechanisms as possible.

There is a need to ensure that DRM solutions are flexible enough to be used by a number of media formats, i.e.; a DRM solution should be interoperable with different codecs and with different operating systems.

Different market verticals (e.g. music, film and publishing) have different requirements for DRM For example, the security requirements for medical records are different than for pop music. Therefore each market should be able to choose the best DRM technologies available. In these verticals, standard organizations have started to get all relevant parties involved in defining frameworks.

Most market participants would prefer "open standards" to de facto standards. If one company would gain the advantage of a de facto standard in DRM, might mean higher fees and less evolution in an early market. By "open standards", EICTA does not mean "one and only one acceptable and endorsed standard technology" (e.g., one 1394 protocol, one encryption algorithm, or any other advantage for "one technology").

The concept refers to technologies that are available in the marketplace for adoption by any company desiring to deploy them. Most market participants recognize the evolving need for technologies and systems to interoperate. They also recognize that in this fast evolving industry, new technologies and methodologies are being created continually. No one technology can satisfy the fast moving digital ecosystem.

Thus the focus is on fostering and promoting technologies which promote interoperability. EICTA refers as example to technologies that are available in the marketplace for adoption by any company desiring to deploy them, such HDCP, DTCP, CPPM, CPRM, and other technologies which promote interoperability and function either as an end to end solution, together in a link fashion, or combinations (e.g., an end to end DRM that has "enhanced" functionality because it permits, e.g., handoff to DTCP).

Competition in a fast developing area like DRM will lead to more secure and easier-to-use solutions. Competition will also lead to interoperability as the technologies accepted by the market seek to expand their reach and appeal by expanding their capabilities.

There should be support for competition and variety within the same framework rather than the creation of monopolies. At the same time, it would be recommended to support frameworks and common descriptors that enable interoperability between DRM technologies.

Non-regulated development ensures healthy competition between different bodies/companies to develop DRM technologies with varied functionalities. Interoperability must also be guaranteed but market forces should resolve this issue at a later point via global, open, voluntary technologies.

As an example, there are currently a large number of DRM technologies that deliver content in a "conditional access" format, e.g., through encryption or otherwise. Although it is not possible to "standardize" the authentication keys (if they were standardized, the system would not be secure), it is possible to standardize

"encryption profile", rights language and descriptors so that rights information is accurately passed from one DRM to the other after authentication has taken place.

5.1.6 ENPA

The role of standards in the development of DRM is not certain and could lead to the paralysis of the market if they do not take account of the needs of the different sectors involved.

Consortial standards could also lead to monopolistic practices, always to the disadvantage of the other parties.

If work on standards is necessary, they should not be mandated by government. They should be industry led initiatives, voluntary, approved and recognised by newspaper publishers and adapted to their needs.

5.1.7 European Broadcasting Union

Copy protection and rights management solutions must be defined as open standards. Standards issued from specification bodies like DVB or TV-Anytime are based on consensus between key industry players. This is key to the successful voluntary implementation of these standards.

Standards are known to at least partly remedying to market fragmentation, allowing the deployment of interoperable products at reasonable costs (economy of scale).

Shall these standards apply nationally, regionally or globally depends on the business and associated threat models. For instance, it seems that solutions preventing Internet re-distribution shall be global.

The implementation of these standards shall remain voluntary and take into account migration from legacy.

5.1.8 FEP

Standards must be market-driven and voluntary. Government should never mandate them. FEP understands that indeed standards will have a crucial role in the development of DRM as they will increase interoperability, their cross-platform and cross-media usage which are key for the uptake of DRM. Publishers are supporting industry-led initiatives such as DOI, ONIX, InterParty and MPEG-21. Publishers are also directly involved in such initiatives in the case of the EDRA project, an initiative co-funded by the e-content programme of the EC to establish a multilingual DOI registration agency.

5.1.9 GESAC

DRMs will enable efficient management of rights and successful new business models to emerge if they are well defined, standardised and implemented in a way that ensures that the benefits accrue to all stakeholders. They must in particular be

effective, secured and robust, open, applicable to a wide range of content and business models, world-wide compatible, interoperable, renewable and cost efficient.

On that basis, DRM must be designed on a broad consensus and adopted voluntary. Industry-led and/or Government-facilitated standardisation processes on an open, fair and voluntary basis, must be encouraged. National Governments and EU may have a role to play to promote and encourage voluntary international standards such as MPEG.

At this stage, it may be too early to envisage other forms of public authorities' intervention than the simple facilitation or encouragement of the standardisation process. Nevertheless, GESAC reserves its position regarding a possible legislative intervention would it be necessary to generalise technical devices for identifying works and monitoring their exploitation.

5.1.10 IFPI

Informal or formal standards have a strong role to play in any system that is widely used, and for DRM this is especially true since DRM technologies are complex and involve parties across different industry sectors. DRMs involve IT, hardware and information-security technologies. Experience in these areas shows that many standards arise with governance mechanisms for different aspects of systems. The development and adoption of standards are two different issues. Such standards can be developed as open standards, formal standards or proprietary standards. The recording industry has been actively working on open standards as a priority within the framework of MPEG. The recording industry supports Governments facilitating, in a reasonably expeditious manner, the development of open and globally harmonised technological protection standards. The adoption of standards within any system is for the system implementer to decide, depending on the design goals for the system. In many cases several standards are simultaneously used within the same system to achieve broad compatibility and functionality.

It seems unlikely that standards with only national or regional scope or reach will play a significant role in the distribution of content of global appeal.

5.1.11 MPA

Industry-led standards are necessary in order to build interoperable media players and DRM systems. However, where agreement on such standards proves impossible or where there is need to enforce such standards (in order to ensure that implementers are not undermined by others that do not manufacture to spec and to maintain the integrity of the system), a governmental role may be required. Global standards are preferable, but regional standards may also prove workable as a starting point.

5.1.12 IPR Systems

Standards play a significant role for any new industry (like DRM) and set the framework for acceptable interoperability. DRM standards need to be globally relevant. They should not be specific to any region nor express laws of any jurisdiction.

5.2 Business Models

Can DRM support existing and new business models?

5.2.1 ContentGuard

Not only can it, but it must. Only through the implementation of new business models (and expanded geographic coverage) can the promise of the Internet (and broadband) as a source of new business opportunity be realized. DRM is the key technology enabler for these efforts to be profitable and only if it is profitable will it be sustained. The core benefit of standardizing on rights language technology is that it will provide the grammar for expressing business models. As long as the rights language standard provides the expressiveness and extensibility to build new expressions it will support any business models. The challenge at that point is for the DRM systems to interpret and enforce the terms and conditions expressed in these new business models.

5.2.2 DWS

DRM technologies are able – and necessary - to support all existing and new business models of the participants in the content value chain. Examples for supported existing business models with DWS' ADo²RA system are promotion, purchase, subscription, renting and lending. In more detail:

- Time-Limited: Offer content for a limited time period, e.g. access for 24 hours.

- Usage-Limited: Offer content for a limited number of viewings.

- Pay-per-View: Similar to Usage Limited, with a limit of one viewing.

- Free Trial: Offer content for free on a trial basis, with a purchase required when the trial conditions expire

DWS recommended content owners to take the possibility to experiment with new business models. Examples for those supported new business models are rent-to-own, bundled physical and digital offerings, the separate delivery of rights and content and finally superdistribution. In addition, DRM allows even greater flexibility in business models by providing control over not just when content is used, but how it is used. For example, one may choose to specify that certain DRM-protected content can be read by the purchaser, but not printed. As another example, one may specify that the purchaser may not excerpt text from the protected content by using cut-and-paste.

DRM can also support non-entertainment related business models, e.g. along the traditional value chain of content creation, or document distribution. Especially here, DWS recommend to governments to make use of DRM technologies for eGovernment, eLearning and eLibrary-projects.

5.2.3 EDiMA

DRM is already widely used in certain sectors, particularly the audio and audio-visual distribution sector as well as the e-books sector and thereby supports existing business models. As the technology in DRMs is constantly changing to suit the needs of each player using DRMs, there is no reason to believe that it will not continue to change in order to adapt to new business models, as long as the needs of business models are consistent with realistic and viable objectives.

5.2.4 EICTA

As has been demonstrated in previous sections DRM systems are in use today supporting a variety of business models and systems. Evolving the DRM schemas to support new business models is a key competitive differentiator between different DRM suppliers. As the Digital Ecosystem evolves new systems, products and service requirements from the industry and consumers will drive the DRM suppliers to develop new feature rich competitive systems.

So far there is no business model that DRM cannot support. Examples for supported existing business models are:

- Promotion

- Purchase

- Renting and lending

- Subscription

Projects over the last years have shown that DRM offers content owners the possibility to experiment with new business models – even though content owners have been rather conservative in their approach and willingness to experiment. Examples for supported new business models are:

- Rent-to-own

- Bundled physical and digital offerings

- Separate delivery of rights and content

- Superdistribution

5.2.5 ENPA

The ability of DRM systems to comply with any existing and future business models of the right holder is one of the objectives of DRM. If a DRM cannot achieve this, publishers will not be interested.

5.2.6 European Broadcasting Union

Copy protection and DRM solutions shall be developed to sustain market growth through the protection of the existing business models and facilitate their evolution.

Legacy must be duly taken into account in order not to destabilise existing businesses before a migration pass has been defined to allow their continuation in the new paradigm.

5.2.7 FEP

DRM must support existing business models as well as enabling new and creative models, otherwise publishers will not use them. It is because publishers (and other rights owners) will develop attractive business models which will fit the readers' requests that we need DRM to enforce the terms of contracts. The example of a book which can be read during a week for 1 € while it can be fully acquired for 10 €, makes it clear that when a reader will choose the 1€ book, he/she will not be able to make a private copy otherwise there would be no incentive to offer different business models. Another example could be a university, which invites academics for short periods and wants them to have access to academic journals. This university does not usually acquire licences. It could get a limited 6 months licence at a low price but with no possibility to make copies!

5.2.8 IFPI

As far as content is concerned, DRM can allow more flexible and differentiated product offerings: not just 'buy a CD to keep' but downloads, time-limited 'rentals' and flexible usage like 'burn a copy to CD-R'. This flexibility goes way beyond the current uses of CDs. DRMs are essential to help building a *healthy* market in a safe environment that isn't undermined by piracy. As far as IT and hardware suppliers are concerned, DRMS offer important new business opportunities, not only to develop and sell DRM technologies, but to benefit from the new content offerings these technologies create. DRMs can succeed in building a better market – just look at DVD-Video. DVD-Video incorporates basic DRM functions and has become the most successful consumer-electronic product, ever.

5.2.9 MPA

DRM can support both existing and new business models. In economic terms it allows for substantial products and services diversification and greater consumer choice while ensuring the protection of intellectual property.

5.2.10 Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law

The Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law finds few indications to support the contention DRM systems can support "any business model." In particular, it appears that DRM systems are incapable, as a practical matter, of supporting many business models based upon the post-first sale of a work. Many proposed DRM systems either prevent purchasers from re-selling the work, or they require the maintenance of data about the history of possession of the copy. While some current DRM measures might not collect such data, the momentum in DRM development is clearly directed in the opposite direction: rights holders will have means available to them to exert control over commercial and non-commercial transactions involving copies of digital works, even when copyright law would dictate otherwise. Viewed in light of this ongoing constraint, the apparent flexibility of business models under emerging DRM systems is illusory. The flexibility lies largely in pricing models that are compatible with ongoing copyright holder control over the disposition of copies.

5.3 Interoperability and Compatibility

To what extent does a lack of interoperability and compatibility impede the uptake of DRM?

5.3.1 ContentGuard

The lack of interoperability has impeded the uptake of DRM by making it more expensive for the content owners to implement systems and more confusing/complex for the consumer. From the content owners' perspective the choice up to now has been between one end-to-end point solution system and another. Interoperability will bring choice of components and applications that can be integrated with each other. There will be greater competition both in terms of functionality and in terms of price.

Additionally, interoperability facilitated by common standards will allow applications to "embed" DRM capability into any application or service, rather than to for the integration of a separate DRM solution. See recently announce examples from DMDSecure (www.dmdsecure.com) and Integrated Management Concepts (www.intgconcepts.com), both of which integrate XrML to enable interoperability and finer grained control of digital objects.

Interoperability will bring a consistent user experience to the content consumer. Anything that can make more predictable for consumer will decrease the uncertainty that is common in the marketplace today. Uniform interpretation and enforcement of the rights/permissions by DRM systems will increase the likelihood that consumers will purchase digital content.

5.3.2 DWS

Consumers should not be affected by technology choices from content owners. It should be possible to use the same software or hardware for music from all content owners. Also, consumers should have the ability to use their content across devices. For example if consumers purchase songs via their cell phone, they should be able to use this song at their PCs, their car stereo etc. with the same right they just bought. In other words, rights should not be tied to just one device but instead to the consumer.

DWS sees different ways in achieving interoperability:

- By using a central Rightslocker for each consumer to store their rights abstracted from the DRM technology. This Rightslocker would be accessible from all connected devices that belong to the same consumer. Rights to content could then be shared among these devices. DWS has pioneered such a RightsLocker.

- A middleware that creates a "translation of rights" between different DRM technologies - such as the Ado²RA system from DWS

A rights expression language like ODRL that at least creates a common language between platforms.

5.3.3   EDiMA

In light of the technological splintering of the market, there is a need for interoperability among systems. This is extremely important in terms of developing an industry which can answer the needs of its consumers and thus satisfy the bottom-line of all players in the sector, not least the content creators. If the consumer cannot access / use / shift the content they have bought, then they will prefer to buy it through other distribution channels in other more traditional forms. The future of the industry lies with its ability to reach its consumers – this will not be achieved if the consumer has to deal with different interfaces from different supply chains in the same sector.

This need to achieve interoperability can be done at the basic minimalist position, for instance a common language between platforms. However, once again, the priority is caution and awareness of the difference between identifying these types of interoperability opportunities and pushing for more pro-active methods of interoperability. This brings us back to the need to listen to what the consumer is saying and how the market is reacting to what it is being told. It is important to note that interoperability is reached based on market mechanisms and company accords, rather than through coercive or forced standardisation.

5.3.4   EICTA

There is a need to ensure that the DRM solutions are not tied together with the underlying platform or media formats, i.e.; a DRM solution should be interoperable with different codecs and different operating systems and bundling of these should not be allowed.

At present it is not the primary barrier to the uptake of DRM. The development and proving of different business models is more of an issue. Business models and their resultant technical solutions are being developed which guarantee interoperability and compatibility across different domains. What is meant by this is a domain might be a device, household, network, work group, business up to a geographic domain. For example the DVB/EBU are exploring the concept of a personal domain that could for example include the use of material in the house, car, vacation home etc. Ultimately the technology is only there to provide a framework into which different business models can be developed.

The portability decisions rest with the content provider who should have the right to determine the range of devices and domains on which the content can be accessed. As the content provider makes choices in terms of his licensing models then the marketplace (through the consumer) will reward or penalise accordingly. With a common Rights Expression Language content providers can express their intentions regardless of the type of content or its format. Content providers need do this only once, for all DRM systems which support the REL, rather than doing so for each

DRM, thus reducing costs and increasing interoperability, and helping to increase DRM uptake.

Consumers should have the ability to use their content across devices. For example if consumers purchase songs via their cell phone, they should be able to use this song at their PC, their car stereo etc. with the same right they just bought. In other words, rights should not be tied to just one device but instead to the consumer.

Consumers should not be affected by technology choices from content owners in the same vertical, e.g. music. It should be possible to use the same player software or hardware for music from all labels.

There are different ways in achieving interoperability:

- A central repository of rights for the consumer that stores their rights abstracted from the DRM technology. This central rights storage system would be accessible from all connected devices. Rights to content could then be shared among these devices.

- A middleware that creates a "translation of rights" between different DRM systems

- A rights expression language like REL that creates a common language between platforms.

The best way to achieve interoperability is by developing and using a common rights expression language (REL). Individual technology providers should be allowed to otherwise pursue interoperability on a voluntary basis. If the market is allowed to function normally, technology providers will seek to expand the reach of their technologies by enabling interoperability with other technologies. Standardizing a particular DRM technology, such that there is "one sanctioned technology" is not practical, possible or desirable.

DRM technologies are generally encryption based, with the security of the system dependent on the secrecy of encryption keys. Those keys simply cannot be "standardized". A world with a single "standard" would require one central "key" provider. Those keys would be the subject of repeated attack and compromise. The market would not be able respond, and providers would not be able to upgrade or adapt, on an evolutionary or innovative basis because the central clearing house, and the entire world of devices, would have to change collectively. This lack of flexibility would seriously undermine security as well as design freedom and technological innovation.

As RELs are developed, agreed upon and adopted, the Digital Content Industry will move towards a situation where a range of appropriately delivered, truly interoperable platforms are available. In the interim period, individual DRM offerings will continue to provide effective content hosting, delivery and consumption mechanisms, but this can be enhanced by the development of mediation technologies which allow different existing DRM solutions to work together, as if they were truly based upon common

standards. Such pseudo or simulated interoperability will provide a welcome boost to Digital Content delivery, in advance of full adoption of common RELs.

There are technologies that provide interoperability. The current Open Mobile Alliance (OMA) standard for digital rights management and download specifies the use of a rights expression language called Open Digital Rights Language (ODRL). A common specification for the semantics and syntax of consumption rights ensures that all devices and systems have a common language. In this way, protected content may be delivered to any OMA-compliant terminal with the permission to be played – for example – only one time. Every OMA-compliant terminal would understand this permission and act accordingly.

5.3.5 ENPA

As ENPA mentioned in section 3.2, the lack of interoperability between DRM systems could block the market as they could limit the possibility of choice of publishers among the different DRM systems and could also be an obstacle for the user.

5.3.6 European Blind Union

Lack of interoperability will increase the cost and the complexity of access to the user, since it will mean that s/he has to deploy a range of devices or software solutions to access material.

A further issue is that access can be linked to a processor rather than to a person. This prohibits, for example, a visually impaired person from transferring an item from a table PC to a portable device such as a Braille note taker.

5.3.7 European Broadcasting Union

Solutions based on standards rely on interoperability to remedy market fragmentation that commonly results from deployment of competing non-interoperable proprietary solutions. Any lack of interoperability across implementations or across services will hinder broad acceptance of these solutions and induce market fragmentation.

Existing proprietary solutions have failed providing the necessary compatibility and interoperability for e.g. on-line distribution.

5.3.8 FEP

If DRM can only work on one specific device and block access to the work on other devices, customers are likely to resist DRMs. Therefore we need to develop DRM aiming at delivering high quality content to the right person at the right time.

Also, publishers and other content providers simply cannot afford the overhead of supplying content and metadata in different formats to the various DRM solutions suppliers.

5.3.9 IFPI

In order to have broad appeal and achieve widespread market acceptance, any product offering must provide a high standard of flexibility and functionality. Interoperability and compatibility are essential to deliver that. Whilst standards are a key facilitator, appropriate standards must first gain widespread acceptance and be widely implemented before an actual gain in interoperability or compatibility is delivered to the consumer. In an emerging market, it takes time for the parties to develop and adopt the appropriate standards – these are often shaped by the market itself. Adopting a specific solution a priori and forcing that on the market in advance of market demand is not typically a workable approach; rather it is usual for different product offerings to be developed and the market then to choose and shape these offerings.

5.3.10 MPA

Lack of adequate security on the PC platform impedes the uptake of DRM for the content provider, and lack of convenience potentially impedes uptake from the consumer.

For some industries, interoperability might be essential for the customer experience, since they want interoperability between portable devices. Other industries probably do not have such strict needs for interoperability of the DRM system so long as the back-end systems can be integrated and the content data formats are compatible.

A certain level of interoperability is an important part of ensuring a satisfying consumer experience and to preventing the establishment of new gatekeepers for content delivery. Efforts to ensure effective implementation of DRM should include a focus on interoperability.

As illustrated above, there is a distinction between compatibility and interoperability.

5.3.11 IPR Systems

This is a serious point. The lack of standardization of DRM technologies over the past 3 years (for example) has lead to minimal uptake and development of solutions.

5.3.12 Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law

The importance of ensuring that different DRM systems can interoperate extends beyond the promotion of competition in the market for DRM technology. The permissions that users must purchase in order to use DRM-protected works must also be portable from one system to another. "Vertical" DRM systems that tie a user to a specific platform or device will greatly diminish the quality of users' experiences with copyrighted works.

5.4 DRM Costs

To what extent is the cost of technology licensing and services a consideration in the adoption of DRM?

5.4.1 ContentGuard

As with any technology, there is a factor cost associated with incorporating it into products and solutions. The existence of technology licensing models, particularly around the practise of standards, has often enabled thriving businesses because manufacturers and service providers can invest with confidence knowing that a market will develop with more technological certainty. Examples include: MPEG-2, IEEE 1394, SPDIF (for CDs), DVD, GSM and CDMA (wireless).

5.4.2 DWS

With any IT related expense, cost is a factor to consider. A DRM implementation may involve hardware expense, software expense for a DRM technology platform, software expense for a DRM management platform, integration expense, and training expense.

Each of these expenses can be minimized by careful selection of vendors and platforms. E.g. the DWS ADo²RA platform can be licensed with only those features required, and due to its modular nature additional features can be added as required.

DRM technology can be highly automated – the operating costs therefore are not expected to be high at all. Per transaction costs can be expected to be in the range of financial clearing. Also, there are different ways to license and operate DRM technologies. Platform providers such as DWS have divided their offering into two categories – plus mixed offerings:

With little upfront investments, Application Services Providers (ASP) are "renting" their DRM infrastructure to content owners. With multiple content owners using the same system, economies of scale lead to relatively little costs per transactions. This is especially recommended for smaller entities.

Larger companies can purchase licenses to entire DRM platforms and operate the system themselves (including investments in additional hardware and software). DWS has licensed its technologies for example in the telecommunications environment.

5.4.3 EDiMA

This should be resolved by migration within DRM systems in a competitive consumer offering. However, where the consumer is captive i.e. having bought coded content where only certain DRMs work, then transparency must be the norm so consumers are aware of the trade-offs in purchase and use.

5.4.4 EICTA

There are different ways to license and operate DRM technologies. With little upfront investments, DRM application service providers are "renting" the DRM infrastructure to content owners. As they have multiple content owners using the same system, economies of scale lead to relatively little costs per transactions. This is especially recommended for smaller companies. Larger companies can purchase DRM licenses and operate the system themselves

DRM transaction reporting is highly automated – the operating costs therefore are not expected to be high at all. Per transaction costs can be expected to be in the range of financial clearing.

There are also many other forces that keep prices for DRM technologies down. E.g. there are many companies that currently offer on extremely reasonable and non-discriminatory terms, protection technologies that promote interoperability. Examples include DTCP, HDCP, CPRM, etc., and many others.   Many technology providers have long recognized that the value proposition is not directly through technology licensing, but through enabling and growing markets for new products and services that rely on the flow of content. For example, the value of the CSS protection for DVDs is not in licensing the technology, but in selling the devices that consumers use to enjoy DVDs. In addition, a competitive market for DRM and other conditional access technologies (as opposed to a single "winner" that a standard would create) will ensure that prices remain reasonable as many providers both compete for the DRM business, and many look primarily to the value added to their own goods and services by enabling a protected environment.

Implementing DRM can be complex and costly and if the patent cost is unreasonable, the price of the technology may slow down or decrease the end-user adoption.

This is a competitive area between different DRM providers. Some companies chose to operate an end-to-end DRM system themselves. Others will take advantage of existing DRM infrastructures and lease usage of the infrastructure. One of the features of a DRM network is the granularity of transactions that can be supported. This pressure to support very low value transactions drives infrastructure efficiency with the resultant lowering of costs. On the other hand consumer facing DRM systems may have additional cost issues such as system-integration support and indemnification against piracy to take care of.

5.4.5 ENPA

For ENPA, the cost of DRM systems is an issue. The high cost of DRM is a source of hesitation for newspaper publishers. It can also hold back consumers.

5.4.6 European Broadcasting Union

Technology must be accessible on fair, reasonable and non-discriminatory licensing terms. Access to the technology must be guaranteed through open specifications. Not respecting these rules would significantly reduce market acceptance if not

completely impeding the market introduction of the corresponding technological measures.

The implementation and operational costs to be supported by the service providers should be low to allow developing affordable services.

5.4.7 FEP

DRM has to be an economically viable solution to rights holders if they are to disseminate their works widely through the networks. To come back to the example of the 1€ book, the cost of DRM has to remain acceptable. The high cost of DRM would be a definite obstacle for their uptake in the publishing sector.

5.4.8 IFPI

The question is not so much one of cost, but of the business opportunities that DRM represents. Numerous technology companies have developed DRM components, technologies and implementations. Business opportunities arise not only from selling these technologies to content providers, but also in selling devices that benefit from the technologies to take advantage of valuable content that is protected. DRM represents a business opportunity for many parties. The market as a whole will benefit, since a healthy market – free of piracy – will allow more investment in more content and improved devices.

5.4.9 MPA

The MPA acknowledges that cost is a very important factor in the implementation of DRM (for example as regards CE equipment). A secure environment for content distribution, which meets consumer expectations, is the major consideration with respect to the adoption of DRM. In many fora, we have recognised that cost has to be proportionate to achieving the aims of all stakeholders.

5.4.10 IPR Systems

For standards to be effective, widely deployed, and non-discriminating, there MUST be no licensing requirements at all. That is, all standards MUST be Royalty-Free. If not, then, they will not be accepted by the majority of sectors and fail.

The W3C has recently made a clear stand that all web standards be Royalty-Free. This is clearly a signal that the benefit must be to ALL Web users and not to large patent-holding companies only. Companies with DRM related patents are free to license this IP, but should not expect that this IP be mandated in any globally accepted open standard.

5.5 Complexity of DRM

If the consumer perceives DRM processes as too complex, how can they be made simpler?

5.5.1 DWS

There is some concern that a DRM implementation will put an undue burden on the end user in the form of additional required downloads, complexity of usage, or platform limitations.

DWS finds this to be a valid concern, as some DRM systems have in fact added complexity to what had previously been a familiar and simple process. This is not a reason to discount DRM however, rather a reason to choose platforms carefully based on specific requirements. Well implemented, DRM is not visible to the consumer unless he/she violates the acquired rights to use the content (which is the core function of DRM).

Most DRM technologies do involve a one-time download of software, though this download varies from substantially less than one MB to several MB in size, depending on the platform. Microsoft's DRM software, for example, may not require a download as it is built into recent versions of the Microsoft Media Player, which is shipped with all new versions of Windows. Adobe's eBook Reader does require a download, but the upgrade path from the Acrobat Reader to the eBook Reader is rather easy.

The issue of complexity is also largely alleviated with the latest technologies. As mentioned above, with major players like Microsoft or IBM involved in the industry, the DRM components being offered have matured and their interfaces are becoming familiar to many users.

Also, complexity can be reduced with regards to DRM-related activities such as authentication and payment. Esp. in the mobile environment, this has helped consumer acceptance.

5.5.2 EDiMA

With de facto standards emerging and consequently increasing interoperability, consumers will be less affected by the DRM technologies. Moreover assuming no standards will arise, DRM technologies that enable rights enforcement on the server side, rather than on the client side, will also decrease the complexity for the consumer as no (proprietary) plug-ins/technologies need to be downloaded and operated.

5.5.3 EICTA

Consumers want the freedom to select the media player, service provider and content that best suits their interests and desires. If media players, file formats

(codecs) and digital rights management are all bundled from a single supplier, this will restrict consumer choice, open competition on the market and will inevitably lead to fragmentation leading to higher costs for all involved.

DRM for protected content must not impinge upon content consumption unrelated to the content it is specifically designated to protect.

Consumers will buy from and regularly use systems which allow them to easily access the services and content they require. Correctly designed a good DRM is a tool for sales promotion not a barrier to acquisition. The system can create new business and market opportunities and expand the market for content. Competitive pressures will determine what gains acceptance in the marketplace. Complex systems and processes will be bypassed in favour of more consumer friendly and cost effective solutions.

In the recent years, DRM has made a great deal of progress. The DRM industry has spent efforts in researching consumer preferences.

If well-implemented, DRM is not visible to the consumer unless he/she violates the acquired rights to use the content.

Interoperability, such as that made possible by link technologies such as DTCP, HDCP, CPRM, etc., increase seamless interoperability.

Protecting and informing consumer choice through product labelling is another important way to encourage simplicity and consumer friendly goods and services. Restricted content should be clearly labelled so that consumers know the rights they are getting, the kinds of devices the content plays on, network interoperability, etc. By requiring explicit labelling of protected and restricted content, all participants in the market will be encouraged to enhance both interoperability and consumer choice, flexibility and portability.

5.5.4   ENPA

DRM can be made simpler if the users receive clear information. If the users do not have such information, they will refuse to use the system. In addition, if the DRM process is too complex, even with appropriate information, consumers will not be interested.

5.5.5   European Broadcasting Union

Copy protection shall as far as possible be transparent to the user. User interaction should not be required but occasionally to e.g. present the user with information, or request authorisation.

Maintenance operations such as revocation and renewability should require minimum user assistance.

The security must be sufficiently robust to not (at least frequently and repetitively) require user interaction in particular in the absence of deliberate fraudulent use of content.

The system shall provide a means whereby the rights-protection state and associated usage conditions (e.g. copy restrictions, period of validity), which apply to what type of interaction with content, can be signaled to each viewer clearly and unambiguously both before and after recording.

As concerns copy protection, user owned (e.g. self-generated) content should not be affected.

5.5.6   FEP

It has been shown that consumers will not use the more complex DRM systems. The few DRM systems actually remaining on the market are more user-friendly and they will have to remain so, even improve their user friendliness. Through this user friendliness, DRMs will enable new and attractive business models which will offer new ways to customers to have access to works of the mind.

5.5.7   IFPI

Users do not want to be encumbered by DRMs that don't work correctly, are complicated, or are not supported on their own players and devices. This is definitely an issue for right holders as well. If DRMs are not acceptable and user-friendly for consumers, they will have no chance to succeed. The way to avoid any perceived complexity for the consumer is to employ good engineering practices in the design of systems. There are many examples of complex systems that have been engineered to allow a good user experience, and there is no reason that DRM should be any different. One example is the adoption of ATM machines in banking, where consumers accepted a complex technology when a clear convenience benefit was shown to them. The technical complexity was simplified in that case through the use of a good user interface.

5.5.8   MPA

DRMs that do not respond to the needs of consumers will not survive.

5.5.9   Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law

There is a difference between the complexity of a user's interaction with a DRM system and the user's awareness of how the DRM system functions vis-à-vis her legal rights. The desirability of making the DRM layer of user applications invisible to the user does not imply that users should not be informed that they are purchasing or accessing DRM-controlled copies. Quite the opposite is true. At minimum, vendors of hardware and software that provides access and usage rule enforcement, as well as vendors of DRM-controlled copies, should be obligated to inform potential purchasers that their merchandise might lead to a curtailment of the users' rights under copyright law.

5.6   Security of DRM

If content owners perceive DRM as insecure, what level of security do they require before they will use DRM systems?

5.6.1   ContentGuard

The level of security required will differ depending upon the DRM application. For example, the security required to prevent unauthorised use of a comic strip carried in PDF format is likely to be very different than the security required to distribute US nuclear military secrets in a PDF file to scientists at the Los Alamos National Laboratories.

5.6.2   DWS

It is DWS's perception, that there has always been a certain degree of piracy in the respective markets. But on the Internet, piracy has become a mass-market phenomenon.

A concern expressed is that DRM solutions have been "cracked" (i.e. circumvented) in the past, and can therefore not be trusted.

While some DRMs have been cracked, there are others that have not.

The critical question for business may not be whether a DRM is unbreakable, but rather whether it will present enough of a barrier so that people will access your content through your preferred channels rather than seek out a cracked version. For many types of content, the barrier presented by today's DRM solutions is far higher than is strictly necessary to keep users from seeking cracked content

No technology can be 100% secure – it should always be assumed that a determined hacker will be able to compromise and break a DRM technology given sufficient motivation, resources and time. In addition, it should be recognized that there is usually a trade-off between the security of a DRM system and its convenience and transparency to the end user.

In this context, today's DRM technology can make the distribution systems sufficiently secure – at least within the digital domain.

Nevertheless, any DRM system should be prepared in case a successful attack occurs. In case a DRM system is hacked, processes have to be in place, so that the damage for content owners can be limited. This can be done with a variety of actions – alone or combined – such as:

- Exchange/update of keys

- Identification of hacked content using technologies like watermarking – potentially robust enough to remain intact in the analogue domain

- Update of the client software

In summary, while no technology can be 100% secure, DWS believes that the selective use of DRM technologies coupled with the creation of a favorable usage environment will provide sufficient security to drive strong and sustainable content revenue models.

5.6.3   EDiMA

Highly depends on type of content: someone who gives content away but only wants to monitor who obtains it when and where (one of the things DRM could do) will have different security needs then the CEO of a pharmaceutical company briefing its global R&D heads on a new medicine through a live stream. Content owners will balance the level of security with the increased complexity that comes with higher levels of security. It is the same as in the physical world.

5.6.4   EICTA

Since most consumers are inherently honest, the DRM system must provide the means and incentive for honest consumers to remain honest while deterring dishonest attackers of the system. The level of this security will be selected on a case by case basis by content owners.

There has always been piracy in the respective markets. Therefore, most content owners have been forced to accept a certain percentage of piracy – especially as there might be some promotional benefits to it as well. Unauthorised access to goods and services of course exists in all sectors (credit card fraud, insurance fraud, theft and shoplifting). The affected companies take sensible precautions (both technical and legal) to limit losses to acceptable levels, but eradicating it totally would not be possible in any business activity.

DRM providers use a combination hardware and software techniques to secure their systems. Additionally they build into their services provisions and techniques for responding to attacks. This combination of technical and operational expertise is how DRM providers differentiate themselves and their products to the marketplace of content owners. As the market expands new innovative cryptographic and security techniques will evolve to support the market development. Here again different market sectors will have different security requirements. The use of a standard REL also enables the content owner to explicitly state which DRM technologies they trust.

In this context, with today's DRM technology, the distribution systems can be made sufficiently secure.

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damage for content owners can be limited. This can be done with a variety of actions – alone or combined:

- Exchange/update of keys

- Identifying of hacked content using technologies like watermarking for forensic tracking purposes. For example, one the biggest threats today in the movie world is pre-release, or early release titles, that are put on the internet before they are even released. These titles are not "stolen" by typical consumers, but instead are stolen by employees, or other individuals (using, e.g., camcorders in early "screenings" of the movies). A watermark could be put in these movies to identify the source of the piracy (e.g., you could identify which theatre the content was unlawfully "recorded" at).

- Update of the client software

It is a combination of legal and technical frameworks that make DRM systems safe enough for all participants. This has to be combined with value added for the consumer to use legal system.

It should also be noted that content provider security requirements vary with the kind of content that is being distributed and there is no "universal requirement" or standard. For early release content, a high degree of security might be expected, while for "library" content, a very low level of security might be acceptable. These divergent requirements and needs underscore the fact that no single "standard" technology is appropriate, but rather that a multitude of technologies in the market are needed to address a variety of needs and situations.

5.6.5 ENPA

The security level of DRM should be determined in order to prevent, stop and trace any infringement of the usage rules, including copyright rules, related to content. This cannot be achieved if DRMs are easy to circumvent. In consequence, a high level of security corresponding to the publisher's request is necessary.

A typical example in ENPA's sector is the problem of illegal copying. It is very easy to copy and past newspaper articles online and to forward it to thousands of people, without being authorized by the publisher to do so.

An appropriate level of security is therefore a key criteria for newspaper publishers and for their confidence in the use of DRM.

5.6.6 European Blind Union

Content owners' perception of "security" may relate more to their expectation of income from rights sales than actual technical security. The speech facility incorporated into proprietary e-book readers is often disabled at higher levels of security, such as "owner exclusive" because it is thought that "audio rights" can be traded separately. If a separate audio version was always made available at the

same time, this might not matter, but in reality it means that visually impaired people can buy a book which ought to be accessible only to find that in fact it is not.

5.6.7   European Broadcasting Union

It is needed to identify the threat models and the appropriate required level of security to ensure that usage rules will adequately be enforced and rights information be protected.

The problem is mainly centred on maintaining the required level of incentives for the creation of works, and sufficient protection of investments.

5.6.8   FEP

Rights holders have undertaken to use networks to disseminate works of the mind as an innovative way of reaching their customers. The level of security required depends on the nature of the content and the business relationship between trading partners. In some cases, especially business to business, security is not an issue as content providers are willing to rely on contractual arrangements. In other cases, content providers may need highly reliable DRM to achieve protection of their works.

5.6.9   IFPI

Content owners are well aware of the limitations of security offered in various systems. Even the security applied to financial and military systems can be broken with sufficient effort. However, content providers are comfortable with security that is broadly in line with the security employed in other consumer systems, such as pay TV and mobile telephony systems. Such systems rely on proven security techniques, designed according to accepted principles. These principles include avoidance of global secrets, avoidance of a single point of failure, and renewability to recover from a compromise. There is no reason that such principles used to design security in other consumer applications could not apply to DRM. Indeed, DRM systems such as Windows Media DRM, IBM EMMS and others, are all designed with such principles in mind.

5.6.10 MPA

While the answer to this depends upon several variables, including the: type/value of content being distributed, distribution media, architecture of the end-user devices and DRM system, and underlying business models, the MPA takes the position the creation of a secure environment is the *sine qua non* of a properly functioning marketplace. While not all of the following elements are strictly necessary to every DRM system, these guidelines are generally applicable:

Any client-side software components that can potentially access the DRM-protected content must incorporate strong tamper resistance. These components include: crypto algorithms, codecs, media player filters, A/V device drivers, and components of the operating system. Additionally, any software that executes within the same memory space as these components is also included.

Critical data structures that contain decrypted content, keys, shared secrets, or can otherwise affect the security of the DRM system must be securely protected against snooping or tampering.

Keys and shared secrets should never be exposed in the clear, even within volatile memory. Expired or revoked keys and shared secrets should be securely deleted/wiped.

APIs and dynamically loaded software components (such as media player content filters, operating system device drivers, dynamically linked libraries, etc.) must be securely authenticated, preferably using cryptographic one-way hashes.

The DRM should be able to control (restrict and/or require) which software components are used, including the specific codec implementations, media players, plug-ins, etc.

The DRM should be able to control and manage all usage of protected content, including: storing/recording, play, uploads, download, delete, distribution, etc.

The DRM should be able to securely authenticate all identifiers and values used to determine access control rights, including: the specific user, the end-user device, real-time clock, geographic location, etc., as appropriate.

The DRM system should support practical revocation of hacked or vulnerable components, such as devices, licenses, users, keys and shared secrets, the DRM system itself, etc.

The DRM system and client-side software components should support full renewability, so they may be conveniently upgraded for improved security or corrected if revoked.

The integrity of the security of the DRM system should be actively monitored by a trust authority in order to trigger, in a timely manner, appropriate revocation or renewability when a security breach is discovered.

DRM license generation servers should generate their keys and licenses within secure tamper-resistant hardware, such as FIPS 140-1 level 3 or 4, such that the root license keys can never extracted.

DRM license servers should generate a secure, signed, tamper-evident log of all operations performed, including key and license generation. This log may be audited to identify security breaches to the license generation servers.

Only cryptographic algorithms that are publicly released, well established, and proven secure through public, scientific peer review by the cryptology community should be used.

Cryptographic algorithms and key lengths must be sufficiently strong to protect data against cryptographic attacks performed within the useful lifetime of the data.

All implementations of cryptographic algorithms, security protocols (including key generation, exchange, and management), and tamper resistance should be reviewed and certified by an approved third-party testing lab, such as ICSA (http://www.icsalabs.com).

5.6.11 Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law

The resistance of DRM-controlled content to attacks is understandably presented as the paramount security issue. The introduction of DRM technology into computing equipment will create the potential for new security vulnerabilities. Currently, users are able to discover and guard against these threats by setting and enforcing their own security policies. DRM technologies must therefore not introduce new vulnerabilities, and they must allow users to continue to set the security policies for their own machines. The protection of copyrighted works should not come at the expense of general computer security.

5.7 Privacy

If consumers perceive DRM as a threat to their privacy, do they require certain assurances before they will accept DRM systems?

5.7.1 DWS

Privacy is not a particular issue only related to DRM. Generally speaking, same rules like for e-commerce and payment systems should apply to DRM systems. In other words, DRM systems have to follow existing legislation regarding privacy.

An example for privacy concerns are file sharing systems like KaZaA or Morpheus used by many millions of consumers. As these systems have the ability to share information from the user's hard drive with third parties, the consumer tends to give up privacy. In contrast, in a DRM environment, privacy can be implemented according to legislation and thereby the consumer's privacy remains protected as well.

5.7.2 EDiMA

It goes without saying that the use of DRM systems does not preclude total respect of privacy and data protection laws, just as is the case in all other activities and sectors.

5.7.3 EICTA

Privacy is not an issue which is restricted to DRM systems. DRM systems have to comply with all existing legislation, including that concerning Data Privacy and E-Commerce.

Consumer's privacy must be protected when purchasing goods (digital or otherwise).

Protection of IPR rights is of key importance to content industries who are seeking secure content distribution methods over networks such as the internet. At the same time, there is more consumer demand for anonymity when surfing the net. The IT industries are trying to address both requirements. DRM technologies can also be used to aid the consumer wishing privacy by giving consumers control over the use of their personal data when registering for a service. One example is the most recent implementation of privacy features into Microsoft Windows Media Player (WMP).

On first use with the player they can choose to enable or disable:

- Retrieving Metadata on Album art

- Auto acquisition of protected content

- Sending the player ID and cookie management

This way privacy can be respected without compromising access to increased functionality.

5.7.4   ENPA

Newspaper publishers apply the existing rules on data protection adopted at national and EU level both off-line and on-line.

5.7.5   European Blind Union

If schemes are devised which recognise individual users as people entitled to manipulate a text in a particular way, then this implies the person making the nature of their impairment known at the registration stage. Such information should only be used for the purposes for which it has been supplied. Any general statistics on uptake or sales should not identify individuals, and should avoid statements which might lead to their being identified by third parties with no valid interest.

5.7.6   European Broadcasting Union

The system shall support service models not requiring user information to be disclosed to third parties. Automatic registration and transfer of private data over a return channel should be avoided, and in any event made subject to prior authorization by the person involved.

Rights managements systems shall preserve/protect privacy and prevent unauthorised access to private data.

Education needs to be made on the accompanying legal measures to enhance user trust in automatic rights management systems.

5.7.7   FEP

DRM are no exception to e-commerce activities and they will have to respect the European data privacy law which should fully reassure consumers. In fact DRM may be a vehicle to ensure compliance with privacy law.

5.7.8   IFPI

DRMs do not create privacy problems per se. Privacy is a question linked to e-commerce and the use of the Internet in general. All operators have to respect the privacy legislation that has been put in place. The Data Protection Directive and the recently adopted Directive on Data in Telecommunication Networks contain clear privacy rules that apply to all operators using DRM, and will be enforced by Member States. Creating trust concerning privacy is also a requirement for the business community if companies want to develop DRM-based services that will succeed commercially. In fact, DRM may actually enhance privacy for consumers by creating a safe and trusted environment for the storage and use of information about them.

5.7.9   MPA

DRM is not per se a privacy issue and at this stage it is premature to assess any specific impact as there is a lack of experience. As a general principle, all business entities must act in compliance with the legal rules protecting personal data as per national law. Furthermore, DRM can serve to technologically protect personal data.

5.7.10 Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law

DRM systems, and their associated authentication and authorization systems, carry the potential of generating, transmitting, and storing vast quantities of data about the use of copyrighted works. This data could reveal a great deal about the manner in which individuals explore copyrighted works. DRM thus presents the potential for a level of usage monitoring that is unknown in most uses of digital technology and is unprecedented in the use of informational goods. Unless the use of DRM-related data is strictly limited to enforcing usage and access rules, users are likely to be deterred from accepting DRM-controlled works. DRM systems should generate no more data than necessary, and store data for no longer than necessary to execute their rule enforcement functions.

5.8   Agreement among Stakeholders

Are there any impediments to agreement among different stakeholders that prevent the adoption of DRM?

5.8.1 DWS

In the end, DRM benefits all parties in the value chain as all are able to build a legal business for paid content. In order to create a successful digital content business, all parties have to come together and reach agreements.

In the past it has been very difficult to license attractive digital content with acceptable terms for digital content distributors. This has hindered the ability and attractiveness of legal offerings.

5.8.2 EICTA

There are already a wide variety of DRM solutions being adopted in the marketplace, so the short answer is "no".

In the end, DRM benefits all parties in the value chain as all are able to build a legal business for paid content. In order to create a successful digital content business, all parties have to come together and reach agreements.

In the past it has been very difficult to license attractive digital content with acceptable terms for digital content distributors. This has hindered the ability and attractiveness of legal offerings.

- On the issue of licensing, it is not clear whether, in the existing European legal framework, authors will be able to license their works directly instead of having collecting societies handling the licensing of their rights. Also on this issue, it is not clear whether licenses will be or should be valid just for one country or whether they will be valid across countries.

- One of the key areas here is the imposition of levies. The imposition of levies affects the roll out of DRM systems as it adds a cost base to the consumer's acquisition of content. It is also a blunt tool as it serves within a secondary effect to inhibit the growth and building out of the technical infrastructure .Enabling this infrastructure will enable the great diversity of rich content, which we have in the EU, to reach the consumer.

- The existence of levies systems is an impediment to the adoption of DRM as consumers will not want to pay for making copies of content through a DRM system when they have already paid through a levy imposed on the media or the equipment. Further, such double compensation would potentially be unlawful.

- The legal framework has to be in place to ensure legal protection against circumvention of technical protection measures and DRM systems otherwise, content owners and DRM providers might be reluctant to deploy them.

Final

- DRM permits the emergence of new business models. But consumer reactions to these new means of access to entertainment are yet unknown and depend on a mix of factors (content availability, ease of use, adequate pricing, trust). The uncertainty of the return on investment in DRM may hinder developments.

There will always be differences of opinion between content providers and device manufacturers on specific issues, but voluntary negotiations driven by market forces are the best way to resolve those differences in a manner acceptable to all.

5.8.3 EDiMA

DRMs are still developing and evolving and users appear to still be reluctant to embrace the technologies, while providers are trying every model to push it through. Demand for digital content on one side and demand for protection of that same content on the other will establish a DRM market but pricing models, standards, etc are still being "tried and tested", with as a consequence obstacles to quick adoption.

5.8.4 ENPA

It is in the interests of all stakeholders to ensure that DRM complies with right holders' expectations. The agreement between stakeholders will depend on their ability to respond to the needs of the different right holders. If DRM meet these needs, right holders will therefore be more confident to use them for their on–line content. Newspaper publishers are willing to be present online and to propose quality content for their readers. Nevertheless, they should have the appropriate technological means to achieve this objective.

Another obstacle is the current difficulty of knowing whether DRM systems are secure enough and can therefore be retained as a reliable solution for protecting content and ensuring the respect of usage rules.

5.8.5 European Broadcasting Union

The market introduction of copy protection and DRM solutions shall not be taken as an opportunity to introduce market distortions in the content distribution chain in developing new gatekeepers.

It is particularly important to avoid associations that would prevent competition in the delivery on content of value and user interest. Monopoly on any part of the solutions must be avoided by all means.

5.8.6 FEP

There seems to be a lack of willingness[34] from the IT industry to have serious talks about DRM. Certainly the consumers will have to be educated to use works lawfully and this could mark a pause for buying certain equipment. IT industry is very keen to discuss the phasing out (although it might see it rather as an immediate withdrawal) of levies. Publishers are warning them that if such an adaptation is to happen, it will only happen when DRM are not only available but also implemented.

It is in the interests of all stakeholders that DRM uptake in meeting both rights holders and consumers expectations.

It should be rebutted that it is a lack of content which is an obstacle to DRM uptake.

5.8.7 IFPI

Fundamentally there are no impediments. Whilst as with any initiative, there are competing views on many details, it can fully be anticipated that the use of DRM technology will become widespread in future. Evidence of this is already emerging at this early stage, as content providers invest in DRM-backed initiatives such as Press*play* and MusicNet, using technologies that have come out of the technology sector. It is already clear that consumers are also able to shape these services. Present service offerings have repeatedly been adjusted taking into account consumer opinion and market feedback.

5.8.8 MPA

Yes. Views of the different stakeholders are sharply divergent in many respects. This divergence of opinion has seriously hampered the development of a market solution for years. In essence, the protection of intellectual property in the digital environment is confronted by some business models that seek to benefit from the lack of a secure environment and a flouting of copyright law.

5.8.9 IPR Systems

Yes, the current patent threats are a serious concern. Stakeholders are unwilling to commit to adopting DRM whilst the situation is unclear, uncertain, unfair, and unreliable.

5.9   Availability of Content

Does the availability or lack of availability of content have any influence on the take up or non-take up of DRM technology?

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[34] Especially the hardware industry seems to view content and copyright as a pure commodity that spurs consumer demand for equipment and devices. This is also noticeable in some of the trade literature and advertising materials issued to the public which stops short of enticing copyright infringement. In reality, without ongoing creation of quality content there is no market for hardware items.

5.9.1 DWS

The availability of content, offered in a way the consumer wants determines the success of digital product offerings.

In the music market, consumers have demanded interest in a complete product offering. So far, no company has been able to fulfill this demand – except for illegal file sharing systems.

A second demand from the consumer was lower prices for digital goods. But prices for digital offerings are usually based on traditional pricing for physical products. But most consumers didn't perceive the same value for a digital album compared to a CD Album (with booklet).

In both cases, the business model for the legal offering didn't respond to consumer demand. As a result, success in the market place was limited, but could not be attributed to DRM technology. On the other hand, lack of successful business models based on DRM slowed down adoption of DRM technology.

5.9.2 EdiMA

The lack of availability of content directly affects the uptake of DRMs. If content is not being licensed to digital content distributors, then those distributors will have no need for DRM technologies as they have nothing to distribute. So yes, there is a direct link between availability of content and the take-up of DRM technologies.

Successful market development will not be achieved if open access to fair content licensing is not provided by the recording industry. It must also be recognised that the robustness of DRMs do contribute to effective protection of copyright, but that often other circumstances such as consumer and market control are the real reasons why uptake of DRMs has not been accelerated.

5.9.3 EICTA

For content to be made available there has to be a digital ecosystem in place to distribute and receive it. The performance and availability of this ecosystem has to date been a factor in the availability of DRM protected content. DRM is only one component of this enabling infrastructure. As the digital performance of the infrastructure improves and the range of cost effective digital storage and playback devices increases so the content owners will be able to augment their existing business models with new innovative targeted services using DRM. Content players are currently trailing various business models to test the potential of this new technology.

For end-to-end DRM solutions/delivery systems that are subscription or pay per view based, or download based, content providers can easily (i) make the content available and (ii) make the necessary player (software) available. For new conditional access formats, like DVD Audio, or future High Definition DVD, that require new

hardware devices for playback, there will always be the classic chicken and egg problem—content providers will not invest in new format releases until a sufficient number of players are out there, and device manufacturers will not want to invest in product lines unless there is content availability. For protected formats, like DVD, there is simply nothing that can be done to accelerate this as both content providers and device manufacturers must make their own business decisions. New "digital" services that are offered over the internet can take advantage of the flexibility of new and existing generations of computing devices by delivering both the content and the playback application.

Consumers are not interested in technology per se – they want to access premium content (by using new technologies). In the past, the non-availability of licenses has hindered the adoption on DRM. It is still difficult and expensive to get the appropriate licenses.

The situation seems to get better, but is certainly one of the reasons for the slow uptake.

Additionally, if content was made available for digital distribution, the price was set by the content owner. Usually, the prices were based on the traditional pricing for physical goods. Unfortunately, most consumers didn't perceive the same value for a digital album compared to a CD Album with booklet.

It would be desirable if content owners would be willing to embrace the new distribution channels and make content available in new concepts such as:

Download and streaming via the Internet and mobile channels

Distribution of pre-installed content on PC hard drives and MP3-Players. With the purchase of a PC, consumer could receive pre-installed DRM-protected music and movie files. After a preview, the consumer could unlock the DRM-protected file and purchase the content without the hassle (and costs) of downloading. E.g. a standard hard drive of 50 GB can hold 15.000 songs.

5.9.4   ENPA

ENPA disagrees with this approach. The implementation of DRM is not linked to the availability of content. Publishers are willing to put their newspapers online but they need reliable DRM systems which notably correspond to their business models. This has nothing to do with availability. The take-up of DRM will notably depend on whether DRM systems are able to provide the appropriate solutions to respond to publishers' needs.

5.9.5   European Broadcasting Union

Inappropriate solutions may lead to low market acceptance in spite of the availability of content.

5.9.6 FEP

For the publishing industry, the question should be formulated the other way round. Unless DRM technology takes off and becomes reality, then rights holders will have difficulties to offer attractive new business models.

5.9.7 IFPI

This question cannot be answered without also answering question 10. It cannot be expected that content adhering to any given DRM can be made widely available in advance of the DRM technology for accessing that content being available to consumers. Likewise it cannot be expected that device makers will choose and implement any given DRM in their devices in advance of content becoming available according to that DRM specification. This does not mean that progress is blocked however, for the following reasons. Computer systems can have software loaded to interact with DRMs when needed – this is exactly how Press*play* has been constructed. This allows the gradual deployment of DRMs across a section the marketplace, although it is not a complete solution as the computer would not be wholly governed by the DRM. Device makers are increasingly making devices that have re-programmable functionality. This in principle allows devices to be upgraded in the field to provide DRM capabilities. Thus over time, as DRM gains momentum in the market, both content providers and hardware makers will have increasing scope to develop DRM within their mainstream business.

6.9.8 MPA

The mere availability of DRM technology without an overall secure environment does not completely solve the problem for content distribution and availability of content. The creation and distribution of content entails the means to recoup the massive investments required to bring that content to market.

Nevertheless, MPA recognises that, for example, if only a few titles were available on DVD, then this would dramatically affect the take up of licenses by hardware manufacturers (both CE and IT) for the Content Scrambling System (CSS). While CSS is more a technological measure than a DRM, this point still has some validity to this exercise. The success of the DVD format demonstrates the willingness of content owners to move toward the distribution of their content in new ways.

5.10   Availability of DRM

Does the availability or implementation of DRM technology or the lack thereof have any influence on the delivery of protected content in a digital form, either online or offline?

5.10.1 DWS

Over the past 3 years, Digital World Services has tested DRM technologies and launched pilot programs. Based on consumer feedback, DWS has built its platform ADo²RA. Today, DWS has integrated a variety of different DRM technologies - from companies like Microsoft, Adobe or IBM as well as from start-ups like SDC or TryMedia.

5.10.2 EdiMA

DRM technology has become increasingly robust, flexible and available over the past 18 months. The more available, robust and flexible it becomes, the more it will be used. EdiMA would argue however, that there already exists a wide and deep enough catalogue of DRM technologies to allow content owners to at least experiment with the possibility of making their content available.

5.10.3 EICTA

DRM technologies have a history of almost ten years (e.g. the concept of Superdistribution was invented in Japan in 1990). Also DRM-relevant patents date back to this time frame. This was before digital content was shared among masses on the Internet

DRM technology is already here today and successful business models are being supported. It is up to the content owners to choose their route to market. As a content owner I may feel that my content requires a certain bandwidth or screen size before I will allow it to be viewed. On the other hand I may decide that lower quality trailers of the same material can be given a wider distribution to other networks and devices. In the cases where interoperability is required then using a common language and metadata vocabulary coupled with a mappable syntax will provide a practical level of interoperability and flexibility.

About four years ago, about fifteen companies like InterTrust or Xerox/ContentGuard were offering DRM technologies to the entertainment and publishing industries. Also the first DRM Service companies evolved, including Reciprocal, Magex and Bertelsmann's Digital World Services. Pilot programs were started but couldn't sustain for mainly two reasons:

Pricing too high: there was little value compared to existing offerings from the traditional market. Consumers rather buy a CD Album than spending 9.99 US$ for a computer file.

Piracy: the legal content offering was much smaller in terms of variety and restricted in usage compared to illegal content available from file sharing networks.

Today, there is a variety of different DRM systems in place from established companies like Microsoft or IBM as well as from start-ups like SDC and TryMedia.

For end-to-end DRM solutions/delivery systems that are subscription or pay per view based, or download based, and delivered over the internet, content providers can easily (i) make the content available and (ii) make the necessary player (software) available when the content is delivered. For new conditional access PHYSICAL formats, like DVD Audio, or future High Definition DVD, that require new hardware devices for playback, there will always be the classic chicken and egg problem: content providers will not invest in new format releases until a sufficient number of players are out there, and device manufacturers will not want to invest in product lines unless there is content availability. For protected formats, like DVD, there is simply nothing that can be done to accelerate this, as both content providers and device manufacturers must make their own business decisions. New "digital" services that are offered over the internet can take advantage of the flexibility of new and existing generations of computing devices by delivering both the content and the playback application.

5.10.4 ENPA

Newspaper publishers would like to rely on DRM systems which are notably compatible with the type of content they produce, adaptable to their different business models and guarantee security, at a reasonable cost.

The success of DRM systems will notably depend on their ability to fulfil these demands.

5.10.5 European Broadcasting Union

Yes, to a certain extent, in particular concerning on-line access to on-demand services and re-distribution of audio-visual material and file sharing via the Internet.

However, the absence of DRM solutions, which implementation may still require time (developing the necessary infrastructure), has currently no noticeable impact on digital pay- and free-TV broadcasting take-off.

5.10.6 FEP

It is both the availability and the implementation of DRM that will make it more obvious and economically viable to disseminate their works through the networks.
There is genuine concern in the marketplace that while agreeing that the market shall act as the final judge of successful standardisation, a de facto standard may arise which limits the grow of innovation in protection and policing technologies. How do you regard this scenario?

5.10.7 IFPI

This question cannot be answered without also answering question 9. It cannot be expected that content adhering to any given DRM can be made widely available in advance of the DRM technology for accessing that content being available to consumers. Likewise it cannot be expected that device makers will choose and implement any given DRM in their devices in advance of content becoming available according to that DRM specification. This does not mean that progress is blocked however, for the following reasons. Computer systems can have software loaded to interact with DRMs when needed – this is exactly how Pressplay has been constructed. This allows the gradual deployment of DRMs across a section the marketplace, although it is not a complete solution as the computer would not be wholly governed by the DRM. Device makers are increasingly making devices that have re-programmable functionality. This in principle allows devices to be upgraded in the field to provide DRM capabilities. Thus over time, as DRM gains momentum in the market, both content providers and hardware makers will have increasing scope to develop DRM within their mainstream business.

5.10.8 MPA

Delivery of protected content already exists to secure devices, such as some digital set top box systems, airline VOD, etc.

Unfortunately, insecure platforms such as PCs are significantly weaker at protecting against content theft and piracy. If DRM technologies can increase the security of these platforms, digital content will become increasingly available.

5.11 Regulatory Issues

Do regulatory issues have an impact on DRM?

5.11.1 EICTA

One such issue is the extent to which the relevant legislation facilitates and encourages DRM-based content delivery. The national implementation of the EU Copyright Directive, which is the central piece of EU legislation setting the legal framework for new DRM-based content delivery models, is therefore crucial. It is essential that the Copyright Directive is properly implemented by the Member States, particularly with respect to private copying, the protection of technical protection measures against circumvention and fair compensation.

The Directive contains a number of provisions relevant to DRMs and technical protection measures, and endorses the principle that DRMs inherently guarantee that the copyright holder has received fair compensation (and levies are neither justified nor otherwise appropriate). Article 5.2(b) says that fair compensation must take account of the application or non-application of technical protection measures. (In addition, it is EICTA's view that such compensation must be "fair" for end-users as well). The Directive also gives indirect encouragement to DRMs by requiring that Member States take account of technological developments and the availability of technical protection measures (Recital 39).

Technological protection measures, by definition, specifically define the rights that consumers have with respect to content they have purchased. In this respect, levies cannot be supported or justified when content providers are able to both define the consumer's behaviour and dictate the price. In the world of DRM and technological protection measures, fair compensation for all of the rights delivered is reflected in the purchase price of the restricted content. DRMs enable multiple product offerings, with a variety of rights and price points. Simply put, protected content is "paid for" and no additional compensation is due content providers.

From a political perspective, the issue might not be so easy to resolve, but politics should not be allowed to dictate the evolution of digital markets and hinder the move to digital delivery of goods and services.

EICTA recognises that in light of the complexities that the levies systems create as compensation scheme, it is difficult to define, from a legal and political perspective, exactly how theses systems must be revised in order to take account of the application or non-application of technical protection measures. This difficult task may actually impede progress toward the adoption of DRM technologies (depending on the way the directive is actually implemented).

For example, when trying to define what exactly "application" of TPM means it is useful to look to the guidance given in Recital 39. There, it appears that TPMs should be considered to be "applied" when they are "available" for use by content owners. The ultimate decision on whether or not to protect content is for content owners to take, but it would not be reasonable to continue the existing indiscriminate levies systems when effective TPMs are available for use by content owners.

That is, if content owners are able to maintain their current business model and collect levies in the traditional way simply by electing not to take advantage of available protections, content providers will be able to distort the market, or continue market distortions, by perpetuating a levy system they deem to be more profitable than the actual fruits of the market. This absurd result would not encourage content owners to apply technological protection, and it would not provide incentives for DRM providers to continue to refine and improve their solutions, and the result would be further delays in launches of digital content delivery business.

As we have seen, it is clear that the Directive foresees the phase-out of the existing levies systems with the advent and introduction of content protection. Indeed, levies were invented for an analogue environment where control of access to content was impossible. Logically, therefore, content protection technologies remove the fundamental justification for levies.

It is therefore of great concern that collecting societies in several EU Member States are attempting - in many cases successfully - to impose levies on an ever-increasing range of digital equipment and recording media. Their demands for new levies cover not only equipment and media specifically designed to make recordings, but even extend to multi-purpose Internet access devices such as PCs and other equipment like hard discs, printers, digital set-top boxes, mobile phones, etc.

The scope of the demands is often arbitrary and without any regard for the extent to which the media and equipment in question are in fact used to make private copies. Many users may never reproduce copyrighted material, but use their equipment and media for entirely unrelated purposes. They still pay the levies, however.

Furthermore, where levies are imposed on both media and several types of equipment simultaneously (e.g. blank CDs, CD burners, and PCs), users are paying double or multiple compensation. This situation is further aggravated when users pay for accessing protected content online (and as we have seen, these services are becoming increasingly commonplace).

For example, a user who accesses an online music service and wants to make private copies of tracks, will pay extra for the possibility to do that. This unfortunate user has already paid levies on each piece of equipment, and on the recording media. The same is of course true for the consumer who has purchased music discs that cannot be copied or perhaps not even play in PCs. The user will have paid the levies but is unable to make private copies.

Finally, the claims for new levies are frequently made without any consideration of the actual harm private copying may or may not cause content owners. The Directive explicitly calls for assessment of actual harm when the level of compensation is determined, and states that where no harm occurs, no compensation is due (Rec. 35).

Indeed, more fundamentally, the Directive states the necessity to evaluate the particular circumstances of each case. Obviously, the existing indiscriminate blanket schemes completely fail to meet any of these requirements.

These factors demonstrate a pressing need to review the existing levies schemes in view of technological developments. In its February 2002 paper on Digital Rights Management, the European Commission's DG INFSO voiced "serious concerns" about the impact of levies, such as the risk of double compensation where levies and DRMs are used in parallel, and market distortions. However, the evidence to-date suggests that the Commission's conclusion that there will be a "natural, market driven phasing out of levies" is too optimistic.

Collecting societies have every incentive and substantial power to continue expanding the scope and scale of levies, to the detriment of both consumers and the development of the new digital market place. That is why it is so important that the EU institutions and Member States phase out the obsolete levy schemes in the new copyright legislation. This is a fundamental condition if the deployment of DRM-based digital content delivery is to succeed.

In short summary, the current levy system undermines market forces, creates disincentives for content providers to embrace new technologies and distribution systems, and creates incentives for content providers to continually seek legislative and other ways to preserve their existing business models and reject innovation and the move to the digital society.

Rights management regimes in the EU

Another legal issue that should be addressed by the European Commission and Member State authorities is the collective rights management carried out by collecting societies. Most collecting societies are monopoly organisations with exclusive rights in their territories. Dismantling the monopoly of collecting societies in rights management would remove a major obstacle to market development and should be a priority for the Commission and Member States.

Clearly, content owners who wish to sell their content online in digital format, using DRM, need to have the legal right to do so. However, many content owners are legally prevented from exploiting and managing their online rights. The reason is that the powerful, monopolistic collecting societies have managed to obtain that all the works of a member within a particular category of rights be transferred to them. In some cases individual content owners have asked collecting societies to be given back the right to manage the online distribution, leading in one high-profile case to a complaint to the Commission.

Collecting societies were originally created to represent content owners and manage their rights collectively where it is impossible or impractical for them to do so themselves. But, there is no longer any reason why content owners should not be allowed to deliver their own works online if they wish. However, without the ability to legally manage their own online rights, they cannot embrace, benefit from and drive demand for new forms of distribution.

The reluctance of collecting societies to allow content owners to manage certain categories of rights themselves is easy to understand. In that increasing use of DRMs will lead to a reduction in levies, and collecting societies rely on levies for their income, they have a financial incentive to delay the spread of such technologies and not to allow online exploitation. The European Commission and Member State authorities should amend this situation, not only because dismantling these monopoly structures would remove a significant bottleneck from new content delivery market, but also because rights management is a normal commercial activity like any other. And as such it should obviously be open to competition within and across Member States

In short, collecting societies and current levies schemes create obstacles to the adoption of new technologies and the natural evolution to digital distribution systems and DRM technologies generally.

While creating standards is certainly advantageous, EICTA believes that in the area of Digital Rights Management (DRM) technologies, the optimal way to do this is to focus on standardizing aspects to enable interoperability, rather than DRM systems themselves. Doing otherwise may introduce some unintended disadvantages that may not be so apparent. In particular DRM standards may hinder innovation or unwittingly create opportunities for malicious attack on the technologies standardized as they become a fixed target. As a consequence of this, it is essential that any standards for digital rights management must balance the benefit of interoperability to rights holders and consumers against the need both to ensure that technology innovation is not circumscribed and that the technologies are capable of immediate refreshment in the case of malicious attack (for instance by the revision of algorithms).

Given that interoperability for the consumer and the rights holder is of key importance technologies with which the two groups will be intimately involved are primary targets for standardization. Such technologies include identification systems, metadata processes and rights expression languages (REL).

Identification systems and metadata processes are used by both rights holders and consumers. Rights holders use them to identify and describe their content, which consumers use them for discovery purposes. Without consistent, standardized approaches in both these areas, rights holders and consumers will be faced with networks that are difficult to navigate, leading to unsatisfactory user experiences.

In the case of rights expression languages, it is important that rights holders be able to use a single standardized language to express the permissions they wish to grant to users, and need do so only once for all DRM systems supporting this common REL. It is also essential for consumers to be able to be sure that their device will be able to read the permissions that accompany content. In brief, a standardized REL will provide the means by which content owners and consumers can create satisfactory relationships with each other, while leaving the consumer and the rights holder free to chose the rendering and enforcement technologies. This recognition has already been made by MPEG which is developing a single REL specifically to support interoperability among proprietary DRM systems.

In the same way that it is important to understand that standardizing certain aspects of DRM technology will have a chilling effect by limiting innovation, and precluding the optimization of DRM technologies for different types of content.

Optimal solutions are likely to include both hardware and software components, thus combining the advantages of each, such as fast efficient silicon solutions (HW) along with the upgradeability of software based solutions. However, this makes it more difficult to directly create DRM standards, but is well suited to standardizing the interoperability technologies.

Mention has already been made of MPEG, currently the most important focus for the standardization of processes to support digital rights management. Support for MPEG is widespread in the CE, IT and content industries. Other standards initiatives, such as TV-Anytime, and Open eBook Forum, are also crucial to the development of markets for digital content. While it is understood that CEN/ISSS has no intention of supporting the creation of rival standards initiatives, explicit support of MPEG and the other related initiatives is vital to the adoption of the standards under development. The MPEG REL effort was designed to be applicable to any industry and includes mechanisms to easily tailor the REL for each industry. EICTA would welcome any support of such efforts.

5.11.2 European Broadcasting Union

Article 6(4) of the new Copyright Directive seems to imply that copyright exceptions are of less importance in cases where the particular use is controlled by technical means and the user has agreed contractually to such use. For certain exceptions, e.g. ephemeral recordings made by broadcasters, Member States are obliged to ensure - in the absence of agreements or voluntary measures - that a right-holder will provide the means to enable the beneficiary of the exception to perform the particular

(technologically-blocked) act. Therefore, DRM technology should not be used with the purpose or effect of reducing the benefits for broadcasters of any exception or limitation under copyright law.

With respect to such DRM technology which is mainly intended to restrict the traditional exception for private use, and in particular the number of permissible copies that may be made by consumers, e.g. for time-shifting, consumers should be guaranteed of being able to maintain their present opportunities of copying for personal purposes.

5.11.3 European Grouping of Societies of Authors and Composers (GESAC)

Contrary to some assertions, authors' societies are obviously not against and not an obstacle to the development of DRMs. On the contrary, they are willing to negotiate with distributors which use DRMs for their services, and they do so increasingly.

Authors' societies welcome DRMs both as regards their ability to control infringement and their ability to track and monitor uses of works. Authors' societies are also already licensing users which develop new business models based on measures aimed at securing the content and enforcing the usage rules set by right owners. If DRMs are essential to ebusiness, they are also important to collective management societies: in effect, in so far as they are well designed and efficient, such systems will permit a more effective enforcement of licences delivered by collective management societies (CMS) by supporting the process of authorizing the use of works, the granting of fair remuneration in accordance with the licences, and the fight against piracy.

Having said that, GESAC considers that CEN is not the appropriate fora to address issues such as private copying and rights' management regime in the EU. GESAC expressed its opinion on these issues in the framework of other specific DRMs working groups set up by DG "Information Society". These positions can be found on the Commission's following website:

http://www.europa.eu.int/information_society/topics/multi/digital_rights/index_en.htm

5.11.4 European Blind Union

Levies on hardware and on consumables have always been an undiscriminating blunt instrument, and the European Blind Union has always opposed them. Any case in their favour completely evaporates where an effective and fair DRM regime is in operation.

5.12 DRM Uptake - Additional Contributions

Some contributors made additional submissions on DRM Uptake.

5.12.1 ContentGuard

The Internet has spawned a revolution in how content is distributed and services are accessed. Industries that engage in the trade of Intellectual Property as well as those that generate content and services for use or sale are increasing their dependence on network delivery.

This reality, coupled with the search for profitable on-line business models and the increasing availability of broadband services, has fuelled the development of technologies to manage, secure, control, and automate the flow of content and the access to services over the Internet. Internal content distribution, external content distribution, retail content for sale, and on-line services now depend on the Internet to establish cost effective, reliable, flexible, highly available, and secure means of managing the delivery of these assets that are the cornerstone of digital commerce and enterprise communication.

Digital Rights Management (DRM) is the common term collectively associated with such technologies, and the associated workflow is called a DRM or Rights Enabled workflow. A whole new industry is forming around DRM as an emerging technology. The workflows associated with it are finding their way into complementary technologies such as Digital Asset Management, Content Management, and Trust Systems.

If one considers this lifecycle or workflow for digital content and services, one sees that the exchange of rights information is required between the players or entities in the workflow or at each step of the lifecycle. For example, a content user needs to know what rights or permissions are associated with a piece of content. A content distributor or publisher needs to communicate the rights that are available for consumption. An automated content aggregation system needs to know if a piece of content can be published in physical and/or digital format.

ContentGuard also realizes that expressing rights can be simple or very complex. For example, a user may obtain the rights for unlimited play for a music file; a corporate document may have the usage right restricted to certain managerial levels, PCs and/or certain dates. Rights expressions get more complex when one tries to mimic the use and distribution of content in the physical world. For example, specifying the rights that govern the lending of a digital book or the giving-away of an article in an electronic magazine can be very complex.

Furthermore, the current commercial workflow involves distributors or middle entities for almost everything a consumer needs. Specifying the rights for the different entities in this multi-tier workflow is also needed. For example, the usage rights for a piece of content will change as it moves from the creator, aggregator, distributor, retailer, and consumer. Participants in the workflow require the "rights to issue rights" while at the same time adhering to the rights of the consumer according to the laws of the local jurisdiction.

In an end-to-end system, other considerations such as authentication and security become important. For example, you must specify the devices, issuers or users, and the mechanisms to authenticate those entities. A rights specification may be accessed or manipulated by different participants during different stages of its life

cycle, and mechanisms and semantics are needed to validate the authenticity and integrity of the rights expression.

Thus, a common Rights Language that can be shared among the participants in this digital workflow is required. Not only from an obvious interoperability point of view, but more so to comprehend that rights will be manipulated and changed during the digital workflow and lifecycle, and to comprehend system issues such as trust and authentication. The standard or common rights language must also be compatible with the other standards required to complete the DRM framework.

As DRM technologies are developed to support a wide variety of business model and content formats, the rights language supporting the DRM must have wide appeal. Namely, the language must be:

Comprehensive: a language capable of expressing simple and complex rights expressions in any stage in a workflow, lifecycle or business model.

Generic: A language capable of describing rights for any type of digital content or service (an eBook, a file system, a video, or a piece of software).

Precise: a language that communicates precise meaning to all the players in the system.

System Interoperable: a language that comprehends that it a part of a tightly integrated end-to-end system. A language shall support those elements that are required for components to interoperate within the context of an end-to-end DRM system. Authentication and validation of entities, open and standard identification systems, security (including integrity and confidentiality) of the rights expressions themselves, comprehension of emerging web technologies, and being machine-processability are part of this requirement.

The first three requirements relate to how well the rights language communicates arbitrary rights associated with arbitrary business models. The fourth requirement emerges when the language in put into action. System interoperability requirements can be thought of as practical or real-life requirements that have been developed from field and implementation experience.

After a brief and highly inflated start, the DRM industry is currently in a consolidation mode. Mainstream industries are starting to deal with the issue of content and services that are associated with a license or rights. The shifting of desktop-centric applications to web services is an indication of this trend. In addition, increased awareness of digital distribution by the legal entities and the evolution of security technologies such as Public Key Infrastructure are encouraging the commerce of digital assets.

5.12.2 EICTA

DRM technologies create new market opportunities. They allow a range of different types of access to and use of content: sale, rental, stream, download, copy once, twice, or whatever the content owner wishes to specify as business rules - within the

limits of the law and the negotiated agreement with the technology provider (both of which may provide protection for consumer interests). This capability creates new business and market opportunities, and this is why content owners launch new digital content services, using DRM-solutions. DRM-solutions can expand the market for content.

DRMs make a variety of content offerings possible and, if market forces are allowed to work effectively and the rights and expectations of consumers are respected, will also benefit consumers by increasing their choices and allowing them to purchase the goods or services that meet their specific needs. In this context, when consumers purchase, lease or rent content that is protected and managed with DRM technologies, they have by definition paid for all of the rights they receive in their entirety, thereby eliminating, by definition, both the justification and need for copyright levies. This allows the market place to function more effectively, with consumers paying directly only for those goods and services they use.

Similar benefits, of course, flow to content providers. By enabling the market to function more efficiently, both consumers and content providers should benefit as prices should be strongly related to the user's willingness to pay. This can eliminate "missed opportunities" where people forgo accessing content because the price charged is too high for the perceived value of the content. This contrasts the traditional market place today, where a single price is charged to all consumers for identical units of a product regardless of their actual use, and where levies add market-distorting costs based on speculation regarding consumer behaviour.

EICTA believes that the spread of DRM technology can enable consumers to enjoy high quality content in more ways than ever before, and that DRMs can and should increase consumer choice, flexibility and portability with respect to their consumption of entertainment and other copyrighted content. DRMs open up new ways to package and offer content, thereby increasing the variety of goods and services available to consumers, extending from music and video clips subscription schemes, to movies and eBooks clubs, from televised conferences to sporting events.

On-demand delivery may develop over a variety of delivery structures such as the Internet, Cable TV-networks and mobile phones. It is, of course, important that content owners package and protect content in a way that allows consumers to access and enjoy it in a flexible and convenient way, and across multiple devices and platforms. The consumer benefits of DRMs will not, however, be realized if content owners are not subject to genuine market forces. In this context, great care should be taken to make sure that the private monopolies created through copyright laws are appropriately balanced against consumer expectations with respect to the reasonable enjoyment of protected content.

Obstacles: Business/Market-related issues:

The spread of the Internet and related technological developments present both opportunities and challenges for many industries. Like companies in other sectors, the content industry needs to adapt and innovate in order to take advantage of these exciting new opportunities. In this context, DRM technologies should encourage content providers to move into the digital age and offer new, flexible services and

expand consumer choice. DRM technologies must not become the vehicle by which content providers preserve existing business models.

Consumers are ready and willing to move to new content distribution models. Content providers need encouragement and incentive to move forward, as changing an existing business practice or model is often a difficult proposition. The importance of content providers embracing the digital world and new business models simply cannot be overstated. The tools to create compelling new goods and services already exist.

One further barrier to introducing new distribution models for content is the reluctance of some distributors to adopt new business models, and difficulty with moving away from existing business models based on investments in traditional distribution networks. One example is music distribution. The music industry currently depends on the music retailer. Traditional music retailers often see e-music as being in direct competition with their business. This may require content owners to involve the retail community in the introduction of new on-demand business, as a tool to extend and complement their existing market reach.

From a legal and policy perspective, however, actions that slow the natural evolution to e-commerce or otherwise preserve ineffective distribution systems should not be supported. And, although it is important to take into account the impact of the difficulty for some to move to new business models, the solution is to provide incentives to move forward, rather than protection that preserves the status quo.

5.12.3 European Blind Union

Visually impaired people, and those with other reading-related disabilities, face the fundamental problem that material presented digitally and protected by rights management schemes may be totally inaccessible. This may result from the way in which the scheme is designed, or the level of security adopted by the publisher.

This situation runs counter to the interests of content providers, who want their material to reach, and/or be purchased by as many people as possible. It does nothing for the social standing of the IT industry. Above all, it excludes a significant number of people from full participation in society.

Visually impaired people often have to modify the way in which information is presented before they can access it. This can involve:

- Enlarging the size of the characters or graphics displayed

- Altering font or colours

- Providing textual description of pictures, diagrams, moving images or tabular information

- Reading the information across to a synthetic speech device

- Reading the material across to a refreshable Braille display

- Creating hard copy Braille or enlarged print

- Downloading to a dedicated device such as a Braille note taker

All these activities require the information to be manipulated in some way, and DRM schemes generally prevent this.

Visually impaired users are not seeking to alter the content itself, or in any way threaten the moral rights of content providers. They seek merely to alter the presentation of the material to make it accessible.

The SEDODEL project (Secure Document Delivery for Blind and Partially Sighted People), undertaken for the European Commission by the Catholic University of Leuven and other partners and completed in 2000 illustrated that a rights management scheme could be made compatible with a form of access technology. But in the generality this will only happen if an appropriate requirement is incorporated into universally accepted standards.

A separate problem is that the speech facility incorporated into dedicated e-book readers, which might in many instances offer access to visually impaired people, is "disabled" by publishers offering higher levels of security. Thus a facility which would give visually impaired people access to information without any additional or "special" software or hardware is denied them.

If DRM standards and practices do not address these issues, DRM will prove to be a tool for discrimination against disabled people. If it prevents or hinders them form accessing the same material, under the same terms and conditions, as their non-disabled peers, it will be socially unacceptable and will in some cases contravene anti-discrimination legislation.

If, on the other hand, DRM schemes evolve which recognise the individual requirements of each user, and allow appropriate "individualisation" of the end product, they could contribute positively to increasing access to information for people with a reading related disability.

5.12.4 EVA

Standards will increase the effectiveness of rights management in general. EVA would rather prefer a voluntary, industry-led initiative and strongly believe that the initiatives taken by the collecting societies in the field of fine arts have undertaken the appropriate steps to develop an effective system for users and authors.

In the field of works of fine art DRM have not been developed to the same level as for other work categories. This is not due to costs of research and development or low expectations of profit but to the limits of such systems to fill in the gap of unregistered uses and piracy out of the application field of any DRMs. Apparently, this technical problem can not be solved so far.

Remuneration and levies on equipment have to remain in consideration as an effective and consumer friendly solution.

There appears to be a request on the market to receive licences and content in one package. As mentioned above, collecting societies are working in that area to satisfy that request.

Authors and their collecting societies are certainly reluctant to license uses that enable as a side effect abuses without disposing of effective measures to monitor and control. But such situation does not prevent consumers to scan and digitise reproductions of protected works of art that are available on the market in analogue form. The licensing of such uses may be reduced but not the de facto use without license.

5.13   Identification of potential DRM Gaps and potential solutions

During the course of the DRM Group's discussions, the question was raised about potential gaps in protection that exist in today's DRM systems and any potential solution to these.

Contributions were requested to address this issue.

5.13.1 BSA

Digital Rights Management technologies have developed quickly in a relatively short period of time. Only 10 years ago, the technologies which provide its components were little known outside a hadful of technology companies. Since then, the technologies have multiplied and their application across different verticals is beginning to be understood. In particular, it is now becoming clear that "one size does *not* fit all" – that is, most verticals will require their particular sets of technologies and policies, configured in a particular way, to suit their business requirements. For instance, the needs of the entertainment industry are likely to be different from the needs of the scholarly publishing industry, yet both of them, from their different perspectives, require technologies that protect their assets from unauthorised access and allow for the development of new and exciting business models to satisfy consumer demand. The Software industry, which also suffers from multi billions theft of its intellectual property and is currently working to develop new business models, is engaged in rapid development of digital rights management products to meet these challenges.

At the same time as technology and digital rights management applications have been under development, there has been extensive activity in a number of different international standards environments. Whether these initiatives are formal (e.g. ISO/IEC JTC 1/SC 29/WG 11 – MPEG) or consortial (e.g. W3C, TV Anytime), they have become the focus of debate about how the level of standardization of digital rights management technologies can be taken forward. The software industry is of the view that there is a balance to be struck between the need to enable the unfettered development of technology while at the same time enabling the creation of

a baseline level of interoperability in order to ensure that users of digital rights management systems are not "locked-in" to unsuitable or obsolescent technologies.

This balance, essential to all players in the digital rights management environment, requires that a distinction be made between applications and infrastructure. In particular, the former includes technologies that are *not* appropriate for standardization. The selection of such technologies is best left to the market, which will determine which vendor products best suit the needs of consumers and rights owners in various market segments. In addition, these technologies sometimes employ the use of algorithms, where a standard could lead to a situation in which it is not possible to renew a compromised technology without an amendment to the standard, which usually takes many months, even years – which is in many cases unacceptable for users of the standard. Indeed, it is significant that bodies like MPEG, SDMI, OPIMA, etc. took the decision not to create a standard for encryption technologies for digital rights management for this very reason.

The infrastructure technologies, on the other hand, include those technologies which can enable the market driven technologies to interoperate with each other. These technologies support identification and metadata declaration, messaging standards and rights languages, the "glue" that can enable interoperability between vendor technologies. These infrastructure technologies usually do not involve the use of algorithms and consequently are not susceptible to the same kind of attack as application technologies. It is this latter group of technologies that are currently under active, consensual development in standards bodies, such as MPEG.

In this context, the software industry welcomes CEN/ISSS and the EU Commission's effort to identify gaps in interoperability of DRMs technologies and is committed to work towards greater integration of the technologies therein.

5.13.2 EdiMA

During the course of the DRM Group's discussions, the question was raised about potential gaps in protection that exist in today's DRM systems and any potential solution to these.

Non-DRM enabled devices are cut off from DRM protected content. With a vast increase in volume and variety of devices it is very difficult for DRMs to enforce rights, unless they are enforced on the server side. EdiMA will therefore support increased use of DRMs at the server level so as to significantly reduce the "gaps in protection" referred to above.

5.13.3 EICTA

There are certain perceived gaps or elements hindering the deployment of DRMs, which can be addressed by technology, such as the implementation of a central repository of rights as mentioned above. These systems can solve the following issues:

- Private copying: consumers can access multiple copies of their rights downloaded to different devices

- Back-up copy: the right in the central repository of rights system serves as a receipt, in case the consumer device is lost or damaged.

- Sharing, renting, lending: Rights can be shared in a controlled fashion without creating millions of copies. Also libraries can use this concept to lend books.

- Rights are tied to the consumer and not to the device – therefore interoperability between different devices and platforms is achieved – maybe the biggest benefit.

- Content providers view peer to peer piracy as a "gap", and are looking for solutions. The truth of the matter is that there are already sufficient technologies available to ensure that content is delivered to consumers in a protected fashion.

In this context, the threat of "peer to peer" is a red herring regularly used by the content community to advance other agendas. Content providers have primary responsibility to make sure that their early and pre-release content does not "leak" out. In the music world, new protected formats like DVD Audio are available, and online distribution systems offer a wide variety of DRMs to deliver protected content.

The real challenge for content providers is to (i) protect their content before it gets released and (ii) move their business models over to these protected environments. That is the real impediment and issue with peer to peer. Consumer demand needs to be satisfied with legitimate product offerings.

Some content providers, especially broadcasters, perceive "unencrypted terrestrial broadcast" as a "gap" that needs to be fixed. In the US, efforts are underway to deploy a broadcast flag that digital receivers must recognize so that digital content that is supposed to be protected against internet retransmission will be so protected.

In the EU, most broadcast television is delivered in protected or encrypted form. Because that content is delivered in protected form, the protection can be perpetuated throughout the home network as a condition of access. So, in the EU, this does not appear to be a "gap" of the same magnitude, if at all, as it is elsewhere.

The "analog hole" is another area that many content providers claim is a "gap" in protection. Many systems today permit protected content to be output in "unprotected form" over analog outputs, not specifically for our eyes and ears directly, but because of the large number of analog playback devices already in the market (TVs mostly). Some content providers have therefore proposed content marking systems (such as watermarking) intended to protect content after it enters the analog world.

These proposals would, for example, require a computer to scan every file it processes for a watermark, and if it finds that mark, prohibit playback and recording. This kind of approach, however, has extremely broad implications both with respect

to device cost and performance and to the natural evolution of goods and services away from analog to digital.

The real solution to the "analog hole" is not to create broad technology mandates that preserve the analog world, but rather to create incentives for both content providers, device manufacturers AND CONSUMERS, to move away from the analog world and fully embrace the digital world and the possibilities enabled by a protected digital environment. This transition will take some time, but the transition should not be slowed by ineffective, costly and otherwise burdensome technology mandates that may try and close the elusive analog hole.

Efforts to close the so-called analog hole only preserve outdated business models and slow the natural evolution to "all digital" goods and services. Content providers have a very real responsibility in driving the evolution to digital by offering compelling content offerings that provide consumers benefits not possible in the analog world— such as more choice, more flexibility and more portability with respect to the enjoyment of lawfully obtained content. We all need to look forward, not backward.

Promotion of interoperability is important. This can best be achieved at the level of a common Rights Expression Language. This is being worked on by a number of groups involved in the DRM arena. MPEG 21, 3GPP, TV Anytime amongst many others.

In the case of broadcast /broadband transcription gateways are a necessity to deal with the conditional access systems interfacing with DRM systems. Additionally extra work is being carried out to enhance the security of stored content in a variety of forums E.g. (DVD CSS, CPRM, CPPM, SD, MAGIC GATE etc).

Signalling the status of content and other rights management information is being developed E.g. the Broadcast Flag; CCI; CGMS etc to further enable content exchange and distribution within and throughout different broadcast/broadband systems.

5.13.4 ENPA

ENPA identifies a certain number of gaps of DRMs in relation to security, enforcement of copyright rules and other usage rules, prevention of infringement, compatibility with the newspaper publishers business models, ease of use for users, reasonable costs, etc.

"The solution that ENPA suggests are regular and informal discussions between all the stakeholders in order to hear the concerns of each party and progress in the debate, whilst examining the market evolution."

5.13.5 European Blind Union

The glaring gap in current provision is the lack of any serious attempt to address the needs of those with a visual impairment or other disability which affects the way they access information displayed on screen.

5.13.6 EVA

The major gap for DRMs in the field of fine arts is the ease of scanning and digitising of protected works of art from (licensed) analogue reproductions. In nearly every household consumers are able to scan and digitise and distribute through the internet works from illustrations on post-cards and illustrated books everywhere available on the market. The difficulties to track down such uses have been described under 4.2. The dimensions of these unauthorised uses are – depending on the artist – enormous. The estate of Picasso estimated that approximately 4.000 unauthorised copies of "La Guernica" are on the world wide web.

This gap is not of temporary effect but will resist any introduction of efficient DRMs for licensed uses, because post-cards and other analogue items will always remain available on the market. Analogue uses of works of art will always remain attractive to consumers.

5.13.7 IFPI

As said above, the development of DRMs is still at an early stage. Many "gaps" remain concerning the development of DRMs on-line and off-line, the transferability of content, interoperability of technologies and platforms.

The industries concerned are working on solutions and need to continue to do so. Almost all technical progress occurs when industries work together to build voluntary standards and then implement systems that adhere to those standards. This model lies behind the greatest innovations of our time: the computer, the Internet, and DVD. These technologies are sometimes proprietary, sometimes open-standards. They have evolved from the interaction and innovation of the industries participating in the markets.

The recording industry generally favours voluntary agreed measures and prefers to have a good general framework rather than mandated scattered and immature technology.

5.13.8 FEP

FEP understands that there is some resistance from IT industry and software industry to work together with rights holders in order to jointly develop DRM, which will then gain the wide customers' acceptance they deserve. Unless IT industrialists, hardware industry, software developers and rights holders sit together and develop these acceptable solutions, we will miss a great opportunity to offer new ways of reading (in case of publishing). Indeed, DRM might face at the beginning some consumers' resistance as customers have been used to access and use works of the mind for free over the networks. But Napster and other Gnutella are illegal, fraudulent ways of accessing and enjoying protected works and cannot be models. As in the 'real' world, works of the mind have a price and should not be pirated.

5.13.9 MPA

Current DRM systems do not (typically):

- Prevent O/S tampering or rogue device drivers from gaining unauthorised access to protected content, making unauthorised copies, or illegally redistributing copies.[35]

- Ensure protection of the content once it is decrypted and rendered, as it is sent over audio and video signal outputs.

- Support for watermark detection to identify and to respond to: (a) rights information and (b) usage rules.

- Address the problem of the "analogue hole". As noted above, analogue content can easily be converted in to digital form and then subject to widespread unauthorised copying and redistribution.

- Support adequate levels of revocation or renewability.(Note: this is present in some technologies - e.g., DTCP)

Technologically, the solutions to these problems are attainable. What is required is industry consensus and governmental support for the necessary agreement.

5.14   Short term and long term means

Contributors were requested to make suggestions for short-term and long-term means such as voluntary, industry led measures supportive of existing standards initiatives that could promote the interoperability of DRM systems.

5.14.1 BSA

The work of standards initiatives, particularly of voluntary industry-led initiatives, is a vital activity if digital rights management technologies are to be supported by an interoperable infrastructure.

The European Commission recognised this when in 1994 it agreed to support the work of the World Wide Web Consortium. W3C, a classic consortial standards organisation, benefited from the support of the Commission and the results are obvious. XML, a basic Web technology, has been widely adopted and there are now many flavours of language based on the XML syntax. Other standards developed by W3C which have been widely adopted include HTML (the lingua franca for web sites), SMIL (Synchronised Multimedia Integration Language) and CSS (Cascading Style Sheets). Although it cannot be said for certain that without the support of the EC support W3C standards would not have been adopted, there is no doubt that it was of enormous value.

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[35] "Every DRM solution requires some method for storing the keys used to lock and unlock protected information. Today, DRM systems have to store those keys in software, and that represents an inherent vulnerability."
http://www.microsoft.com/presspass/features/2002/jul02/07-01palladium.asp -
Q&A session with John Manferdelli, general manager of the Windows business unit that is building Palladium.

Final
                                                                                          30 September 2003

Members of other standards bodies also work towards adoption of their standards. MPEG, for example, has created industry Forums to promote the standards it creates. Both MPEG-4 and MPEG-7 standards are supported by industry Forums, which exist to bring potential users together and explain the details and application of the standards. However, for nurture and encouragement, these industry Forums require external support, which they receive from industry.

Although one of the main foci for the development of standards for interoperable digital rights management is now MPEG-21, there is as yet no industry forum. But given both the scope of MPEG-21 and its apparent complexity, the creation of an Industry Forum to promote the standards it creates is going to be essential – and has already been informally discussed amongst senior MPEG participants. However, the creation of an industry Forum, involving all the players who participate in the standard and all the potential stakeholders who will benefit from the standard, will be time consuming and will require significant resources. Support for the creation of an MPEG-21 Industry Forum could yield considerable dividends in terms of interoperability (this support could take many forms and need not be financial in nature.)

Such an Industry Forum could:

- Promote the benefits of MPEG-21 standards

- Provide documentation on MPEG-21 standards

- Involve a wider group of players than those who originally created the standards

- Provide a platform for feedback on MPEG-21 standards to inform future amendment and the development of MPEG standards

- Enable the MPEG-21 standard for DRM interoperability become commercially useful.

It should be noted that a number of other initiatives, such as TV Anytime, DVB, the Open eBook Forum and others, are basing their standards on MPEG technology and support for an MPEG-21 Industry Forum could also benefit these important initiatives.

Finally, the software industry also feels strongly that focusing on technology in isolation, and particularly on digital rights management technologies in relation to piracy, will limit the search for solutions to only one aspect of a multifaceted challenge. For any future discussions to accomplish our shared objectives – protecting content, promoting customer choice and fostering innovation – the agenda must be expanded to include other matters of equal importance and other relevant bodies of the EU Commission:

- Initiatives to educate consumers and customers about the harm piracy causes innovators, copyright owners and the economy;

- Encouraging enforcement of existing laws in cases of systematic, widespread distribution of pirated content;

- Exploring avenues to harness the power of the Internet in bringing robust content to consumers;

- Balancing the intellectual property rights of artists and content creators with the lawful needs, including legal concepts such as private use, and emerging expectations of consumers who legally acquire new digital content.

This list of proposed short and medium terms means represents BSA's outline of a productive work program that the Software industry is prepared to support, should the CEN/ISSS and the EU Commission agree to any further discussion that includes these critical components.

5.14.2 ContentGuard

The nature of DRM; its implementation across borderless distribution chains and applicability to the entire life cycle of content, makes it apparent that open, world wide, industry standards are a key enabler for interoperability and commercial success. Industry has come to understand this need for open standards and ContentGuard has identified over a dozen standards bodies, fora and industry groups that are investigating DRM related standards. While these activities are very encouraging, it is important that redundant efforts be minimized. They lead to possible fragmentation, wasted effort and delay in standards formation. It is also important to note that standards are most effective if the parties developing them are also committed to, and capable of, rapid implementation and commercialization.

There is general agreement that a digital rights language standard is one DRM related standard that is critical, and this is where ContentGuard has focused its efforts. It has committed a considerable part of its technical resources to this area. It is ContentGuard's view that significant progress has been made on this Standard and that its completion is in sight. It recommends that the interested parties focus on those standards bodies' efforts that are most broadly based, most comprehensive and furthest along. In its view this is MPEG, followed by OASIS. Other Bodies, such as TV-Anytime, OeBF, SMPTE and 3GPP/OMA should be encouraged to liaison with these and build upon their work (and some have already indicated they are willing to do so). ContentGuard observes that there are many common members in these groups and they are well positioned to enable the needed collaboration. It also believes that while care must be taken to address the needs of all key constituencies, at the same time, standards must be created that are timely, can be quickly deployed and are financially viable.

Government(s) can play an important role in these standards activities, but appropriate and lasting standards are best achieved if they are market driven. The role of government should be to encourage and bring the important parties together, and to support the work of recognized standards bodies. Government should also lead by example, be an early adopter and use its buying power to speed implementation. Governments should resist the temptation to legislate solutions that

create inappropriate "one size fits all" solutions or outlaw innovative new business models.

5.14.3 DWS

All stakeholders should intensify their search for a consensus on open, interoperable and globally harmonized technological content protection standards for effective content protection – depending on industry requirements.

Governments should be involved in facilitating the establishment of such standards among diverse DRM technologies. This might also happen by implementing DRM platforms in internal projects related to eGovernment, eLearning or eLibraries.

5.14.4 EdiMA

Policymakers and regulators should submit to market-led engineering of technology.

Vigilant scrutiny of proprietary standards where they lead to anti-competitive measures should continue so as to ensure a certain degree of interoperability. Competition between big and small players is crucial to the development of the market and open standards could in some way facilitate this.

Where de facto standards arise there must be a critical mass of acceptance from market players as to the positive benefits of the standardisation. If not, public authorities should endeavour to scrutinise the standard to ensure that it is interoperable with others or at least accessible for interfacing technologies and consumers.

5.14.5 EICTA

As mentioned, a requirement in order to achieve interoperability is to deploy a common rights expression language (REL). Efforts are already nearing completion (July 2003) in ISO Working Group 11 in its MPEG 21 to define a common REL. The MPEG-21 REL is extensible and can be amended to cover industry sectors beyond multimedia. Such voluntary, industry-led measures should be fully supported.

Reaching into the longer term is the encouragement of the individual technology vendors and voluntary industry led forums in enabling interoperability with different technologies. Individual technology vendors should be allowed to pursue interoperability on a voluntary market led basis.

5.14.6 ENPA

As ENPA just mentioned in 5.3, discussions between stakeholders will be helpful if we want to progress in the debate.

It also reiterates that voluntary, industry led measures, approved and recognised by newspaper publishers and adapted to their needs would be appropriate if work on standards initiatives is necessary.

5.14.7 FEP

FEP is supporting industry-led standard initiatives and is willing to actively contribute to these. We need interoperable cross-platforms and cross-content, user-friendly, flexible DRM which will allow legal consumption of protected works over the networks. Publishers need DRM systems compatible with content they publish, respect usage rules including copyright. DRM should also be secure and take account of different business models, at a reasonable price.

FEP stresses that even if DRM solutions exist, they are still at an early stage which clearly needs maturation. Furthermore, FEP understand that there is very little market integration for the moment.

FEP believes that standards work should concentrate on the underlying layer of identification and description of content, rights and parties and that the specification of encryption systems should be left to the market.

FEP believes that DRM standards should be industry-led and voluntary and that government legislation in this area would be counter-productive and anti-competitive.

5.14.8 IFPI

The European Institutions, and in particular the Commission, should continue to support programmes like MPEG, which are global frameworks and work on the development of global, interoperable standards.

5.14.9 MPA

The MPA believes that industry-led standards are necessary in order to build interoperable media players and secure DRM systems and address the requirements and gaps in protection mentioned in this submission. However, where agreement on such standards proves impossible or where there is need to enforce such standards (in order to ensure a level playing field and maintain the integrity of system(s)) a governmental role may be required.

5.14.10 Vodafone

Vodafone Group Plc (hereafter 'Vodafone') welcomes the opportunity to contribute to the CEN/ISSS Report on Digital Rights Management. As details of this submission show, Vodafone supports the development of DRM systems, as they shall contribute to the development of content, to the benefit of all stakeholders.

Vodafone believe there is a real need for a DRM standard suitable for distribution of content to both mobile and fixed terminals:

- content providers want to distribute their content to subscribers with some assurances about its use;

- mobile operators and other service providers want to do this for the revenue possibilities;

- mobile users clearly desire this as shown by the very healthy current market for mobile content (ring tones and screen logos).

Vodaphone believes a standard is required for two main reasons. First, so that content providers can distribute content to a large number of terminals with just a single infrastructure (though it is clear they may have to support some existing proprietary solutions for some time). Secondly, a standard is also required so that it can be jointly designed and controlled by all interested parties to avoid the concerns about concentration of control that arise when there are just "de facto" standards.

In particular, Vodafone support the OMA standard for DRM. The existing version of these specifications was specifically targeted at the distribution of the low cost content that is so successfully being distributed to mobile terminals already. It does not provide cryptographic authentication of terminals so may not meet the needs of all the content community but Vodaphone believes it is suitable for distribution of low value content. Vodafone intend that the OMA specification is developed to provide strong cryptographic terminal authentication and give the content community and others the confidence to distribute high value content to terminal supporting the developed standard. Vodafone believe that this goal is shared by many significant companies within the OMA.

Vodafone believe that DRM should develop by means of market–led initiatives, and regulatory authorities should not mandate the support of DRM by media players (as is proposed by the Hollings Bill in the US) nor should they recommend a particular DRM standard. Vodaphone believes that industry is capable of choosing the right solution to meet its needs to distribute content to consumers. The mobile industry is actively and intelligently engaged in producing DRM standards that meets the needs of content providers, distributors, terminal (both mobile and fixed) suppliers and consumers. Mandated solutions will only hamper these efforts.

6 Individual Contributor Conclusions

While the DRM Group as a whole will decide on the final conclusions of the Report, suggestions were requested for what those conclusions might be.

Contributors were requested to provide a rationale for their suggestions which they may include in their contributions to other sections of this Report.

6.1 BSA

Although one of the main foci for the development of standards for interoperable digital rights management is now MPEG-21, there is as yet no industry forum. But given both the scope of MPEG-21 and its apparent complexity, the creation of an Industry Forum to promote the standards it creates is going to be essential – and has already been informally discussed amongst senior MPEG participants. However, the creation of an industry Forum, involving all the players who participate in the standard and all the potential stakeholders who will benefit from the standard, will be time consuming and will require significant resources. Support for the creation of an MPEG-21 Industry Forum could yield considerable dividends in terms of interoperability. (This support could take many forms and need not be financial in nature.)

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- Provide documentation on MPEG-21 standards

- Involve a wider group of players than those who originally created the standards

- Provide a platform for feedback on MPEG-21 standards to inform future amendment and the development of MPEG standards

- Enable the MPEG-21 standard for DRM interoperability become commercially useful.

It should be noted that a number of other initiatives, such as TV Anytime, DVB, the Open eBook Forum and others, are basing their standards on MPEG technology and support for an MPEG-21 Industry Forum could also benefit these important initiatives.

Finally, the software industry also feels strongly that focusing on technology in isolation, and particularly on digital rights management technologies in relation to piracy, will limit the search for solutions to only one aspect of a multifaceted challenge. For any future discussions to accomplish our shared objectives – protecting content, promoting customer choice and fostering innovation – the agenda must be expanded to include other matters of equal importance and other relevant bodies of the EU Commission:

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- Encouraging enforcement of existing laws in cases of systematic, widespread distribution of pirated content;

- Exploring avenues to harness the power of the Internet in bringing robust content to consumers;

- Balancing the intellectual property rights of artists and content creators with the lawful needs, including legal concepts such as private use, and emerging expectations of consumers who legally acquire new digital content.

This list of proposed short and medium terms means represents BSA's outline of a productive work program that the Software industry is prepared to support, should the CEN/ISSS and the EU Commission agree to any further discussion that includes these critical components.

6.2   DWS

There are DRM solutions based on new business models available in the market place in Europe – which seem to gain acceptance by the end consumer, e.g. at www.orange-blue.net

Standardisation of DRM across verticals is complex and should be decided by market forces. Nevertheless, there is a strong need to facilitate interoperability and a general understanding of the framework for the digital content business.

Government should also consider using such DRM platforms in internal projects related to eGovernment, eLearning or eLibraries in order to support the market and educate the public.

DWS supports the rapid development and deployment of effective standard technological measures in order to avoid the proliferation of new copyright levies that could have a potentially negative impact on economic growth, business investments and global competitiveness and potentially undermine remunerative business models.

6.3   European Blind Union – EBU

The European Blind Union fully respects the economic and moral concepts of copyright. However, it is essential in the interests of social justice that information, once published, is available on an equitable basis to all.

To win respect, all control or management systems have to be designed and operated in such a way as to provide the same opportunities for all consumers and to offer content in a non-discrimnatory way. Approaches based on principles of "inclusive design" are of the utmost importance.

The market will not accept solutions that exclude the majority, but the market alone can accept solutions which exclude a minority. We do accept that it would be unhelpful to enforce a particular technological solution through regulation. On the other hand, systems which exclude some users, however inadvertently, do not merit the active protection of governments.

Our specific comments on detailed aspects of this whole issue, to be found elsewhere in this report, illustrate the practical issues that have to be considered if equitable access for blind and partially sighted people – and indeed for other people with a reading-related disability - is to be achieved.

6.4   European Broadcasting Union – EBU

Free-TV broadcasters are looking forward to the availability of DRM solutions for their different operations including traditional broadcasting activities but also interactive TV and on-line services. Some of the solutions listed in the CEN/ISSS DRM report, with a preference for open standards, are being investigated for on-line services. Broadcast services, which are structurally (both technically and operationally) different from on-line services, require different solutions based on open standards for the sake of interoperability in a horizontal market.

From a free-TV broadcaster perspective, DRM solutions are expected to be useful with a view to protect content distribution and related activities, but also to facilitate day-to-day operations such as the management of rights e.g. in collaboration with collecting societies.

There is currently no realistic plan, let alone "business model", for deploying DRM for free-TV broadcasting in the near future. Why? One of the difficulties consists of the necessity for all parties involved to agree on a common definition of DRM, which is well illustrated by the different contributions gathered in the CEN/ISSS DRM report. As an example, one of the definitions proposed for DRM is indeed the definition of conditional access, which is something inherently different from DRM and therefore does not fit! Common understanding is a prerequisite and thus must be improved. This is even truer when this needs to be a cross-sector consensus as it is the case between the broadcasting and Internet worlds about re-distribution of broadcast content on line.

In order to build faster compromise and achieve agreement on common standards for free-TV broadcasting compatible with pay-TV, it can be suggested to tailor technology first to cover immediate needs to combat mass piracy of premium content instead of looking for a "one-fit-all" solution. For that reason, even if closely related, the distinction should be made between "copy protection", "business-to-business and business-to-consumer license modelling" and "management of intellectual property (so called rights)". For example, a full and effective DRM

solution does probably not require   a rights expression language to specify and implement copy protection. However, scalability is required for later adaptation to the evolution of services and equipment e.g. to complement copy protection mechanisms with license modelling tools.

The CEN/ISSS DRM report insists on definitions and implementations but does not sufficiently highlight the requirements from each sector. From a free-TV broadcaster point-of-view, it is vital that DRM solutions:

- avoid the introduction of new gatekeepers
- are compliant with existing or accompanying regulatory measures that may help reducing the piracy threat and/or allow specifying less complex technological measures
- do not lead to an increase in costs for legitimate broadcasting activities;
- are not used with the purpose or effect of reducing the benefits for broadcasters of any exception or limitation under copyright law
- respect the user privacy and do not rely on pervasive access to] providers' sensitive commercial information
- do not perturbate the service experience of honest viewers

In the event that standards can successfully be produced, more will be needed before the technology is implemented:

- Open standards' technology licensing conditions need to be negotiated and accepted. Fair licensing terms and conditions should be granted, in particular for open StandardsThe European Commission has rightly noticed the dangerous shift in the motivations behind the flourishing of patent applications. This is one of the reasons why technology should not be mandated and left to voluntary implementation and market adoption.
- Compliance and interoperability issues need to be properly assessed. Here again, the difference of views reflected in the CEN/ISSS DRM report shows that defining the requirements and accompanying structures may take time.
- Migration from a situation with a large growing base of installed non-compliant digital equipment to a seamless DRM compliant world (if achievable) requires careful attention. Users should be able to afford DRM compliant equipment, particularly as a vast majority are honest users.

Finally, bearing in mind the relative fragility of any digital security system, the CEN/ISSS DRM report should suggest a market survey to be conducted to understand what are the fundamental motivations of piracy. Why does users have such a different appreciation of the value of goods?

6.5 EDiMA

Copyright must be protected. In the digital world, digital rights management technologies can provide this necessary protection

The decision as to which technology should be used to protect copyright in the future should be a market-driven driven decision. The strict enforcement of competition rules should ensure interoperability of different technologies

If standards are deemed to be required with respect to technology, then that standard must only go as far as to deliver a level playing field and should not, in any way, discourage market entrants from entering a given market.

Whichever technology is used to protect content, it should not limit consumer choice and ease of use.

6.6 EICTA

Copyrights have to be protected – legally and technically. DRM is available and is already used today

Standardisation of DRM across verticals is not possible without completely disrupting market forces and the natural evolution of goods and services in the digital revolution. This should be left to market forces.

Nevertheless, there is need for interoperability and a general understanding of the framework for the digital content business.

There are many initiatives which are currently addressing the issue of DRM interoperability in open forums, and normal market forces will dictate which schemes will be adopted by industry as a whole.

Interim solutions such as DRM services aggregation and the use of pseudo or simulated interoperability systems will offer both the content owner and the consumer a route forwards to expanding markets and content availability alike.

There are more efficient ways to ensure compensation of the media industry than through collection societies. DRM technologies can be used to facilitate this process.

DRM-enabled devices should be exempt from levies.

DRM allows a fair compensation along the value chain in contrast to increasing the levy system.

DRM offers content owners the opportunity to explore new and opportunities to deliver their digital assets to the consumer, in ways that will maximise revenues and volume, rate and scope of consumption, on a local, regional and global scale.

6.7 ENPA

ENPA believes that the debate on DRM is still at an early stage and that time is needed to analyze the market. Further discussions and exchanges of views are welcome on this issue in parallel with the market evolution.

As right holders, newspaper publishers would like to find DRM system which is notably compatible with their content, respect usage rules, including copyright. DRM should also be secure and take account of their different business models, at a reasonable price.

The levies should not be questioned if DRM are not able to respond to publishers' needs.

If standards are necessary, they should be industry led initiatives, voluntary, approved and recognised by newspaper publishers and adapted to their needs.

6.8 FEP

FEP is supporting industry-led standard initiatives and is willing to actively contribute to these. FEP needs interoperable cross-platforms and cross-content, user-friendly, flexible DRM which will allow legal consumption of protected works over the networks.

FEP believes that standards work should concentrate on the underlying layer of identification and description of content, rights and parties and that the specification of encryption systems should be left to the market.

FEP believes that DRM standards should be industry-led and voluntary and that government legislation in this area would be counter-productive and anti-competitive.

6.9 IFPI

DRM is developing slowly but surely. Overall, the services are growing both in availability and capability, although adoption by the market is still at a very early stage. It is however anticipated that authorised and secure online distribution will gain increasing market penetration and provide new opportunities and consumer benefits. The music industry participates actively in International forums such as MPEG. It encourages the European Institutions to continue to support such global frameworks and work on the development of global, interoperable standards. The recording industry supports Governments facilitating, in a reasonably expeditious manner, the development of open and globally harmonised technological protection standards.

6.10 MPA

Following a full review of the submissions and information gleaned from the different significant parties, the CEN/ISSS Forum DRM Group Report could carefully document the different DRM initiatives and technologies, the various positions in respect of the issues raised by the outline and identify the gaps in protection. Where agreement on the establishment of a DRM secure environment for the digital delivery of copyright works and the plugging the current gaps in protection continue to elude

industry, the government has role to play to address what can only be characterised as market failure. The Commission and CEN/ISSS should be able to contribute to this process.

6.11 AIDAA

Objections may be raised not only that despite many years of research DRM systems need to be further developed for them to be truly applicable in practice, but also that hitherto all copying prevention systems have sooner or later been proved capable of being bypassed. Even should such individual counting systems actually be introduced, they will never be a complete substitute for lump-sum remuneration on private copying. As long as analogue television exists, copies of broadcasts will be made that cannot be subjected to any individual counting system. Moreover, only major producers with extensive catalogues and the logistics to go with them will be able to procure such expensive technology. DRM systems will be of little benefit either in the short or medium term to authors, producers and performers, who are accustomed to their rights being administered by collecting societies. As far as authors and performers are concerned, there is a major risk that such systems will leave them empty-handed. Finally, in the field of consumer protection, warnings have been sounded concerning possible misuse of data, since individual accounting would encourage individual use profiles and preferences to be established.

AIDAA is of the view that it is essential to maintain the lump-sum levy on blank media. Owing to the fact that works and protected services are more and more frequently copied directly on to hard disks (rather that on to traditional media), a private copying levy should also be established to this recording material in these cases. Is this context it would perhaps be acceptable to run the lump-sum and individual remuneration systems in parallel. What is unacceptable is that lump-sun systems which have stood the test of time be abolished, to be replaced by DRM individual-counting technology which is not yet applicable and begs a wide range of questions.

Furthermore, the 2001 EU directive on the information society expressly states that both systems are acceptable

6.12 GESAC

As a conclusion, GESAC wishes to underline the following points:

• In general, authors' societies wish to use relevant and appropriate DRMS, which could be, as long as they work efficiently and cost-effectively, a useful tool to assist and enhance the management, administration and enforcement of the rights they are vested in or represent.

- Authors' societies are themselves actively developing DRM components for managing rights (WID, ISWC, ISAN, ISTC, ARGOS, FAST TRACK, NORD-DOC for example) in order to respond to the challenges of the digital world.

  Authors' societies are also actively participating in international fora (Music Industry Integrated Identifier Project - MI3P, MPEG 21 in the framework of ISO) in order to promote the development of common, interoperable and secure standards able to respond to their needs for managing, administering and enforcing the rights they represent.
- In the work they do for authors, societies carry out a number of different functions, some of which could be enhanced by DRMS but some of which DRMS do not address.

- DRMS should not be promoted against collective management, but developed in cooperation with collective management societies (CMS).

- Right-owners obtain a greater benefit from DRMS through collective management : right-owners have a stronger input in the development of worldwide standards when their views are voiced by CMS; collective management provides right-owners access to economies of scale with respect to administration costs and investments in research and development; by allowing a more effective fight against piracy.

- DRMS do not give right-owners all the benefits of membership of a CMS, e.g. bargaining power in order to ensure that they receive adequate remuneration from users more powerful than them; verifying and enforcing that correct royalties have been paid; help, through providing an easy system for obtaining licences and through cultural initiatives to stimulate and promote the growth of new works in different cultures, which helps to provide a wider choice for consumers; social and legal assistance.

7 Contributors

7.1 Association of Commercial Television

The commercial television sector is today at the leading edge of European expertise in programme creation and editing, rights acquisition and programme distribution. In this sector, the ACT is a unique force for discussion and for proposals both in the regulatory field and in the establishment of Community support initiatives with regard to production/distribution both in the Internal Market as well as in exports.

ACT is consulted on a regular basis by the Community Institutions on all questions impacting on the future of the Audio-visual sector in Europe. The European Audio-visual Conference in Birmingham (April 98), organised around the theme "Challenges and opportunities of the digital age" provided the platform for the ACT to elaborate the industrial challenges taken up by the private television sector in Europe today.

ACT currently works to represent the commercial sector's interests in the following areas:

Advertising and e-commerce
Intellectual property
Competition and public sector broadcasting
Media ownership
Audio-visual policy
New services
Protection of minors
Sports

In addition to the organisation's work at the EU institutions, ACT actively represents the interests of the commercial broadcasting sector as an Observer at the Council of Europe. ACT also participates (as an Observer) in the work carried out by the World Intellectual Property Organisation (WIPO). ACT is also an Observer at the DVB (Digital Video Broadcasting) and works with the European Audio-visual Observatory, the European Advertising Tripartite and the Advertising Information Group as well as with the European Services Forum.

www.acte.be

7.2 BSA – Business Software Alliance

Promoting a safe and legal online world.

The Business Software Alliance (BSA) is the foremost organization dedicated to promoting a safe and legal online world.

BSA are the voice of the world's software, hardware and Internet sectors before governments and with consumers in the international marketplace. BSA members represent the fastest growing industries in the world. BSA member companies represent the fastest growing industries globally and BSA are committed as an

organization to promoting a safe and legal online world. BSA's top priorities include enhancing trust and security in cyberspace, reducing software piracy, promoting strong policies for intellectual property protection and free trade, and educating the public about sound software management practices.

Established in 1988, BSA has programs in 65 countries worldwide.

www.bsa.org

7.3   ContentGuard

Launched in April 2000, ContentGuard conducts its operations in Bethesda, MD, and El Segundo, CA. The company is owned by Xerox Corporation, (NYSE:XRX), with Microsoft Corporation holding a minority position.

The company's broad foundation patent portfolio concerning the distribution and management of digital works (content or services), including the use of a rights language, and its right language, XrML, were originally developed at the Xerox Palo Alto Research Center (PARC).

These core technologies enable the efficient creation of DRM applications, simplify the digital distribution process and increase revenue opportunities for content or service providers deploying varied business models, while protecting their intellectual property.

The company is focused on creating a single worldwide standard Digital Rights Language. It believes that such a standard will enable interoperability across DRM systems for digital content or services, including web services. Towards this end, ContentGuard has contributed XrML to numerous standards bodies and provides technical expertise in support of their work.

ContentGuard licenses its technology to companies developing software and systems to distribute and manage digital works. It also develops and licenses tools to help companies implement systems using XrML. Sony recently licensed ContentGuard's patent portfolio and is exploring the use of XrML.

www.contentguard.com

7.4   Digital World Services

Digital World Services is the only content-neutral and DRM independent solutions provider for securing and delivering digital content including music, publishing, video, games and software. Digital World Services simplifies the digital distribution process for the content provider, retail network and consumer while honoring the owners' content usage preferences, delivering the content rapidly, and ensuring satisfaction for all participants throughout the process.

Digital World Services is part of Arvato Storage Media, a Bertelsmann Company – the media expert with a long history of unprecedented success in managing content on a global scale. Because of its unequaled access to resources and experience

throughout the entire media value chain, DWS expertise goes beyond Digital Rights Management – DRM. The company understands content, good user experience, and client business needs.

DWS Bertelsmann Arvato partners include

- BMG Records; RCA; Arista; Windham Hill (Music)
- Random House; Doubleday; Gruner & Jahr; Little, Brown and Co.(Publishing)
- Sonopress (Manufacturing and Content Preparation)
- LYCOS, barnesandnoble.com, CDNOW (Internet business partners)

www.dwsco.com

DWS is actively participating in the following organizations, which are related to DRM standards:

Open Mobile Alliance (OMA)

Created through the consolidation of the WAP Forum and the Open Mobile Architecture Initiative, this is a group of companies that have come together to develop and promote open standards and interoperability in the mobile industry.

Third Generation Project Partnership (3GPP)

An organization bringing together a number of telecommunication standards bodies. Their original scope was to develop the technical specifications for a third generation network. They are now going on to address a number of additional areas including digital rights management.

Moving Pictures Experts Group (MPEG)

A working group of the International Organization for Standardization (ISO) in charge of the development of standards for coded representation of digital audio and video data. In addition to developing the MPEG1-4 standards including MP3, they are looking at related issues such as digital rights management.

Open eBook Forum (OEBF)

A trade and standards organization devoted to establishing specifications and standards for electronic publishing.

7.5   European Blind Union

The European Blind Union is a non-governmental and non profit-making European organization founded in 1984. It is one of the six regional bodies of the World Blind Union, and it is the only organization representing the interests of blind and partially-sighted people in Europe.

EBU aims to protect and promote the interests of blind and partially-sighted people in Europe. Its objects and powers are set out in Article II of its Constitution. EBU currently has 44 member countries, each represented by a national delegation. Its work is directed by an Executive Board composed of 11 elected members who are accountable to a General Assembly held every four years.

The detailed work of EBU is carried out by 14 Standing Commissions and by Expert Working Groups, whose areas of activity reflect the major interests of EBU.

The Central Office of EBU is based in Paris. It is responsible for communication within EBU and for information of the general public. It produces a quarterly Newsletter in English, French, German and Spanish. The English version is also available in accessible formats (tape and braille).

www.euroblind.org

7.6   European Broadcasting Union

The European Broadcasting Union (EBU) is the largest professional association of national broadcasters in the world. The Union has 71 active members in 52 countries of Europe, North Africa and the Middle East, and 45 associate members in 28 countries further afield.

The EBU was founded in February 1950 by western European radio and television broadcasters. It merged with the OIRT - its counterpart in Eastern Europe in 1993. Working on behalf of its members in the European area, the EBU negotiates broadcasting rights for major sports events, operates the Eurovision and Euroradio networks, organizes programme exchanges, stimulates and coordinates co-productions, and provides a full range of other operational, commercial, technical, legal and strategic services. At its office in Brussels, the EBU represents the interests of public service broadcasters before the European institutions.

The EBU works in close collaboration with sister unions on other continents.

www.ebu.ch

7.7   EDiMA

EDiMA's mission is to contribute to the creation of a business and legal environment in Europe that encourages new media companies to deploy innovative technologies that support the promotion, sale and protection of digital copyrighted content.

EDiMA is the first alliance of digital media and technology companies in Europe, representing the interests of new media entrepreneurs in policymaking, standards developments and industry co-operative activities, through comprehensive information about the potential for economic and artistic development and growth in the new digital industries.

EDiMA serves as a lobby entity, on behalf of its members, on all issues that impact their business such as copyright issues, music licensing, competition law, taxation of digital music sales Some decisions may impose substantial technical and financial burdens on on-line music companies, and may adversely affect the growth of the online music market. EDiMA therefore acts in order to influence the resolution of these issues in a way that preserves the interests of on-line music companies.

www.edima.org

7.8   EICTA

EICTA - European Information, Communications and Consumer Electronics Technology Industry Association - combines 44 major multinational companies as direct members and 29 national associations from 19 European countries. EICTA altogether represents more than 10,000 companies all over Europe with more than 1.5 million employees and revenues of over 190 billion Euro.

EICTA works to improve the environment in which its members do business. It seeks to:

- Accelerate industry growth and prosperity in the European Union
- Present its industry's agenda to the EU Institutions, namely the European Commission, the Parliament, and through its network of national associations to the Council and the governments in all EU Member States
- Raise general and public awareness for the importance of its sector for growth, job creation and the development of the information society
- Inform its members about actual policy developments at EU level

EICTA member companies are involved in the following standards groups:

- *Open Mobile Alliance*

   www.openmobilealliance.org

- *ECMA - Standardizing Information and Communication Systems*
  Technical Committee TC31 - Optical disks and disk cartridges

   www.ecma.ch

- *Internet Digital Rights Management Group (IDRM); IRTF within IETF*

   www.irtf.org/charters/Digital-Rights-Management.html

- *MPEG-21*

   http://www.itscj.ipsj.or.jp/sc29/

http://mpeg.telecomitalialab.com/

http://www.jtc1tag.org/

http://www.iso.ch/iso/en/ISOOnline.openerpage

- *Open eBook Forum*

  www.oebf.org

- *TV Anytime*

  www.tvanytime.org

- *IEEE/LTSC*

  www.LTSC.IEEE.org

www.eicta.org

7.9 ENPA

ENPA -The European Newspaper Publishers' Association - is a non-profit organization currently representing some 3.200 daily, weekly and Sunday titles from 21 European countries. More than 91 million copies are sold each day and read by over 240 million people.

ENPA works towards ensuring a sympathetic European legislative and economic environment, as these are indispensable conditions for the development of an independent newspaper industry.

ENPA in particular is concerned with strengthening and defending the freedom of the press both editorial and commercial, as fundamental rights.

ENPA supports access to information and the plurality of media, stressing that these are essential to a healthy democracy.

ENPA is service-orientated and provides a comprehensive information network for its members from which also officials in the European Union and the Member States can benefit.

ENPA aims to facilitate the exchange and transfer of know-how and ideas to its members and related organisations alike.

www.enpa.be

7.10 EVA

European Visual Artists (EVA) is an European economic interest group incorporating copyright and collecting societies for the visual arts in Europe.

Its members represent approximately 50.000 fine artists, photographers, designers, architects and other creators of visual works.

The members of EVA administer copyrights for these authors, licence uses and collect remunerations which are distributed to the artists and other right holders.

These societies were in general founded by artists themselves and their professional associations in order to create a body that ensures that artists benefit when their works are exploited by others. The activities are not profit making and most societies provide social funding for artists in need and funding for creative arts projects.

EVA represents the economic interests of the members throughout Europe and in particular concerning the pending legal projects in copyright within the EU. EVA also defends the author's moral rights, not only because of the economic impact these rights have. Finally EVA represents its members on the international level.

www.europeanvisualartists.org

7.11 Federation of European Publishers

The Federation of European Publishers is the trade association representing national book and learned journal publishers associations of the 15 Member States of the European Union and of Czech Republic, Cyprus, Hungary, Norway and Slovenia. Founded in 1967, the FEP is the voice of the great majority of publishers in Europe. FEP deals with European legislation and advises publishers' associations on copyright and other legislative issues.

FEP works in close collaboration with the European Institutions to ensure that high quality European content is available to European consumers and also to international markets. Publishers play a vital role in ensuring that content has a high standard. FEP encourages the Institutions of the European Union to implement positive policies for European publishing, to promote the competitiveness of European publishing and to underpin European educational standards and Europe's cultural identity by ensuring by every means the widest availability of books and learned journals.

In a Europe, where functional illiteracy is still affecting more than 10 % of the population FEP members and the publishers they represent, plead for effective reading policies which could reduce social divisions. This could help Europeans better to access the information society, employment opportunities and the advantages of the electronic world.

In 2001, the annual sales revenue of book publishers within the EU was approximately €20.451 million. This indicates a growth of 2.9% since a previous survey taken two years ago. Sales of educational books at all levels, including

dictionaries, encyclopaedia, reference and professional books amount to €8.382million, or 41% of the total A total of 472,300 new books or new editions are issued by publishers (a decrease of 5% on the previous survey). The number of titles available from publishers throughout the EU is not less than 3,530,000 (an increase of approximately 6% since the previous survey).

www.fep-fee.be

7.12 GESAC

GESAC is a European grouping comprising 24 of the largest authors' societies in the European Union, Norway and Switzerland. In this capacity it represents over 480 000 authors or their successors in title in the music, graphic and plastic arts, literary and dramatic fields, as well as the audiovisual sector and music publishers.

http://www.gesac.org

7.13 International Association of Audiovisual Writers and Directors

The International Association of Audiovisual Writers and Directors (Association Internationale des Auteurs de l'Audiovisuel – AIDAA) is a confederation of collecting societies, unions and professional organisations representing both writers and directors in the audio-visual industry. At present, it comprises 23 Authors' Societies and 21 Authors' Associations in 26 countries.

Since its foundation, AIDAA has set out to strengthen the position of writers and directors in the audio-visual sector. With this aim in mind, it has launched a series of initiatives to secure better protection for European authors of their moral and economic rights.

Both the Directors' Guild and the Writers' Guild of America are members of and work closely with AIDAA. AIDAA has also developed a close relationship with professional associations in Eastern European Countries.

7.14 International DOI Foundation

The Foundation was created in 1998 and supports the needs of the intellectual property community in the digital environment, by the development and promotion of the Digital Object Identifier system as a common infrastructure for content management. The Foundation is a registered not-for-profit organization, controlled by an Executive Board elected by the members of the Foundation.

The activities of the Foundation are controlled by its members. Membership is open to all organizations with an interest in electronic publishing and related enabling

technologies. The Foundation also welcomes comments and participation from non-members. Much of its work is informal, via e-mail and discussion groups; please feel free to contact me directly or sign up to one of its e-mail lists to join its activities.

Since beginning its work, the Foundation has created a system which integrates a persistent identifier of intellectual property entities (creations), a reliable resolution system, and associated metadata which enables the construction of services in the digital environment. The DOI is now being used in large scale implementations, with more applications under development.

The Foundation also works closely with many organisations and activities in the intellectual property, technology, and standards communities, and acts as a focus for discussions and a common interface from its membership to these efforts.

www.doi.org

7.15   International Federation of the Phonographic Industry

IFPI is the organisation representing the international recording industry. It comprises a membership of 1500 record producers and distributors in 76 countries. It also has national groups in 46 countries. IFPI's international Secretariat is based in London and is linked to regional offices in Brussels, Hong Kong, Miami and Moscow.

IFPI's priorities

- Fighting music piracy
- Promoting fair market access and adequate copyright laws
- Helping develop the legal conditions and the technologies for the recording industry to prosper in the digital era
- Promoting the value of music in the development of economies, as well as in social and cultural life

www.ifpi.org

7.16   MPA

The Motion Picture Association of America (MPAA) and its international counterpart, the Motion Picture Association (MPA) serve as the voice and advocate of the American motion picture, home video and television industries, domestically through the MPAA and internationally through the MPA.

Today, these associations represent not only the world of theatrical film, but serve as leader and advocate for major producers and distributors of entertainment programming for television, cable, home video and future delivery systems not yet imagined.

Founded in 1922 as the trade association of the American film industry, the MPAA has broadened its mandate over the years to reflect the diversity of an expanding industry. The initial task assigned to the association was to stem the waves of criticism of American movies, then silent, while sometimes rambunctious and rowdy, and to restore a more favorable public image for the motion picture business.

The Motion Picture Association of America (MPAA) serves its members from its offices in Los Angeles and Washington, D.C. On its board of directors are the Chairmen and Presidents of the seven major producers and distributors of motion picture and television programs in the United States. These members include:

Walt Disney Company;

Sony Pictures Entertainment, Inc.;

Metro-Goldwyn-Mayer Inc.;

Paramount Pictures Corporation;

Twentieth Century Fox Film Corp.;

Universal Studios, Inc.; and

Warner Bros.

www.mpaa.org

7.17   IPR Systems

IPR Systems is an Australian company, delivering next generation IP Asset Management technology, with software to help customers realise the full value of their digital material. All types of material - books, publications, research, film, video, music, and photographs - can be managed through IPR Systems technology.

The company has developed the Open Digital Rights Language (ODRL) initiative as an international effort of Supporters aimed at developing an open standard for the Digital Rights Management sector and promoting the language at numerous standards bodies.

The ODRL specification supports an extensible language and vocabulary (data dictionary) for the expression of terms and conditions over any content including permissions, constraints, obligations, conditions, and offers and agreements with rights holders.

The ODRL specification is freely available and has no licensing requirements.

www.odrl.net

7.18 Sony

In August 2002 Sony Corporation announced "OpenMG X", a digital rights management (DRM) and distribution technology which is used for various types of products and devices. The technology intends to play a key role in as market for music and movie content downloaded via the Internet expands. "OpenMG X" flexibly adapts to the distribution of content to PCs, as well as services which distribute content directly to AV and mobile devices. With this technology, the usage conditions for content can be controlled from the distributor's end and hence, content distribution can be secured from the beginning to the end of the service. This technology will be promoted widely to music labels and other music/content distribution companies to use as a core technology for protecting their content.

In the future, Sony estimates that the following capabilities will be required for DRM (Digital Rights Management) in expanding the digital content distribution business:

- Flexibility in order to accommodate various distribution methods, such as the Internet and packaged media.

- Adaptation to different types of media content (music, video, etc.)

- Installation not only on PCs, but also on networked devices such as PlayStation 2, AV devices, and mobile devices.

In 1999, Sony developed a technology called "MagicGate", which is used to mutually authenticate PCs and portable audio players and to prevent illegal copying when contents are transferred from one to the other, using the semiconductor recording media, "Memory Stick". Sony has commercialised several products including the Network Walkman which are compatible with this technology. At the same time, "OpenMG Jukebox", a content compression, management, and playback technology installed in PCs, has been developed to restrict illegal copying of music content from CDs and the Internet. This application is pre-installed in VAIO and is compatible with Sony's portable audio players. Furthermore, in May 2001, Sony announced "OpenMG Light", a digital rights management and distribution system for mobile products such as cellular phones and PHS phones. Sony also aims to energize the music download service market with "Net MD", a system which transfers music content from PCs to MD players through a high speed USB cable, while restricting illegal copying of music content.

www.sony.com

7.19 Vodafone

Vodafone is one of the world's largest mobile telecommunications network companies. Vodaphone helps people find information, entertainment or assistance wherever they are.

Over the past few years Vodaphone has worked hard to build a company capable of delivering innovative and compelling mobile services to all its customers throughout the world.

Right now, Vodaphone is introducing new mobile services that will make Vodafone an even more important part of its customers' lives. These services will enable everyone to communicate, manage, organise, pay, play and experience life on the move, as part of a full-colour, fun, mobile world.

Its innovative services will open up a new world of communication for its customers, bringing news, information, e-mail, chat, location-based services, games and shopping to people's mobile devices.Vodaphone's customers will be able to send picture messages, chat online with friends, send e-mails, play interactive games, pay for downloads, access their business applications and use a whole range of compelling services.

Investments Vodaphone has made in its network and in new technologies mean it will lead the way in defining mobile data services across the world.

Vodafone supports the developments of DRM systems, as they shall contribute to the development of content, to the benefit of all stakeholders. We believe a standard is required, but that developments should be market-led. In particular, Vodafone supports the OMA standard for DRM and is actively involved in its work.

8 Annexes

All contributions from which the main body of the Report has been summarised will be included **in their entirety** in annexes.

Annex A

Membership of the CEN/ISSS Digital Rights Management Group

NAME	COMPANY	COUNTRY
Brian ADKINS	Information Technology Industry Council	United States
Francisco AGUILERA	SGAE	Spain
Claire Alexandre	Vodafone Group Services Ltd	Belgium
Josée AUBER	HEWLETT-PACKARD FRANCE	France
Stephen BALOGH	Intel Corporation	Belgium
Eric BAPTISTE	CISAC	France
Chris BARLAS	RIGHTSCOM	United Kingdom
Marie-Louise BARTH	Bertelsmann AG	Germany
Anne BERGMAN-TAHON	Federation of European Publishers	Belgium
Stephanie BORDARIER	ETSI	France
Jan BORMANS	IMEC/MPEG	Belgium
Claude BOULLE		France
Karl BROOKES	Sony European Technical Standards Office	United Kingdom
Willms BUHSE	Bertelsmann Digital World Services	United States

NAME	COMPANY	COUNTRY
André CHAUBEAU	F.I.A.P.F.	France
Yves CHAUVEL	ETSI Secretariat	France
Eddie CHEN		United States
Leonardo CHIARIGLIONE	Telecom Italia Lab (Multimedia Division)	Italy
Giulia CIPRESSI	CEN/ISSS	Belgium
Jenny CLARK	RNIB	United Kingdom
Annabella COLDRICK	Europe Analytica	Belgium
Eric CORNEZ	CENELEC/CS	Belgium
Joao CORREA	AIDAA - International Association of Audiovisual Writers and Directors	Belgium
Lucy CRONIN	EDIMA - European Digital Media Association	Belgium
Louisa CROWSON	RNIB	United Kingdom
Frederic DAMBLE	TVAF	United Kingdom
Pierre-Yves DEFOSSE	Belgacom	Belgium
Jaime DELGADO	UPF	Spain
Cécile DESPRINGRE	SACD	France
Severine DUSOLLIER	University of Namur (BE)	Belgium
Thomas EHRGOOD	Compaq Computer Corporation	United States
Siada El Ramly	EICTA	Belgium
Rita ESEN	CyberLaw Services	United Kingdom
Jean-Pierre EVAIN	EBU (European Broadcasting Union)	Switzerland
Timothy FENOULHET	EC - DG Infsoc - Unit 1	Belgium

NAME	COMPANY	COUNTRY
Kevin FISHER	Intel Corporation (UK) Ltd	United Kingdom
Katrin GAERTNER	Bertelsmann AG	Belgium
Brad GANDEE	ContentGuard, Inc.	United States
Paloma GARCIA LOPEZ	AENOR	Spain
Chiara GIOVANNINI	ANEC	Belgium
Bruce GITLIN	CONTENTGUARD Inc.	United States
Eddy GORAY	RTBF	Belgium
Brian GREEN	EDITEUR	United Kingdom
Patrick GRÜTER	The Walt Disney Company	Belgium
Teresa HACKETT	EBLIDA	The Netherlands
Marc HANSEN	Latham & Watkins	Belgium
Matthew HARRISON-HARVEY	Vodafone Group Services Ltd	United Kingdom
Frank HARTUNG	Ericsson Eurolab Deutschland GmbH	Germany
Mikael HERTIG	Nensome ApS Denmark	Denmark
Andrew HINCHLEY	CPL Consulting	United Kingdom
Lindsay HOLMAN	Panasonic OWL	United Kingdom
Barbara HOOGLAND	IFPI	Belgium
Verina HORSNELL	Sun Microsystems Ltd	United Kingdom
Cécile HUET	EC - DG Infsoc - Unit 1	Belgium
Cécile JALLET	Ministère de la Culture/Direction du livre et de la lecture	France
Jens-Henrik JEPPESEN	Intel Corporation	Belgium
Laurence KAYE	European Publishers	United Kingdom

NAME	COMPANY	COUNTRY
	Council (EPC)	
Steve KENNY	Dutch Data Protection Authority	The Netherlands
John KETCHELL	CEN/ISSS	Belgium
Balazs KIACZ	ETSI	France
Panos KUDUMAKIS	CRL	United Kingdom
Olivier LAFAYE	Thomson Multimedia	France
Erik Lambert	Association of Commercial Television (ACT)	Belgium
Trent LARSON	IBM	United Kingdom
Lars-Göran LARSSON	Ericsson European Affairs Office	Belgium
Philippe LE CLECH	Savoir-Faire & Cie	France
Anne LEHOUCK	EC DG Enterprise	Belgium
René LLORET	CISAC	France
Roland LOUSKI	Info2clear NV-SA	Belgium
Kazuyoshi MAEKAWA	Fujitsu Limited	Belgium
John MALKINSON	Vivendi Universal	Belgium
David MANN	European Blind Union Copyright Working Group	Ireland
Chris MARCICH	MPA (Motion Picture Association)	Belgium
Dean MARKS	AOL Time Warner	United States
Dave MARPLES	TV-Anytime	United Kingdom
Francisco MARTINEZ CALVO	ONCE	Spain
Catherine MATTENET	AFNOR	France

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NAME	COMPANY	COUNTRY
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Johannes MESSER	IBM Deutschland GmbH	Germany
Meinolf MEYER	Digital World Services	Germany
Francisco MINGORANCE	Business Software Alliance	Belgium
Michael MIRON	CONTENTGUARD, Inc	United States
Josiane MOREL	APPLE	Belgium
Michael NIEBEL	European Commission -DG INFSO C	Belgium
F.X. NUTTALL	FX Nuttall Consulting/ CISAC	France
Danny O'Brien	STAND	United Kingdom
Gerd OCHEL	ETSI Secretariat	France
Marilyn Oldershaw	Royal National Institute of the Blind (RNIB)	United Kingdom
Peter OSBORNE	RNIB	United Kingdom
Angela PAN	Microsoft Corporation	United States
Simon PARNALL	TVAF	United Kingdom
Sylvia PETTER	ITU	United Kingdom
Johnny PRING	GERA-Europe Secretariat	Belgium
Isabelle PROST	GESAC	Belgium
Olivia REGNIER	IFPI	Belgium
Karin RETZER	Morrison & Foerster	Belgium
Reetta RIIKONEN	TIEKE	Finland
Ann-Sofie Rönnlund	Nokia Corporation	Belgium

NAME	COMPANY	COUNTRY
Heather ROSENBLATT	AIDAA	Belgium
Soichiro SAIDA	LockStream Corporation	United Kingdom
Julie SAMNADDA	EC - Internal Market	Belgium
Cesar Fernando SANTOS GIL	EC - DG Entr. - Unit D4	Belgium
Seth SCHOEN	EFF (Electronic Frontier Foundation)	United States
Corinna SCHULZE	European Commission - DG INFSO	Belgium
Sophie SCRIVE	ENPA	Belgium
Frances Seghers	Sony Entertainment EC Affairs	United Kingdom
Ted SHAPIRO	MPA (Motion Picture Association)	Belgium
Arni SIGURDSSON	Digital World Services	Germany
Alessandra SILVESTRO	AOL Time Warner	Belgium
Théodora STAMOS	Belgacom	Belgium
Sheri STEELE	EFF (Electronic Frontier Foundation)	United States
Roland STRAUSS	Siemens AG	Belgium
Carola STREUL	EVA, European Visual Artists	Belgium
Jean STRIDE	BSI	United Kingdom
David SWEENEY	Vivendi Universal	Belgium
Jane THACKER	National Library of Canada	Canada
karita Thomé	SIS	Sweden
Charlotte THORNBY	Sun Microsystems Inc	Belgium
Johannes THORSTEINSSON	EFTA Secretariat	Belgium

NAME	COMPANY	COUNTRY
James THURSTON	Information Technology Industry Council (ITIC)	United States
Stephane TRONCHON	ETSI Secretariat	France
Steve TYLER	Royal National Institute for the Blind	United Kingdom
Jenny VACHER	ICMP/CIEM	France
Jan VAN DEN BELD	ECMA	Switzerland
Marta VILLAR	Hewlett-Packard	Belgium
Walo VON GREYERZ	Telefonaktiebozaget LM Ericsson	Sweden
Petra Wikström-Van Eemeren	Association of Commercial Television (ACT)	Belgium
Barney WRAGG	Universal Music Group eLabs London	United Kingdom
Irene ZAFRULLAH	Simmons & Simmons	Belgium

Annex B – Terms of Reference

Document status

Agreed at the third CEN/ISSS Forum DRM Group Meeting, on the 7th of March 2002, previous DRM2(02)02Rev.2.1; new issue of the document on the 30th of June 2002, document DRM5(02)05.

Description

Final
30 September 2003

The Group is formed to conduct a study into Digital Rights Management (DRM) and to prepare a Report as suggested by the European Commission, with a view to identifying the current status of DRM usage and possible means to ensure effective implementation of DRM in the marketplace.

Objectives

1 To develop an inventory and database of all worldwide significant parties, companies, organizations and other involved bodies relating to the development, control, monitoring, consumption and exploitation of DRM technologies, and to seek and obtain input from same regarding the subjects under study.

2 To investigate and to document current DRM technologies in the online/offline delivery of digital content.

3 To examine the level to which DRM has currently been implemented in the delivery of digital content, and to further identify all significant effects, including those effects relating to market or technology issues that currently and potentially accelerate or hinder the implementation of DRM in the marketplace. The study can, where appropriate, suggest short-term and long-term means such as voluntary, industry led measures supportive of existing standards initiatives, that could promote the interoperability of DRM systems.

4 To prepare a draft Report to be submitted to an open meeting for consideration, and a final Report by the end of June 2002, taking account of the open meeting discussions, to be submitted to the CEN/ISSS Forum for approval. The Report should include the following topics:

a) a definition of digital rights management;

b) definitions of other significant terms and concepts, including inter-operability with regard to DRM;

c) inventory of significant parties as defined in objective 1;

d) a description of DRM technologies as defined in objective 2;

e) descriptions of current DRM implementations as defined in objective 3, and in particular:

i) identification of benefits of, and technological and other obstacles to, the uptake of DRM, including possible recommendations for further study;

ii) identification of potential "gaps" in protection and any potential solutions to these;

iii) suggestion of short-term and long-term means such as voluntary, industry led measures supportive of existing standards initiatives, that could promote the interoperability of DRM systems.

Membership

The Group shall be open to any CEN/ISSS Forum member entity, or their representative, and to additional interested parties.

Specifically, representatives from the following organizations shall be invited:

- CENELEC

- ETSI

- EC DG Enterprise

- EC DG Information Society

- EC DG Internal Market

- EFTA Secretariat

A call for expressions of interest will be retained on the web.

Working methods

The Chair will be nominated by the CEN/ISSS Forum. The Secretariat shall be provided by CMC/ISSS. The Group will work on a voluntary basis.   Physical meetings may be held as required, but full electronic working facilities shall also be provided.

The Group shall organize the drafting of the Report, and may select and manage a Project Team of paid experts if required.   The Group shall agree the Terms of Reference for such a Team if it is decided to use one, subject to compliance with the standard CEN rules regarding the selection and appointment of experts.

The Group will work by consensus; otherwise it may choose its own operational methods. It shall provide regular progress reports to the Forum.

Annex C – List of significant DRM standardization activities

Name of Initiative	International Federation of Societies of Authors and Composers (CISAC) / *Common Information System (CIS)*
Sector	Rights Management - intellectual property
Contact	Sylvain Piat Rene Lloret
Contact Address	sylvain.piat@cisac.org rene.lloret@cisac.org
URL	http://www.cisac.org/
Status	Confederation
Governance	The CSB has twelve members, ten of which are to be designated by the Executive Bureau. At least one them should come from a non-musical society. The Chairman of the Executive Bureau and CISAC's Secretary General will be permanent members. The CSB will be chaired by the Chairman of the Bureau.
Date started	CISAC:1926 – CIS:1994
Membership Criteria (if any)	CISAC unites societies of authors and composers. Authors do not join CISAC themselves. They are represented by the societies to which they belong.
Meeting Schedule	The Executive Bureau meets at least twice yearly
Development Process	Face-to-face meetings
Description of Activity	The setting up of standards and common information technology tools for the international digital administration of author's rights in the domains of music, audio-video, literature and dramatic and visual arts.
Outputs	The CIS consists of two series of tools that provide the building blocks to global digital copyright administration: - ISO-certified, standardised international identifiers of works and parties relevant to the creative process. - A network of global databases, or sub-systems relying on various centralised and increasingly decentralised technologies, that will serve as the repository of authoritative information on the creative

	process for all participating CISAC societies.
Document Management	All documents on CIS, general or technical, on standards or on the set up of the different sub-systems are available in CISAC documentary base accessible for members on www.cisac.org. Some standards being processed in ISO.
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	**4C Entity - Content Protection for Recordable Media and Pre-Recorded Media (CPRM / CPPM)**
Sector	Physical media protection
Contact	
Contact Address	4C Entity, LLC 225 B Cochrane Circle Morgan Hill CA 95037 EMAIL: info@lmicp.com
URL	http://www.4centity.com/
Status	Proprietary specification, version 0.9 available.
Governance	
Date started	2000
Membership Criteria (if any)	
Meeting Schedule	
Development Process	
Description of Activity	Content Protection for Recordable Media (CPRM) is a technology developed and licensed by the "4C" group -- Intel, IBM, MEI (Panasonic) and Toshiba -- to allow consumers to make authorized copies of commercial entertainment content where the copyright holder for such content has decided to protect it from unauthorized copying.
Outputs	Specification on cryptographic methods
Document	Some documents are available on the Web site. Specifications,

Management	licenses and other documents are for sale.
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	**Copy Protection Technical Working Group (CPTWG)**
Sector	Protecting Against Unauthorized Redistribution of Digital Broadcast Content A US-based overview group
Contact	Maryann Nicoletti- Brad Hunt's office at the MPAA
Contact Address	e-mail: maryann_nicoletti@mpaa.org.
URL	http://cptwg.org/
Status	Working Group
Governance	Discussion group
Date started	1996
Membership Criteria (if any)	Due to economic considerations regarding CPTWG General Session Meeting costs and payment scheduling, it has become necessary to implement an attendance fee of One Hundred US Dollars ($100.00 US) per attending member to cover meals, equipment and service. This fee will be collected at the registration table prior to the start of the General Session. Registration Fees for CEA and MPAA member participants are covered by dues paid to each respective organization. However, please check in at the CPTWG Registration Desk for your badge (lunch ticket).
Meeting Schedule	Twice per month
Development Process	Regular face-to-face meetings with presentations of technologies
Description of Activity	CPTWG evaluates proposed solutions for (a) the secure signaling of protection for unencrypted digital terrestrial broadcast content against unauthorized redistribution outside of the personal digital network environment (*e.g.*, the home or the automobile)[36], and (b) the secure handling of such content by products when such

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[36] See section 5.1 with respect to disagreements regarding the appropriateness and meaning of the phrase "outside of the personal digital network environment (e.g., the home or the automobile)."

	signaling has been applied
Outputs[37]	Agreements
Document Management	Documents distributed trough the "mail reflector"
IP Policy	
Further Comments	
Information provided by	

[37] E.g. Formal standards, workshop agreements, MoUs de facto etc.

Name of Initiative	**DVD Copy Control Association (DVD CCA)** **Content Scramble System (CSS)**
Sector	DVD Copy Control
Contact	John Hoy President DVD Copy Control Association
Contact Address	DVD Copy Control Association 225 B Cochrane Circle Morgan Hill CA 95037 Phone: 1-408-776-2014 Fax: 1-408-779-9291 CSS-License@DVDCCA.org. Selection.interest@dvdcca.org
URL	http://www.dvdcca.org/
Status	The interim CSS license is no longer available.
Governance	DVDCCA is a multi-industry association that is composed of licensees of the CSS technology, including content owners, computer product implementers and consumer electronics product manufacturers.
Date started	July 1999
Membership Criteria (if any)	The CSS license has an annual DVD Copy Control Association administrative fee of 15,500US dollars for each Membership Category of license selected (except the "Assembler" and "Reseller" categories, each of which cost 5,200US dollars per year). The cost of each CSS Technical Specification (Confidential Information) is 500US dollars per copy per Technical Specification.
Meeting Schedule	
Development Process	
Description of Activity	Evaluates and licences technologies for use in marking audio-visual content to convey certain copy control information.
Outputs	CSS License Agreement
Document	No technical information is provided for the "Assembler" and

Management	"Reseller" categories. Technical specifications are only available to a licensee with a license for the appropriate membership category.
IP Policy	According to the Membership Categories members sign for a Confidential and/or Highly Confidential agreement before the information is provided (e.g. applicable parts of CSS specification).
Further Comments	
Information provided by	

Name of Initiative	DAISY Consortium
Sector	Disability community
Contact	George Kerscher
Contact Address	1203 Pineview Dr. Missoula, MT 59802 USA
URL	WWW.daisy.org
Status	
Governance	Worldwide, voluntary
Date started	1995
Membership Criteria (if any)	Non-profit organization serving persons with print disabilities
Meeting Schedule	Quarterly, with annual General Meeting, work groups more often
Development Process	
Description of Activity	Description of Strategic plans developed by Board, detailed plans implemented by staff. Working groups developing specifications.
Outputs	Specifications, guidelines, validation and conformance software, production software
Document Management	
IP Policy RF, no history of RAND	
Further Comments	The DAISY Consortium is developing the worldwide standards for the next generation of information technology for persons who are blind or print disabled.
Information provided by	George Kerscher kerscher@montana.com

Name of Initiative	**High-bandwidth digital content protection - Digital Content Protection**
Sector	Protecting of commercial entertainment content.
Contact	
Contact Address	Digital Content Protection, LLC 5440 SW Westgate Dr. Suite 217 Portland, OR 97221 info@digital-cp.com
URL	http://www.digital-cp.com/
Status	Proprietary specification
Governance	
Date started	
Membership Criteria (if any)	Annual fee (US $15,000 per year)
Meeting Schedule	
Development Process	
Description of Activity	HDCP is a specification developed by Intel Corporation to protect digital entertainment content across the DVI interface. The HDCP specification provides a robust, cost-effective and transparent method for transmitting and receiving digital entertainment content to DVI-compliant digital displays.
Outputs	Licences
Document Management	The HDCP specification is available for download from the web site. Implementation of HDCP requires a license.
IP Policy	The HDCP license contains robustness and compliance rules that ensure that HDCP implementations both protect the confidentiality of keys and other values from compromise as well as deliver the desired protection for high-value video content. Adopter shall not use any portion of the HDCP Specification, or any implementation thereof for the purpose of identifying any individual or creating, or facilitating the creation of, any means of collecting or aggregating information about any individual or any device or

	product in which HDCP, or any portion thereof, is implemented.
Further Comments	
Information provided by	

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Name of Initiative	**Digital Transmission Content Protection**
Sector	Digital content protection from unauthorized interception, retransmission and copying.
Contact	
Contact Address	License Management International, LLC. 225B Cochrane Circle Morgan Hill, CA 95037 info-request@dtcp.com
URL	http://www.dtcp.com
Status	Proprietary Specification
Governance	Copy Protection Technical Working Group (CPTWG)
Date started	1998
Membership Criteria (if any)	Within thirty (30) days of the Effective Date and of each anniversary of the Effective Date, Content Participant shall pay Licensor a nonrefundable sum in the amount set out in Exhibit B (the "Administration Fee"). Annual fee: US$18,000
Meeting Schedule	
Development Process	
Description of Activity	The Founders have developed a certain method for encryption, decryption, key exchange, authentication, and renewability for purposes of protecting certain digital content from unauthorized interception, retransmission and copying. The Founders have licensed the method to DTLA for purposes of further licensing the system and administering such licenses.
Outputs	Agreement – Licence
Document Management	Content Participant shall comply with the terms of Exhibit C (the "Confidentiality Agreement"). The materials marked "Confidential" shall be deemed Confidential Information under the Confidentiality Agreement, and the materials designated by Licensor as "Highly Confidential" shall be deemed Highly Confidential Information under

	the Highly Confidential NDA.
IP Policy	Content Participant shall use Proprietary Information and Confidential Information (and tangible embodiments of either of the foregoing) solely as may be necessary for the activities contemplated under the Agreement. Content Participant shall designate a single employee and an alternate employee who shall receive all Confidential Information disclosed by Licensor.
Further Comments	
Information provided by	

Name of Initiative	**Digital Video Broadcasting – Multimedia Home Platform**
Sector	Copy Protection
Contact	Eva Melamed
Contact Address	DVB Project Office 17a Ancienne Route CH-1218 Grand Sacconnex Geneva Switzerland Telephone: +41 22 717 27 19 Fax: +41 22 717 27 27 melamed@dvb.org
URL	http://www.dvb.org
Status	Consortium
Governance	Any Company or Organisation who wishes to become a member of the DVB you will require to read and agree to the Memorandum of Understanding (MOU).
Date started	September 1993
Membership Criteria (if any)	To qualify for Membership, your activities should be within one of the four categories of DVB Membership (Broadcasters, Network Operators, Regulatory bodies, and Manufacturers - including software developers). Please note that academic institutions are also welcome to apply for membership. The Project Office will acknowledge your application and the Rules and Procedures Ad-Hoc Group will decide if your company qualifies for membership. If this is the case, you will receive the necessary documentation to be signed and an invoice covering the annual membership fee (€ 10'000-). Your file will then go through our acceptance procedure and get final approval by our Steering Board. Please note that the membership application procedure takes 2-3 months.
Meeting Schedule	
Development Process	DVB systems are developed through consensus in the working groups of the Technical Module. Members of the groups are drawn from the general assembly of the project.

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Description of Activity	For each specification, a set of User Requirements is compiled by the Commercial Module. These are used as constraints on the specification. User requirements outline market parameters for a DVB system (price-band, user functions, etc.).
	The Technical Module then develops the specification, following these user requirements. The approval process within DVB requires that the Commercial Module supports the specification before it is finally approved by the Steering Board.
	Following approval by the Steering Board, DVB specifications are offered for standardisation to the relevant international standards body (ETSI or CENELEC), through the EBU/ETSI/CENELEC JTC (Joint Technical Committee), the ITU-R, ITU-T and DAVIC.
Outputs	Standards for digital video broadcasting.
Document Management	Once standards have been published, through ETSI, they are available at a nominal cost for anyone, world-wide. Open standards free manufacturers to implement innovative and value added services. It doesn't matter where DVB technology is developed. It is available world-wide.
IP Policy	DVB has an innovative IPR policy laid out in Article 14 of the Memorandum of Understanding. It is designed to protect the interests of those with IPR to license and those who are licensing the IPR in order to deploy products and services in the market place.
Further Comments	
Information provided by	J-P Evain

Name of Initiative	**DVD Copy Control Association** **Content Scramble System (CSS)** **DVD Copy Control Association (DVD CCA)**
Sector	
Contact	
Contact Address	
URL	http://www.dvdcca.org/
Status	New technology evaluation under way?
Governance	
Date started	
Membership Criteria (if any)	
Meeting Schedule	
Development Process	
Description of Activity	Evaluates and licences technologies for use in marking audio-visual content to convey certain copy control information.
Outputs	
Document Management	
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	**The European Group for Electronic Commerce in the book and serials sectors (EDItEUR)**
Sector	Electronic commerce in the book and serials industries
Contact	Brian Green
Contact Address	EDItEUR, 39-41 North Road, London, N7 9DP, U.K. email: brian@bic.org.uk tel: +44 (0)20 7607 0021 fax: +44 (0)20 7607 0415
URL	**http://www.editeur.org/**
Status	International organisation
Governance	
Date started	1992
Membership Criteria (if any)	Membership of EDItEUR is open to individual enterprises with an interest in EDI in the book trade, and to relevant associations. The Secretariat is housed at the London offices of Book Industry Communication who manage EDItEUR.
Meeting Schedule	
Development Process	All members are invited to comment and provide input to the standards development process either at special meetings or via email. The documents can be downloaded from the FTP site. There is a "**FTP FILENAMING STANDARD**" to be followed.
Description of Activity	EDItEUR is the international group coordinating development of the standards infrastructure for electronic commerce in the book and serials industries.
Outputs	EDItEUR provides its international membership with research, standards and guidance in such diverse areas as: • EDI and other eCommerce standards for book and serial transactions • Bibliographic and product information • The standards infrastructure for digital publishing

	• Radio frequency identification tags • Rights management and trading
Document Management	Members of EDItEUR have free access to all EDItEUR standards and reports, receive regular bulletins and drafts of all work in progress.
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	**European Blind Union**
Sector	Promoting Equal Opportunities for Blind and Partially sighted People
Contact	David Mann
Contact Address	David Mann David.mann@rnib.org.uk Tel. +44 28 9032 9373 Fax +44 28 9027 8119 European Blind Union, c/o RNIB 40 Linenhall Street, Belfast BT2 8BA Northern Ireland
URL	www.euroblind.org Belfast BT2 8BA Northrn Ireland
Status	Formal
Governance	The European Blind Union, one of the regions of the World Blind Union, is governed by a General Assembly held every four years and by an Executive Board
Date started	c. 1984
Membership Criteria (if any)	Members are drawn from the principal blindness Organizations in each European state.
Meeting Schedule	Executive Board meets twice yearly. Copyright Working

	Group meets as required.
Development Process	Meetings are usually face to face or by e-mail discussion List
Description of Activity	Working with other NGO's to influence national governments and European institutions; exchanging experience of good practice in service provision; organising conferences and bilateral exchanges; assisting sister organizations in developing counties.
Outputs	Resolutions, reports, policies
Document Management	Material is generally available onour website once it has cleared internalprocedures.
IP Policy	We seek the fair application of copyright, so that blind and partially sighted people are not prevented from gaining equitable access. That is to say they should be able to read the same material as anyone else, over the same time span, under the same terms and conditions. This requries the removal of the need to pbtain permission before creating accessible formats, albeit with appropriae checks and balances. It also means that technological barriers which inadvertently deny access to blind and partially sighted people should be dealt with either by inclusive design or by legal measures to protect people with a visual impairment.
Further Comments	
Information provided by	David Mann

Name of Initiative	**ECMA - Standardizing Information and Communication Systems; TC31 - Optical disks and disk cartridges**
Sector	CD and DVDs
Contact	Mr. J. Neumann (Hitachi), Chairman
	Dr. I. Henderson (IBM), Vice Chairman
	Mr. Jan van den Beld (SG ECMA), Secretary
Contact Address	jan@ecma.ch
URL	www.ecma.ch
Status	
Governance	
Date started	
Membership Criteria (if any)	ECMA membership prerequisite. Different membership status possible.
Meeting Schedule	See web page
Development Process	Physical meetings and electronic working.
Description of Activity	Maintenance of ECMA Standards (both CD and DVD) prepared by TC31.
Outputs	ECMA standards
Conformance	
Document Management	All ECMA standards are published on the web. Download is free.
IP Policy	ECMA IPR policy, i.e. RAND conditions.
Further Comments	
Information provided by	EICTA

Name of Initiative	**EVA European Visual Artists GEIE**
Sector	European Collecting societies for visual works
Contact	Carola Streul, secretary general
Contact Address	Avenue de Tervuren, 92, 1040 Brussels 02/7266264 Secgen.eva@skynet.be
URL	www.europeanvisualartists.org
Status	GEIE
Governance	Statutes
Date started	June 1997
Membership Criteria (if any)	Collecting society administering copyrights of authors of fine arts and photography and CISAC membership
Meeting Schedule	Approx. 4times/year
Development Process	Everything
Description of Activity	Economic interest group
Outputs	
Document Management	No restrictions
IP Policy	Yes
Further Comments	No
Information provided by	Carola Streul

Name of Initiative	**Internet Digital Rights Management Group (IDRM)**
Sector	Internet
Contact	Thomas Hardjono, Mark Baugher
Contact Address	thardjono@verisign.com mbaugher@cisco.com
URL	www.irtf.org/charters/Digital-Rights-Management.html
Status	Charter ready, more work expected
Governance	
Date started	
Membership Criteria (if any)	Open to individuals, no company membership.
Meeting Schedule	see web pages or mailing list
Development Process	Electronic working method usual, Interest-Mailing-List: mailto:mietf-idrm-request@lists.elistx.com (In the message body put: subscribe)
Description of Activity	
Outputs	IETF RFCs
Conformance	
Document Management	Published on the web, download free.
IP Policy	
Further Comments	
Information provided by	EICTA

Name of Initiative	IEC/OPIMA *Open Platform Initiative for Multimedia Access (OPIMA)*
Sector	Intellectual property management and protection.
Contact	**IEC** Dennis Brougham Information Services Manager Email: db@iec.ch **OPIMA** Leonardo Chiariglione CSELT Email: leonardo.chiariglione@cselt.it
Contact Address	Via G. Reiss Romoli, 274 I-10148 Torino (Italy)
URL	http://leonardo.telecomitalialab.com/opima/ http://www.cselt.it/ufv/leonardo
Status	industry consortium
Governance	
Date started	30 September 1999
Membership Criteria (if any)	500 or 400 CHF by the IEC depending on whether you choose to be a Full or an Associate Member.
Meeting Schedule	
Development Process	Face-to-face meeting and reflector mailing list
Description of Activity	Management and protection between multimedia services providers and consumers. Telecom Italy Lab Multimedia supports the family of standard MPEG and considers MPEG-4 like the standard of the future for the multimediali contents in virtue of its functionalities, between which: it codifies to objects, robustness to the transmission errors, defense of the intellectual property, and modularity of the architecture.
Outputs	OPIMA operates in the Industry Technical Agreement (ITA) program of the International Electrotechnical Commission (IEC) based on a Charter.

	The IEC's ITA is a new product, which delivers industry specifications for fast-moving technology sectors in months, rather than international standards which serve the traditional industry sectors but which can take years to develop. ITAs are designed to enable industry to launch new products or start production once the ITA specifications have been agreed. ITAs are different from international standards in that they do not go through the same consensus procedure and are not produced within the committee structure used for developing standards. ITAs were launched by the IEC in response to calls from industry for a new and rapid means of achieving de facto industry specifications.
Document Management	All material presented to OPIMA or its Committees shall be deemed of non confidential nature and hence for public distribution.
IP Policy RF, no history of RAND	All patents, copyrights or other intellectual property owned or created by any Member shall remain the property of that Member. Such ownership shall not be affected in any way by the Member's participation in OPIMA, unless the Member specifically agrees to otherwise.
Further Comments	
Information provided by	Paper by Central Research Laboratories

Name of Initiative	**ISO Technical Report 21449, "Content Delivery and Rights Management: Functional Requirements for Identifiers and Descriptors for Use in the Music, Film, Video, Sound Recording, and Publishing Industries"**
Sector	
Contact	Jane Thacker, ISO/TC46/SC9 Secretariat
Contact Address	iso.tc46.sc9@nlc-bnc.ca
URL	http://www.nlc-bnc.ca/iso/tc46sc9/21449.htm
Status	Approved; awaiting publication.
Governance	Not applicable.
Date started	2001
Membership Criteria (if any)	Not applicable.
Meeting Schedule	Not applicable.
Development Process	ISO Technical Report (informative)
Description of Activity	TR 21449 presents a business and information architecture specifically designed to assist organizations involved in the development and administration of identification and description schemas for intellectual content and products in understanding the relationships between their organizations and other content industry players involved in production, distribution, and rights management.

The first segment of TR 21449 defines a conceptual business architecture that identifies the functions performed by individuals and organizations involved in the production and distribution of intellectual or artistic content and the management of rights associated with that content, and highlights the key business relationships between those functions.

The second segment of TR 21449 defines an information architecture that provides a structured representation of and definitions for the key entities (i.e., the objects, agents, activities, events, etc.) involved in each of the business functions and the primary relationships between those entities.

The third segment of TR 21449 identifies and defines the attributes and relationships associated with each of the entities identified in the information architecture. |

	The fourth segment of TR 21449 defines a generic set of user transactions and maps the attributes and relationships associated with the three entities of primary focus in the information architecture (*content*, *product*, and *property*) to those transactions. The mapping of attributes and relationships to transactions is intended to serve as the basis for defining a common set of descriptors required for the registration of content, products, and property.
Outputs	ISO Technical Report 21449 (approved and awaiting publication)
Document Management	ISO TR 21449 will be available for purchase from ISO and its member organizations immediately upon publication in the fall of 2002.
IP Policy	
Further Comments	ISO TR 21449 was prepared by Tom Delsey as consultant to several of the organizations that act as Registration Authorities for ISO TC46/SC9 standards.
Information provided by	Jane Thacker, Secretary of ISO TC 46/SC 9

Name of Initiative	**Intellectual Property Management and Protection (IPMP) Extensions**
Sector	New multimedia standard MPEG-4
Contact	René Lloret (Contact CISAC's IPMP Administrator)
Contact Address	CISAC 20-26 boulevard du Parc 92200 Neuilly sur Seine FRANCE Tel: +33 1 55 62 08 50 Fax: +33 1 55 62 08 60 E-mail: rene.lloret@cisac.org info@ipmp-ra.org
URL	www.ipmp-ra.org
Status	working group of ISO/IEC
Governance	MPEG is not like other standards committees where the development work is done outside and the role of the committee is simply managing the formal process of standards approval. The actual development takes place in the committee itself where the different technical submissions are reviewed by the committee and work is assigned to members for the next meeting. This allows MPEG to attract the best expertise in its fields and to produce the technically most advanced standards.
Date started	1996
Membership Criteria (if any)	Unique subscription fee (for 4 years) of €2000 Euros. (Reviewable after 4 years). Attendance at MPEG meetings requires accreditation by a National Standards Body or standards committee in liaison. Experts attending MPEG not representing a committee in liaison must be members of a National Delegation under the responsibility of a Head of Delegation appointed by the National Body.
Meeting Schedule	MPEG usually holds three meetings a year.
Development	MPEG manages some 500 documents at each meeting. About 300 are input documents from members and about 200 are output

Process	documents produced by the committee.
	The documents are restricted to MPEG members. From time to time, however, MPEG decides to post publicly some of its output documents. These are typically calls for proposals, general descriptions of standards, approved or under development, the text of standards under ballot etc. As a rule standards in final form are not posted here. They can be purchased purchased directly from ISO (sales@iso.ch) or from a National Body. Some of the standards are publicly available (including reference software).
Description of Activity	MPEG-4 IPMP will standardise a generic interface to (possibly private) IPMP tools. This interface is referred to as the IPMP interface.
	IP Management & Protection is necessary for MPEG-4 to manage information about digital creations and to control their accessibility through content protection.
	Giving the confidence to PR owners, such as film producers and record companies, that they can make available their vast catalogues of valuable creative material securely across new digital markets is critical to ensure the commercial success of the MPEG-4 standard.
	Standardization of interworking between different devices and services designed to play secure digital MPEG-4 content from multiple sources in a simple way, e.g. without the need to swap physical modules; an enhancement of the original MPEG-4 IPMP Framework. Future mapping to MPEG-7 also.
	The Intellectual Property Management and Protection (IPMP) identifies carriers of creative works. The tool was developed as a complement of MPEG-4, the ISO compression standard for digital audio-visual material.
Outputs	Standards
Document Management	<table><tr><td>Access to public report for everyone through the RA website</td><td>Information on the IPMP_ID only (nothing to be published except the number)</td></tr><tr><td>Access to the IPMP_IDs database with all the information (including proprietary data).</td><td>Only persons within the RA will have access to this database. The members of the RMG should NOT access this database.</td></tr></table>

	Access to the requester's own data.	The IPMP_IDs database must be available every time-With requester login and password
IP Policy	The requester decides himself what information shall be made available to the public by selecting one of the three following options: 1. All the information on the IPMP Data Base is made available to the public (Organization, authorized representative and description of the IPMP System). 2. Only the information related to the Organization (Name, adress, representative) is made available to the public. Information related to the IPMP System is confidential. 3. The whole data related to the IPMP System ID is confidential. In this case, the IPMP System ID is shown as assigned, without any related data. The management and protection of IP will as well as the identification are a part of MPEG-4 Systems, which became an International Standard in January 1999.	
Further Comments		
Information provided by	Paper by Central Research Laboratories	

Name of Initiative	International standard textual work code (ISTC)
Sector	Textual work
Contact	Mr. Albert Simmonds Convenor, ISTC Working Group
Contact Address	E-mail: albert.simmonds@WORLDNET.ATT.NET Fax: (1 212) 989-7542 Phone: (1 212) 924-3961
URL	http://www.nlc-bnc.ca/iso/tc46sc9/wg3.htm
Status	Consortium *ISO/WD 21047*
Governance	
Date started	October 2000
Membership Criteria (if any)	The membership of ISO/TC 46/SC 9 Working Group 3 (WG 3) shall consist of experts appointed by the P-members and A-liaison organizations for ISO/TC 46/SC 9.
Meeting Schedule	
Development Process	The experts appointed to ISO/TC 46/SC 9/Working Group 3 must commit to attend meetings of the Working Group.
Description of Activity	ISO Project 21047 is a working group appointed to develop an International Standard Textual Work Code (ISTC) for the unique, international identification of individual textual works. The ISTC will provide a way for textual works to be uniquely distinguished from one another within computer applications and for the purposes of administering rights to such works.
Outputs	ISTC standard
Document Management	
IP Policy	
Further Comments	

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Name of Initiative	International standard work code (ISWC)
Sector	Audiovisual production, distribution and rights management.
Contact	J. Thacker e-mail: iso.tc46.sc9@nlc-bnc.ca
Contact Address	ISO/TC 46/SC 9 Secretariat National Library of Canada 395 Wellington Street Ottawa K1A 0N4 Canada Telefax: (819) 953-0291 ISWC Administrator International ISWC Agency CISAC 20-26, boulevard du Parc 92200 Neuilly sur Seine France E-mail: info@iswc.org Telephone: + 33 1 55 62 08 50 Telefax: + 33 1 55 62 08 60
URL	www.iswc.org http://www.nlc-bnc.ca/iso/tc46sc9/wg1.htm
Status	**ISO/DIS 15706 Working Group**
Governance	ISO/TC 46/SC 9/Working Group 1 may be disbanded by ISO/TC 46/SC 9 upon publication of ISO 15706 or in the event that the Working Group is unable to reach consensus and/or meet the target dates established by ISO/TC 46/SC 9 for the ISAN project.
Date started	May 1997
Membership Criteria (if any)	Members of Working Group 1 have been nominated by the P-members and A-liaison organizations for ISO/TC 46/SC 9. The experts appointed to ISO/TC 46/SC 9/Working Group 1 represent organizations that will be directly implementing or applying the ISAN and V-ISAN within ISO member countries. The membership of ISO/TC 46/SC 9 Working Group 1 (WG 1) shall consist of experts appointed by the P-members and A-liaison organizations for ISO/TC 46/SC 9. A maximum of two experts from

	each of the P-members and appropriate A-liaison organizations shall be permitted to participate in the Working Group. If necessary, and on the advice of its Secretariat, ISO/TC 46/SC 9 may subsequently restrict the membership of WG 1 to a total of 20 experts and/or limit the appointees of any of the P-members or A-liaison organizations to a single expert. The experts appointed to ISO/TC 46/SC 9/Working Group 1 should be involved in organizations that will be directly implementing or applying the ISAN within ISO member countries and liaison organizations. This includes organizations representing producers of audiovisual works, organizations involved in the administration of rights to such works, and other parties actively involved with the production and distribution of audiovisual works.
Meeting Schedule	Three times per year
Development Process	Meetings face-to-face
Description of Activity	The ISAN (International Standard Audiovisual Number) will be a voluntary numbering system for the identification of audiovisual works. It will provide a unique, internationally recognized and permanent reference number for each audiovisual work.
Outputs	Draft ISAN standard
Document Management	Reports of some WG 1 meetings are available only to members of TC 46/SC 9 and participants in the ISAN project.
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	**IEEE Learning Technologies**
Sector	Learning Technologies
Contact	Robby Robson (chairman)
Contact Address	rrobson@eduworks.com jtyler@mitre.org Phone: 541.754.1215 **Headquarters Office** 1730 Massachusetts Avenue, N.W. Washington, DC 20036-1992 Phone: +1-202-371-0101 FAX: +1-202-728-9614 Conference Department Phone: +1-202-371-1013 Conference FAX: +1-202-728-0884 Membership Information: +1-202-371-0101 **European Office** 13, Avenue de l'Aquilon B-1200 Brussels, Belgium Phone: +32-2-770-2198 FAX: +32-2-770-8505
URL	http://ltsc.ieee.org/
Status	working group
Governance	The LTSC is governed by an executive committee consisting of working group chairs and elected officers.
Date started	
Membership Criteria (if any)	Membership in the LTSC is open to any individual with a material interest in the work of the LTSC. Members pay $200 per year and are entitled to post messages to LTSC discussion groups and participate as voting members in LTSC Working Groups.
Meeting Schedule	The LTSC holds quarterly meetings. *Most active working groups use these to meet face-to-face and hold additional teleconferences to carry out their work.* Quarterly meetings are face-to-face with remote attendance possible via telephone. Internet access is also available at meetings.
Development Process	Standards development is done in working groups via a combination of face-to-face meetings, teleconferences, and

	exchanges on discussion groups. The LTSC uses e-mail discussion lists to carry out its standards development work and business. Anyone may join a list. Posts are restricted to LTSC members.
Description of Activity	The Learning Technology Standards Committee (LTSC) is chartered by the IEEE Computer Society Standards Activity Board to develop accredited technical standards, recommended practices and guides for learning technology.
Outputs	Standards
Document Management	Membership is not required to read discussion groups or to attend meetings as an observer.
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	The Internet Engineering Task Force (IETF)
Sector	Evolution of the Internet architecture and the smooth operation of the Internet.
Contact	Harald Alvestrand (IETF Chair)
Contact Address	chair@ietf.org ietf-announce-request@ietf.org Foretec Seminars Attn: IETF Proceedings 1895 Preston White Drive, Suite 100 Reston, VA 20191
URL	http://www.ietf.org
Status	Working groups
Governance	
Date started	1989
Membership Criteria (if any)	Open to any interested individual.
Meeting Schedule	The IETF holds face-to-face meetings three times per year.
Development Process	Much of the work is handled via mailing lists and face-to-face meetings. Statements made outside of an IETF meeting, mailing list or other function, that are clearly not intended to be input to an IETF activity, group or function, are not subject to these provisions.
Description of Activity	Fair, open, and objective presentation existing (proven) practices used by the Internet community for the standardization of protocols and procedures.

Outputs	Standards
Document Management	The email archive of the IETF Working Groups is displayed on each Working Group Web page. The IETF Secretariat attempts to provide a complementary set of archives as well, each set of WG messages are stored in a separate subdirectory. The IETF Meeting Proceedings cost $85.00 per hard copy and $10.00 per CD-ROM
IP Policy	Confidentiality Obligations No contribution that is subject to any requirement of confidentiality or any restriction on its dissemination may be considered in any part of the Internet Standards Process, and there must be no assumption of any confidentiality obligation with respect to any such contribution. All Contributions By submission of a contribution, each person actually submitting the contribution is deemed to agree to the following terms and conditions on his own behalf, on behalf of the organization (if any) he represents and on behalf of the owners of any propriety rights in the contribution. Where a submission identifies contributors in addition to the contributor(s) who provide the actual submission, the actual submitter(s) represent that each other named contributor was made aware of and agreed to accept the same terms and conditions on his own behalf, on behalf of any organization he may represent and any known owner of any proprietary rights in the contribution.
Further Comments	
Information provided by	

Name of Initiative	InterParty
Sector	Identification of parties in e-commerce
Contact	Brian Green
Contact Address	EDItEUR (brian@bic.org.uk)
URL	http://www.editeur.org/
Status	12 month EC funded project to design and specify a framework for the unique identification of parties (natural and corporate names) in the Intellectual Property e-commerce chain.
Governance	Open Workshop
Date started	April 2002
Membership Criteria (if any)	£75 + VAT (£88.13)
Meeting Schedule	The workshop will consist of plenary and breakout sessions, allowing maximum participation by all attending.
Development Process	
Description of Activity	INTERPARTY is concerned to establish a model and working system which can be used by bodies involved at all stages of the e-content lifecycle. It is intended that through the wide adoption of the new Directory of Parties system, interoperability and ease-of-use will be increased and the establishment of the necessary framework for the operation of e-content trading throughout the supply chain thereby enhanced.
Outputs	Analysis of existing data models Identifiers and party metadata model Report on privacy and security mechanismsl Specification for working demonstrator Demonstrator (alpha system) Business model, exploitation plan and governance proposals

Document Management	
IP Policy	
Further Comments	
Information provided by	

Name of Initiative	**Keitaide-Music Consortium**
Sector	
Contact	***Keitaide-Music Consortium*** Office Phone: +81-3-5803-3561 Fax: +81-3-5803-3639 E-mail: info@keitaide-music.org
Contact Address	Corporate Technology Planning Department Technology R&D Headquarters, Sanyo Electric Co., Ltd. 3-10-15 Hongo Bunkyo-ku, Tokyo, 113-8434, Japan
URL	http://www.keitaide-music.org/index_e.html
Status	Consortium
Governance	Board Members: Nippon Columbia Co.,Ltd., FUJITSU LIMITED, Infineon Technologies Japan K.K., Hitachi,Ltd., PFU Limited, SANYO Electric., Ltd. Currently 32 members.
Date started	2000
Membership Criteria (if any)	¥100,000 per year
Meeting Schedule	General Annual Meeting (No further specific meeting schedule)
Development Process	Decision is made by the board members. The specific WG is also set up to have an ad-hoc meeting to discuss the specifically focused issues.
Description of Activity	Announcement of its the activity through its URL
Outputs	Keitaide-Music Technical Specifications UDAC-MB Host Link Specifications
Document Management	Provided with the members of the consortium for free of charge and even for non-members with the fixed fee
IP Policy	
Further Comments	None

Information provided by	http://www.keitaide-music.org/index_e.html

Name of Initiative	**OASIS Rights Language Technical Committee**
Sector	XML Standards
Contact	Hari Reddy
Contact Address	Hari.reddy@contentguard.com
URL	http://www.oasis-open.org/committees/rights/
Status	Consortium
Governance	Formal Process is defined
Date started	Q2 2002
Membership Criteria (if any)	Must be member of OASIS to be member of RLTC; OASIS Membership- Corporate membership fees range from $1,000 to 9,500 depending type and size of organization
Meeting Schedule	Meetings every two weeks with Sub committee meetings weekly
Development Process	Meetings are both face to face and teleconference; Development facilitated by email and Web based document sharing
Description of Activity	Developing specification for core architecture for Rights Expression Language that can be extended for wide variety of applications
Outputs	Specifications, schemas, reference materials
Document Management	Some outputs are publicly available while others are open only to Members.
IP Policy	RAND
Further Comments	
Information provided by	Brad Gandee, ContentGuard

Name of Initiative	The Open Digital Rights Language (ODRL) Initiative
Sector	All
Contact	Renato Iannella
Contact Address	info@odrl.net
URL	http://odrl.net/
Status	Informal Ad Hoc group
Governance	Managed on behalf of the ODRL Initiative Partners. Proposed ODRL specifications are adopted by formal standards bodies and are under their governance rules.
Date started	2000
Membership Criteria (if any)	None
Meeting Schedule	None. Discussions via email.
Development Process	ODRL specification proposals are submitted to formal standards groups for adoption. Upon adoption, the standards group continues the development of that ODRL profile. For example, the Open Mobile Alliance (OMA) – formally the WAP Forum – has adopted a profile of ODRL as its standards rights language for all mobile content and transactions. See <http://www.openmobilealliance.org/docs/OMA-Download-DRMREL-v1_0-20020913-a.PDF>
Description of Activity	ODRL developed by informal process of requirements gathering and comments/feedback from industry and users. The ODRL Intiative is strongly advocates the development and acceptance of royalty-free standards for the DRM industry.
Outputs	Specifications
Document Management	Freely available specifications
IP Policy	Royalty-Free standards only
Further Comments	Version 1.1 of the ODRL specification has also been published as a W3C NOTE: See <http://www.w3.org/TR/odrl>

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Information provided by	Renato Iannella <renato@iprsystems.com>

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Name of Initiative	**Open Mobile Alliance (comprising former WAP Forum and other standards bodies)**
Sector	Mobile Applications Working Group (The specific OMA group is the OMA Download Drafting Committee)
Contact	Kevin Mowry
Contact Address	Kevin Mowry Motorola Work # 817.245.8171 5555 N Beach Street Fort Worth, TX 76137 USA Tel: Fax: Email: Kevin.Mowry@MOTOROLA.COM
URL	www.OpenMobileAlliance.org
Status	Formal Consortium
Governance	Formal rules apply. These are currently still being set but see http://www.openmobilealliance.org/overview.html for the principles behind them and contact info@mail.openmobilealliance.org for further details.
Date started	The Download/DRM specification work began on February 2002
Membership Criteria (if any)	**Sponsor Membership Fees:** The level 1 fees for Sponsor Members for the year to 31 December 2002 is $200,000 US dollars. The level 2 fees for Sponsor Members for the year to 31 December 2002 is $150,000 US dollars. Sponsor members get a seat on the board for the year that the fees is paid. **Full Membership Fees:** The fees payable by Full Members for the year to 31 December 2002 is $35,000 US dollars. **Associate Membership Fees**: The fees payable by Associate

	Members for the year to 31 December 2002 is $7,500 US dollars. **Supporters Membership Fees:** The fees payable by Supporter Members for the year to 31 December 2002 is $500 US dollars. Meeting prices: $750US dollars ($500US dollars if pre registered)
Meeting Schedule	**2002 Upcoming Plenaries** Open Mobile Alliance Plenary November 10-15, 2002 Hawaii, USA **2003 Upcoming Plenaries** Open Mobile Alliance Plenary February 2 – 7, 2003 Long Beach, CA USA Open Mobile Alliance Plenary April, 2003 Dates and Location To Be Determined Open Mobile Alliance Plenary June 8 - 13, 2003 Atlanta, GA USA Open Mobile Alliance Plenary September 7 – 12, 2003 Berlin, Germany Open Mobile Alliance Plenary November 9 – 14, 2003 Brussels, Belgium
Development Process	5 Formal Plenary Meetings a year. Email reflectors and weekly conference calls as required on a group by group basis.
Description of Activity	The OMA Download drafting committee has produce two sets of specifications: - Download Specifications - DRM Specifications Although these specifications are closely linked they are specified independently as it is possible to implement the Download Specification the DRM specification and vice versa. **The DRM specifications**

	These specifications define the following DRM functionality: • optional prevention of content forwarding • support for the combined delivery of rights and content • support for separate delivery of rights and content, including superdistribution of said content • control content usage based on the specified rights and constraints
Outputs	Formal Standards. Approved standards are available at http://www.openmobilealliance.org/documents.html
Conformance	Companies that wish to publicly claim conformance to the **interoperability** aspects of the OMA specifications must pass tests set by the OMA.
Document Management	Documents are not available publicly during the drafting stage. Documents are available for public comment during the public review stage and then publicly available once they are approved/finalised.
IP Policy	See http://www.openmobilealliance.org/ipr.html
Further Comments	The Download group's first set of DRM specifications have just been approved and are available at http://www.openmobilealliance.org/documents.html The group includes delegates from mobile terminal and smartcard suppliers, mobile operators, infrastructure suppliers and systems integrators, information technology companies, and content providers. It is thus well placed to develop specifications with broad application. The recently approved release 1 specifications were developed, as far as possible, not to be mobile-specific, and this aim for broad application will be continued and possibly enhanced in future releases.
Information provided by	Timothy Wright Timothy.Wright@Vodafone.com

Name of Initiative	**Open eBook Forum, Rights and Rules Working Group**
Sector	EBooks and Digital Publishing
Contact	Amanda Kimmel
Contact Address	NYC, NY US
URL	www.openebook.org
Status	Consortium
Governance	Working Group Process defined
Date started	Q2 2001
Membership Criteria (if any)	Must be member of OeBF to be member of RRWG
Meeting Schedule	Meetings every two weeks
Development Process	Meetings are both face to face and teleconference; Development facilitated by email and Web based collaboration tools
Description of Activity	Developing specification for Rights Expression Language for electronic publishing marketplace
Outputs	Specifications
Document Management	Some outputs are publicly available while others are open only to Members.
IP Policy	RAND
Further Comments	
Information provided by	Brad Gandee, ContentGuard

Name of Initiative	TV-Anytime Forum, Inc.
Sector	Technologies related to contents distribution, including system model, metadata, content referencing and rights management & protection.
Contact	Simon Parnall, Chairman of TV-Anytime Forum
Contact Address	sparnall@ndsuk.com
URL	http://www.tv-anytime.org/
Status	Formal industrial consortium incorporated in Delaware State, USA.
Governance	We have adopted bylaws, technical procedures, membership agreement, etc. necessary for the activities.
Date started	September 1999. (incorporated in December 2001)
Membership Criteria (if any)	For a member, membership fee is required updating every year. Meeting fee is required for each meeting.
Meeting Schedule	Usually, one meeting per two months, i.e. six meetings per a year. Details are on http://www.tv-anytime.org/.
Development Process	A meeting is face-to-face for a week composed of several working groups, including several formal plenaries for the final decision. Ad-hoc groups and phone conferences are conducted on necessity basis. Out ftp site is ftp://tva:tva@ftp.bbc.co.uk/.
Description of Activity	Quite high. About 100 members participate in each meeting.
Outputs	Formal specifications are produced, separated into several parts corresponding to each technical area.
Conformance	Currently under the discussion. However, several activities are on going among the members.
Document Management	All the documents are publicly available.
IP Policy	1. Each member grants to TVAF and other members rights to use copyrights encompassed within contributions made by the granting member to a specification. Each member also is obligated (with some exceptions and exclusions) to grant a license, on reasonable and non-discriminatory terms, to other members and non-members with respect to certain patents that would be infringed by products

	built in accordance with a TVAF specification.
	2. Reciprocity is required of all members and non-members.
	3. Basically nothing, other than products must comply with TVAF specification and are within the scope of TVAF's industry objectives (i.e., hardware, software, protocol and process requirements for television and related multimedia services based on use of local storage). .
	4. For life of patent, provide that patent covered by specification which has been approved by the applicable member obligated to grant the patent.
	5. "Reasonable and non-discriminatory terms" – duty of licensor/licensee to negotiate actual terms.
	6. Owner warrants that it has the right to grant licenses as described in TVAF contracts. Duty of licensor/licensee to negotiate actual terms applicable as part of license agreement.
	7. None.
	8. Currently none.
	9. No such assurances, TVAF may modify its policies in conjunction with provisions of Bylaws, however, antitrust and other applicable law does provide certain assurances to adopters/content providers.
	10. Each member and non-member must negotiate, administer and enforce its own license agreements – TVAF will not police or be involved in licensor-licensee relationship.
	11. Not yet finalized.
	12. Members may terminate at any time, however, the member's obligations with respect to contributions made to a specification and patents covered by a specification adopted prior to termination of membership survive (with certain limited exceptions).
Further Comments	We have lots of liaisons with outside organizations. TV-Anytime Forum is willing to liaise with your organizations.
Information provided by	Wataru KAMEYAMA, Vice Chariman and Secretariat. (wataru@waseda.jp)

Annex D – Public Comments on version of the report submitted to the Open Meeting

D1   Contribution of AIDAA on DRM

The International Association of Audiovisual Writers and Directors (Association Internationale des Auteurs de l'Audiovisuel – AIDAA) is a confederation of collecting societies, unions and professional organisations representing both writers and directors in the audio-visual industry. At present, it comprises 23 Authors' Societies and 21 Authors' Associations in 26 countries.

Since its foundation, AIDAA has set out to strengthen the position of writers and directors in the audio-visual sector. With this aim in mind, it has launched a series of initiatives to secure better protection for European authors of their moral and economic rights.

Both the Directors' Guild and the Writers' Guild of America are members of and work closely with AIDAA. AIDAA has also developed a close relationship with professional associations in Eastern European Countries.

Known as « Digital Rights Management » (DRM) systems, electronic codes which make copying impossible are applied to those media which contain recordings of music or films. Anyone wishing to make one or more copies from such a medium has to purchase a further code from the manufacturer by credit card. Using this code, the purchaser is enable to produce a certain number of copies according to the amount paid. This system takes account both of the fact that a digital copy has the same worth as an original, and that copies thus produced can be counted individually. FERA participated with AGICOA to the restatement, in the framework of ISO (International Organisation for Standardisation), of ISAN's development (International Standard Audio-visual Number) aimed to facilitate a quick and safe identification of the audio-visual works in the digital environment.

The ISAN concept includes both an ISO standard of international numbering system for audio-visual works, a numbering system, and a works database.

The identification number applies to the audio-visual work itself and is not related to the physical medium or the identification of that medium. It is not

related to any process of rights registration and does not help in the identification of right holders. This 16 digits number should be regarded as the as the « identity card » of the work, containing data indispensable to identify each work.

One of the basic ISAN principles is that one ISAN number corresponds to one audio-visual work, whatever the versions of the work used. It could be compared to the ISBN that is applied to books, the only difference being that the ISBN concerns only carrier and not the work.

Currently being developed is a complementary standard, V-ISAN. Its objective, desired by radio broadcasters, is to identify which version of a work is broadcast. V-ISAN will be agreement with the International ISAN Agency.

IDA – International Documentation on Audio-visual Works

This audio-visual right-owners database of directors and writers will be linked to the ISAN database. It allows the tracking of the different categories of right-owners of audio-visual works except the music composers.

IDA contains 200.000 works and 526.000 rights holders. The current contributions to this database are : Suissimage, SSA, KOPIOSTO, Bild-Kunst, ALCS, SACD, SCAM, SPA, SABAM and SACEM.

The main aims of the IDA database are as follows :

Identify works in both their original and derivative language versions ;

Identify the right holder of each of these versions ;

Implement the collective repatriation of rights amongst participating societies for the benefit of works and of foreign authors.

Objections may be raised not only that despite many years of research DRM systems need to be further developed for them to be truly applicable in practice, but also that hitherto all copying prevention systems have sooner or later been

proved capable of being bypassed. Even should such individual counting systems actually be introduced, they will never be a complete substitute for lump-sum remuneration on private copying. As long as analogue television exists, copies of broadcasts will be made that cannot be subjected to any individual counting system. Moreover, only major producers with extensive catalogues and the logistics to go with them will be able to procure such expensive technology. DRM systems will be of little benefit either in the short or medium term to authors, producers and performers, who are accustomed to their rights being administered by collecting societies. As far as authors and performers are concerned, there is a major risk that such systems will leave them empty-handed. Finally, in the field of consumer protection, warnings have been sounded concerning possible misuse of data, since individual accounting would encourage individual use profiles and preferences to be established.

AIDAA is of the view that it is essential to maintain the lump-sum levy on blank media. Owing to the fact that works and protected services are more and more frequently copied directly on to hard disks (rather that on to traditional media), a private copying levy should also be established to this recording material in these cases. Is this context it would perhaps be acceptable to run the lump-sum and individual remuneration systems in parallel. What is unacceptable is that lump-sun systems which have stood the test of time be abolished, to be replaced by DRM individual-counting technology which is not yet applicable and begs a wide range of questions.

Furthermore, the 2001 EU directive on the information society expressly states that both systems are acceptable.

D2 EBLIDA position on Digital Rights Management Systems

Introduction

1. EBLIDA, the European Bureau of Library, Information and Documentation Associations, is an independent, non-profit umbrella organisation of national library, information, documentation and archive associations in Europe. Subjects on which EBLIDA concentrates are European information society issues, including copyright & licensing, culture & education and EU enlargement. We promote access to information in the digital age and the role of archives and libraries in achieving this goal. We represent the interests of our members to the European institutions, such as the European Commission, European Parliament and the Council of Europe.

2. EBLIDA, together with our international colleagues in IFLA, lobbied on behalf of libraries during the negotiation process for the WIPO treaties in 1996. EBLIDA has lobbied for libraries at European level on the *Directive on rental and lending rights* (1992), *Directive on harmonising the term of copyright protection* (1993), *Directive on the legal protection of databases* (1996) and the *Directive on harmonisation of copyright in the Information Society* (2001) and continues to be involved in related European initiatives e.g. digital rights management systems, collecting societies, public sector information.

Copyright and libraries

3. Libraries are increasingly being called upon to provide access to information for citizens in the information society; for e-learning and lifelong learning, to combat social exclusion, to encourage new forms of civic government, to support business and the economy, to help bridge the digital divide. The success of the information society depends on the content being accessible to the public.

4. Copyright law impacts on most of what libraries do. It affects the services that libraries can provide to their users, and the conditions governing the access they provide to copyright materials.

Libraries and Digital Rights Management Systems

A Digital Rights Management Systems is a means of delivering content. However, DRMS are frequently seen only as a Technical Protection Measure i.e. a technical means of enabling rightholders to deliver digital content in a controlled way, preventing users from having access to the content unless they meet the requirements of the rightholder, be it financial or otherwise, and preventing users from using the accessed content in ways other than the rightholder has given permission for.

5. Libraries are already involved in the clearance and management of rights. A properly managed introduction of Digital Rights Management Systems, in its widest sense, could assist libraries in managing their services. However, a restrictive definition of a Digital Rights Management System, which focuses on protection rather than management, may hinder libraries in managing access to their services.

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[1] International Federation of Library Associations and Institutions. www.ifla.org

6. It seems as if the legislation is being driven by the technology and its limitations. Instead, the development of Digital Rights Management Systems should be driven by the principles behind the legislation, especially with regard to the ability to benefit from exceptions.

7. We are pleased that Directive 2001/29 (the EU copyright Directive) contains exceptions, which we hope will be implemented by EU Member States. Digital Rights Management Systems must respect these exceptions, the application of which are limited by Article 5.5 of the Directive.

8. We firmly believe that technical protection measures must not interfere with the legitimate use of content and should be sufficiently flexible to enable use of lawful exceptions.

9. For a library, a Digital Rights Management System should enable efficient management and rights clearance and should include the following elements:

- Digital rights management;
- Management of digital rights;
- Digital management of rights;
- Contract management;
- Access management;
- Management of the clearance process.

Key issues

Exceptions must be respected
Digital Rights Management Systems should meet user expectations e.g. accommodate exceptions in different Member States. The technology can accommodate exceptions, but rightholders must ensure that exceptions are respected in the business models which are developed.

Interoperability

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Digital Rights Management Systems must be interoperable with respect to access to content from different devices and must enable distributor and consumer choice with respect to access to content.

Standards

EBLIDA supports standards that enable easy management across multiple content providers.

Security and data protection

Security levels should be appropriate for the content. Technical developments must not be driven only by the mass entertainment industry, which may have different requirements to the scientific and academic communities.

Data protection and privacy legislation must be respected both for individuals and for research groups.

Circumvention

Circumvention of technical measures in special cases must be possible e.g. for legal or voluntary deposit, archiving, in order to safeguard the availability of material for future generations.

Clear labelling and guidance

Products protected by Digital Rights Management Systems should carry clear information on the effects of the DRM for the user e.g. restrictions of functionality, usage, etc. In this context, it is important that users are informed of their rights, i.e. national copyright exceptions.

Digital Rights Management Systems must be user friendly

Digital content must be easy to access and use. User friendliness is crucial for DRM protected material to be accepted by users.

Dispute resolution

Although safeguards are provided in Article 6.4.1 of the Directive, it is important that special arbitration bodies to settle disputes are established. These bodies must be efficient and inexpensive.

The Hague, February 2003

D3   EICTA comments:

First set of comments

1. Open Standards

In section "3.2.8.2 Open Standards" the footnote 2 says: " Note by the CEN/ISSS Secretariat: There is some confusion over the commonly used term .open standards., but in general it implies standards . formal or informal . to implement which requires _no licence fee_ to an IPR holder. Note that the IPR policies of formal standards bodies and of many consortia allow royalty payments provided the IPR holder grants licences on fair, reasonable and non-discriminatory terms and conditions."

EICTA completely disagrees with the definition, that 'open standards' are equal to 'license free' standards. This seems to be a confusion with the term 'open source'. As one can reed in the attached citations, 'open standards' do not presume 'licence free', however RAND conditions are very common in open standards groups, as most of the contributions in 3.2.8.2 are stating too. Even the recent CEN/ISSS Newsletter acknowledges this fact. The criteria for 'open standards' must not be confused with 'open source' or 'open source standards'.

2. EICTA

We believe that section "8.7 EICTA" of the DRM report should start with the default boiler plate text EICTA uses in position statements and the web site 'about us'. See the proposed and slightly reworded text (change the first person singular to third person singular) at the bottom of this note.

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Following this text the headline should read: 'ECITA members are involved in the following standards groups:"

Second set of comments

Comment 1: We can't agree to request financial support from governments. We cannot on the one hand promote voluntary, industry-led standard development activities, and on the other, ask for government funding. Therefore, we suggest deleting the reference to financial support below.

Editor's introduction – p.6

iv) This in turn has some bearing on the contributors' attitude to standards. The contributions raise well known questions about the value of standards (e.g. their chilling effect on innovation). There is, however, very considerable support for the proposition that standards which are the product of voluntary, industry-led deliberation and agreement could be useful to facilitate a measure of interoperability in the DRM space. This would include standards from both consortial bodies, such as DVB, and formal organisations, such as MPEG. Such activities could merit promotional ~~and financial~~ support by government. However, one contributor suggests that some kind of legislative intervention might be necessary where there is a failure to adopt such internationally agreed standards or to ensure compliance with such standards. Some others point out the significant danger legislative intervention poses to innovation in an area where rapid progress is essential to development and growth.

Comment 2: the following changes relate to one of the EICTA contributions to the report. This is an amendment to a previous EICTA input, which we thought it would be useful to clarify one of the points raised by EICTA earlier. We believe that standardized rights languages alone are not sufficient to guarantee interoperability of an encrypted (secure) piece of content across different platforms. We believe that the DRM current state does not enable interoperability because of different rights expression and encryption mechanisms. Standard Rights Expression Languages achieve interoperability on the back end for the content providers, not for consumers. This still results in multiple content packages because of different encryption mechanisms. We have therefore suggested the following changes:

6 DRM Uptake – Specific Questions

6.1.5. EICTA (1ˢᵗ paragraph, p. 89)

With the advent of digitalization taking place across a range of industries, the need to protect and administrate the distribution of content is becoming a high growth sector. Different markets are evolving at different rates and have particular requirements with respect to Rights Management. For example the requirements for the industrial, defence and medical sectors are different from that of the more consumer orientated music and publishing businesses. This situation results in a range of industry led initiatives to address the specific needs and concerns of individual market segments. It is unrealistic to expect that a single DRM standard could exist to cope with the competitive diversity and virility of the evolving digital ecosystems. Interoperability in this new ecosystem can be achieved by a standard rights expression language and syntax complemented by a standard manner to identify the encryption mechanism. An example of this is XrML which was chosen by MPEG-21 and OASIS.

(last paragraph, p. 90)

As an example, there are currently a large number of DRM technologies that deliver content in a "conditional access" format, e.g., through encryption or otherwise.

Although it is not possible to "standardize" the authentication keys ~~and protocols~~ (if

they were standardized, the system would not be secure), it is possible to

standardize "encryption profile", rights language and descriptors so that rights
information is accurately

passed from one DRM to the other after authentication has taken place.

6.14. Short term and long term means

(p. 141)

6.14.5. EICTA

As mentioned, ~~the best way~~ a requirement in order to achieve interoperability is ~~by
developing~~ to develop and ~~using~~ use a

common rights expression language (REL). Efforts are already underway in MPEG

21 to define a common REL, and such voluntary, industry-led measures should be

fully supported.

Reaching into the longer term is the encouragement of the individual technology

vendors and voluntary industry led forums in enabling interoperability with different

technologies. Individual technology vendors should be allowed to pursue

interoperability on a voluntary market led basis.

D3   European Blind Union

The European Blind Union would like to make the following comments on the draft
report, issued in January 2003. We should like them to be borne in mind when the
final version of the report is published.

1. General Principles

Non-digital forms of communication such as print on paper have always been intrinsically discriminatory against people with certain disabilities. Intermediaries have always needed to make considerable efforts to render them accessible by modifying the presentation in some way.

Digital technology has the potential to make information fully accessible without manual intervention, and it would be a very negative social development if this opportunity were lost. Copy protection and rights management must be developed in a way which affords full, equitable access to those who need material presented in a modified way.

2. Definitions (Draft Report Para. 3.2)

One element is missing from attempts to identify concepts such as "interoperability" and "compatibility". That is the requirements of those unable to use visual interfaces, or only to do so if the manner of their presentation is modified.

A solution is only truly "compatible" with different users' equipment if it can be accessed in a variety of ways, including conversion of text to tactile presentation, conversion to audio, or enlargement , or adjustment of features such as colour and font. Access in this way is often achieved through screen reading technology which involves the addition of a further device (braille display) or layer of software (speech synthesiser) along the chain from originator to end-user. This may not be so in the future, but DRM solutions should always be designed in the light of today's technology rather than tomorrow's promises. It should also be remembered that the latest technological solutions are not instantly purchased by every consumer.

In the same way, a solution is only truly "interoperable" if it can be accessed on devices or through programmes providing non-visual interfaces.

3. Consumer involvement

It is essential that consumers have an equal voice in the establishment of any standards or conventions. Many have argued that the market will ensure this automatically, but we do not accept that the market always operates in the interests of minority groups.

For consumers to have a strong voice, it may be necessary for their involvement to be encouraged or subsidised by public authorities. Consumer bodies are generally less well resourced than industry interests, as well as being more broadly focussed. This is illustrated by the fact that there were three bodies representing consumers at the open meeting on 7th February, but only one of those (ourselves) had been able to give this issue sufficient priority to contribute to the preparation of the draft report.

The specific interests of groups such as libraries and educators do not appear anywhere in the report.

4.   Relevant Standards

We do accept that it would be unhelpful to enforce a particular technological solution through regulation, but believe that regulation does have a part to play in ensuring true interoperability and full access by all consumers.

The Digital Accessible Information System (DAISY) Consortium

http://www.daisy.org is a world-wide body working in the standards arena for accessible information for people with print disabilities. Its 45 member organisations are working together to implement world-wide standards, campaigning for equality of access to information for the 180 million visually impaired people throughout the world. The Consortium maintains an active interest in DRM issues, playing a part in the development of accessible intellectual property protection mechanisms based on agreed standards. The Consortium supports the right of people with print disabilities to access information without undue restriction, and encourages the use of open standards in the development of information accessible to all stakeholder groups.

5. Levies

Levies on hardware and on consumables have always been an undiscriminating blunt instrument, and the European Blind Union has always opposed them. Any

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case in their favour completely evaporates where an effective and fair DRM regime is in operation.

David Mann

European Blind Union, 21st February, 2003

D4   GESAC contribution to the CEN/ISSS DRM draft Report dated 3 February 2003

GESAC presentation

GESAC is a European grouping comprising 24 of the largest authors' societies in the European Union, Norway and Switzerland. In this capacity it represents over 480 000 authors or their successors in title in the music, graphic and plastic arts, literary and dramatic fields, as well as the audiovisual sector and music publishers.

http://www.gesac.org

Comments on the CEN/ISSS DRM draft report

1.   **Implementation of DRM (point 5.6 of the draft report)**

In general, authors' societies wish to use relevant and appropriate DRMS, which could be, as long as they work efficiently and cost-effectively, a useful tool to assist and enhance the management, administration and enforcement of the rights they are vested in or represent.

In order to address the Information Society challenges and improve each of their operations (documentation, licensing and collecting royalties, gathering reporting information on the use of works, and distribution of royalties to the members), which are very complex with regards to the volume of works and right holders concerns as

well as the large variety of users, authors' societies have been for a long time very active in developing and implementing DRM components for managing rights : new standards within CISAC (ISO certified: e.g., ISWC, ISAN) and new tools (Nord-Doc, FastTrack, Argos, sDAE, portals etc.).

<u>Illustration of some technical tools developed by authors' societies:</u>

- FastTrack: it is a decentralised network of 8 Authors' societies: BMI (USA), GEMA (Germany), SACEM (Franc), SIAE (Italy), SGAE (Spain), SABAM (Belgium), SUISA (Switzerland) and AKM/Austro-Mechana (Austria). Founded in 2000 and build on CIS standards, the core projects of FastTrack are:

  * *A global documentation and distribution network (GDDN)*, the objective of which is to develop an international interconnected network of databases on musical and audiovisual works, rights owners, contracts and data on sound recording, with the aim to support diary operations of the societies involved such as identification of works and distribution of royalties.

  * *The online works registration*, and

  * *The Licensing Online system*, which will enable each of its members to deliver on line licenses via Internet in a secure, efficient and user-friendly way.

- ARGOS: it is an active Internet based reporting of work use directly from the users (Internet content distributors) of the repertoire. It aims at providing a technical infrastructure which can provide the societies with effective monitoring tools and assure their members an adequate remuneration for the on-line use of their works.

- MONITOR: it is an independent passive monitoring system of radio and TV broadcasts by authors' societies, which employs state of the art technology such as pattern recognition (fingerprint technology) and watermarking technology amongst other that might become available in the future.

  ARGOS and MONITOR are connected with the Global Documentation and Distribution Network and the on-line registration and licensing applications developed by FastTrack.

Authors' societies are also actively participating in international fora (MI3P, MPEG 21 in the framework of ISO) in order to promote the development of common, interoperable and secure standards able to respond to their needs for managing, administering and enforcing the rights they represent.

2.   DRM uptake – Specific questions

<u>Standards: do standards have a role to play in the development of DRM? (point 6.1)</u>

DRMs will enable efficient management of rights and successful new business models to emerge if they are well defined, standardised and implemented in a way that ensures that the benefits accrue to all stakeholders. They must in particular be effective, secured and robust, open, applicable to a wide range of content and business models, world-wide compatible, interoperable, renewable and cost efficient.

On that basis, DRM must be designed on a broad consensus and adopted voluntary. Industry-led and/or Government-facilitated standardisation processes on an open, fair and voluntary basis, must be encouraged. National Governments and EU may have a role to play to promote and encourage voluntary international standards such as MPEG.

At this stage, it may be too early to envisage other forms of public authorities' intervention than the simple facilitation or encouragement of the standardisation process. Nevertheless, GESAC reserves its position regarding a possible legislative intervention would it be necessary to generalise technical devices for identifying works and monitoring their exploitation.

<u>Regulatory issues: do regulatory issues have an impact on DRM? (point 6.11)</u>

Contrary to some assertions (see EICTA's contribution), authors' societies are obviously not against and not an obstacle to the development of DRMs. On the contrary, they are willing to negotiate with distributors which use DRMs for their services, and they do so increasingly.

Authors' societies welcome DRMs both as regards their ability to control infringement and their ability to track and monitor uses of works. Authors' societies are also already licensing users which develop new business models based on measures aimed at securing the content and enforcing the usage rules set by right owners. If DRMs are essential to ebusiness, they are also important to collective management societies: in effect, in so far as they are well designed and efficient, such systems will

permit a more effective enforcement of licences delivered by CMS by supporting the process of authorizing the use of works, the granting of fair remuneration in accordance with the licences, and the fight against piracy.

Having said that, GESAC considers that CEN is not the appropriate fora to address issues such as private copying and rights' management regime in the EU. GESAC expressed its opinion on these issues in the framework of other specific DRMs working groups set up by DG "Information Society". These positions can be found on the Commission's following website:

http://www.europa.eu.int/information_society/topics/multi/digital_rights/index_en.htm

Nevertheless, to answer to EICTA's contribution, GESAC wishes to restate the following:

Regarding the private copying issue and the link with DRMs:

Authors' societies are in favour of DRMs as they are a tool to enforce rights and collecting societies' licenses, and as such should enable authors to perceive a fair negotiated remuneration. Authors' societies generally speaking prefer remuneration negotiated through contractual agreements than compensation fixed through legal licence systems, which, in economic terms, is less advantageous.

But technologies and DRMs are far from being widely developed and satisfying right now. We are at the very beginning of the process, experiences are not satisfying, and problems of interoperability and security are not solved.

In the future, DRMs are not likely to apply in all environments and circumstances: a huge amount of recorded works are put on the market without any protection and can't be protected retroactively; installed base of consumers' equipments and devices which already exist cannot function with new technologies; analogue content can easily be converted into digital form and then subject to unauthorised copying without any protection and distribution through digital networks. Furthermore, no one can assert that consumers would accept not to be free anymore to make private copying, and, from a political perspective, Governments will probably not take the risk to enable right holders to prevent any private copying. Still today, for example, the current DVD protection consists in a pre-installed protecting system which enables

consumers to make some form of copies. Therefore, some fields will most probably remain where consumers will be free to make private copying.

A balance should be found between, on the one hand, the field where DRMs apply and are capable to support negotiated remunerations, and on the other hand, the field where consumers will keep the possibility to make freely some copying and where a fair compensation will be due to rights holders. Progressively the balance will probably change and the level of the compensation will have to be adapted accordingly. This is absolutely compatible with Article 5.2(b) of the Copyright Directive, according to which compensation must take into account the application or non application of DRMs. This means that where DRM apply, then "levy" schemes must decrease. But this does not mean necessarily that current systems have to change or disappear.

The problem of double payment is not an issue: where "levies" are collected on equipments, then "levies" on blank tape media decrease. The compensation actually takes into consideration the possibilities of copying and must be considered as a whole.

Regarding rights management regime in the EU

1. It is first important to stress that authors (and more generally speaking rights holders) are free to choose between individual management of their rights and collective management.

However, contrary to some assertions, individual management by an author is in many respects not feasible. An individual author is rarely able to enforce his rights effectively, to control the exploitation of his works, engage in court proceedings, combat piracy, and negotiate fair terms of remuneration with users because of his weak bargaining position. Considering the increasingly diverse ways of using works, the ability to make an infinite number of perfect copies, the transience and globalisation of trade, it is simply illusory for an author, even with DRMs, to exert personal control over the use made of his works (authors cannot learn how to manage the exploitation of their works overnight).

Furthermore, the development of systems for managing works which are exploited over networks or in multimedia products require know-how and investment far in excess of the individual authors' capacities.

If they are not to be deprived of their rightful remuneration, authors must in fact rely on institutions which they can trust to manage their rights for them. Collective management societies, as non commercial bodies, are able to really protect their interests while ensuring users equal access to the world-wide repertoire. The advent of the Information Society makes it increasingly essential for authors to pool forces within CMS.

CMS have also a vital role to play for users by simplifying access to the works of authors. This is particularly important in the information society as users need to have access to a number of works easily and rapidly for very varied forms of exploitation covering the entire world. As the repositories of an impressive quantity of information on works and right holders, with power to grant authorisation for the use of the world-wide repertoire, authors' societies substantially reduce the red tape of licensing by limiting the number of contacts with whom users have to deal. This system provides with indispensable legal certainty.

2. Secondly, it must be recalled that the dominant position of CMS has not been created by themselves but proceeds directly from the very nature of their activity which is to ensure an effective implementation of rights vis-à-vis the numerous methods of exploitation.

The dominant position is inevitable for an effective administration of protected works:

- Right holders want the benefits of eliminating duplication. If CMS are in a monopoly situation, it is because their members had chosen it to be so.
- Users want to have to approach as few counterparts as possible in order to obtain licences. It is more difficult to manage rights and respond to users' demands when several societies exist per territory and per category of rights, and it increases costs. That is why there are increasing demands from users for reduction of costs and elimination of duplication. In countries where CMS are in competition (notably in the USA and in Brazil), since works are not substitutable goods (e.g., if you want to hear a song of the Rolling Stones you do not wish to hear a song of the Beattles), users need to sign agreements with all CMS in order to access a full repertoire. This does not make the situation easier for them.

The Commissioner M. Monti himself, when he was in charge of the Internal Market portfolio, answering to a question raised by a MEP in 1996 on the question of the convenience of competition between CMS, explained that the specificity of collecting management of rights justifies a position of exclusivity of the CMS vis-à-vis users to the proper benefit of those authors and users, which explains and justifies the fact

that these societies are very often in a de facto dominant position. The monopoly situation of CMS had also been admitted by the ECJ for a long time.

3. Individual contributor conclusion

As a conclusion, GESAC wishes to underline the following points:

- In general, authors' societies wish to use relevant and appropriate DRMS, which could be, as long as they work efficiently and cost-effectively, a useful tool to assist and enhance the management, administration and enforcement of the rights they are vested in or represent.

- Authors' societies are themselves actively developing DRM components for managing rights (WID, ISWC, ISAN, ISTC, ARGOS, FAST TRACK, NORD-DOC for example) in order to respond to the challenges of the digital world.

- Authors' societies are also actively participating in international fora (MI3P, MPEG 21 in the framework of ISO) in order to promote the development of common, interoperable and secure standards able to respond to their needs for managing, administering and enforcing the rights they represent.

- In the work they do for authors, societies carry out a number of different functions, some of which could be enhanced by DRMS but some of which DRMS do not address.

- DRMS should not be promoted against collective management, but developed in cooperation with collective management societies (CMS).

- Right-owners obtain a greater benefit from DRMS through collective management : right-owners have a stronger input in the development of worldwide standards when their views are voiced by CMS; collective management provides right-owners access to economies of scale with respect to administration costs and investments in research and development; by allowing a more effective fight against piracy.

- DRMS do not give right-owners all the benefits of membership of a CMS, e.g. bargaining power in order to ensure that they receive adequate remuneration from users more powerful than them; verifying and enforcing that correct royalties have been paid; help, through providing an easy system for obtaining licences and through cultural initiatives to stimulate and promote the growth of new works in different cultures, which helps to provide a wider choice for consumers; social and legal assistance.

D5   Nokia comments

CEN/ISSS DRM report draft about "DRM standardisation activities for the EC" (

http://www.cenorm.be/isss/DRM/Draft_report.htm) includes wordings like "we think" that could cause wrong quotations that "we" means the CEN/ISSS DRM group even if that "we" would mean only one particular group or company who has write that section.

Therefore it is proposed to change the wording at least in the following pages and sections:

To change "we" by corresponding group or company name:

Page number	Section number	Number of proposed changes
12	3.1.2	1
19	3.2.2	1
67	5.5.1	1
70	5.5.5	1
83	5.6.7	2
87	6.1.1	1
88	6.1.4	2
90	6.1.5	2
91	6.1.8	1
93	6.2.2	2
94	6.2.7	1
96	6.3.2	1
99	6.3.5	2

	6.3.8	
103	6.4.9 6.5.1	2
107	6.6.2	1
114	6.8.2	1
119	6.9.11	1
123-126	6.11.1	4
127	6.12.1	4
132	6.12.4	1
134	6.13.3	1
136	6.13.3	1
137	6.13.8	1
140	6.14.2	4
141	6.14.6	3
141	6.14.7	4
142	6.14.10	3
148-149:	7.7	3
150	8.2	2
154	8.8	1
156	8.10	1
157	8.12	2
160	8.17	5

To change "us" by corresponding group or company name:

Page number	Section number	Number of proposed changes
45	5.4.3	1
88	6.1.3	1
88	6.1.4	2
97	6.3.3	1

D6   SIS comments

Comments to the DRM-report

As was said at the presentation of the report, it is rather a list of various contributions under a set of headings than conclusions and directions on how to go forward from here.

Other things expressed at the meeting was the somewhat limited responses given and expected to be given from user communities. And the difficulty to agree on a definition for DRM.

In order for all the stakeholders to get a clear picture of the DRM context it is necessary to map what tasks, stakeholders and institutions that are involved. In this respect the ISO TC 46/SC 9 report ISO/DTR21449 Content Delivery and Rights Management - Functional Requirements for Identifiers and Descriptors for Use in the Music, Film, Video, Sound Recording and publishing is a very good start. The illustrations in this report shows the connection between various aspects of digital rights and content management.

(included)

Further to the above a description of the responsibilities and options involved for the various stakeholders could make a base for further discussions on the roles and needs for new standards. In order to provide for the necessary fields and options in

systems for recording, converting and distribution of content it is important to know what options the various user communities would require.

It is also necessary for users and for the legislative community to know what kind of responsibilities and requirements that can be expected from or laid upon various parties in an DRM environment.

I therefore think the report should be complemented by schemas similar to those included in ISO/DTR21449 and by a list of stakeholders needs or options. E.G.

Creators needs and responsibilities

Producers needs and responsibilities

Distributors needs and responsibilities

If content is converted ID and formats may have to be specified

Schools needs for copies.

Libraries may require possibilities for cataloguing and controlled lending of the material.

Archivists that preserve our cultural heritage needs to have means for identifying the content and to dispose of, or migrate the content to a stable format for future needs.

Customers that consume (read, listen or interact with) digitalised works should be provided with clear and legible information about how to use the product as well as on the requirements on equipment for reading, listening or interact with the product.

Final

Digitally distributed works being alone or as a part of another presentation should as far as possible be presented in such a way that it may be understood or converted to a format more easily understood by people with limited abilities to see or listen. Any information on how to convert or transform the information into formats such as Braille or other means for making it accessible for disabled persons should be provided with the product.

In order to develop good technical standards that provide for interoperability and cater for user needs I think that an administrative standard or technical report is what one should begin with. After that it is easier to build into technical standards the required options etc. and to agree on already existing solutions for security, payment etc.

D7   Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law

We appreciate the opportunity to comment upon the CEN/ISSS DRM Group's Draft Report. In particular, we appreciate the opportunity to assist the Group in gathering input from "worldwide significant parties."[39] Acknowledging that DRM development will affect individuals and institutions all over the world is essential in the study of DRM. Recognizing that individual users of informational works are among the "significant parties" or "stakeholders" is also essential.

It is therefore with some alarm that we noted the objective of the Report, which is to "identify the current status of DRM usage and possible means to ensure effective implementation of DRM in the marketplace." The Draft Report's Introduction notes, however, that DRM implicates public policy, and that technology companies and users and producers of informational works differ in their views of what is required for acceptable DRM systems[40]. We therefore submit that any further steps toward developing recommendations for how, whether, under what conditions, and in which environments to implement DRM must incorporate input from representative groups of purchasers of copyrighted works—"consumers"—whose concerns find scant representation in the current draft.

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[39] CEN/ISSS Digital Rights Management Report (Draft 1.2, 5 Feb 2003) (hereinafter "*Draft Report*"), at 170

[40] See Draft Report at 6-7.

Final

Like copyright holders, users also have rights at stake in the development of DRM. In both the United States Copyright Act and in the European Union's Copyright Directive, numerous exceptions qualify the exclusive rights of authors. These exceptions reflect a deliberate effort on the part of legislative bodies to craft copyright policies that balance the goal of stimulating the production of original works with the needs of diverse groups of information users.[41] United States law grants some reproduction and performance rights to libraries and educational institutions; the Copyright Directive proposes similar rights. Furthermore, under both United States law and the Copyright Directive, copyright holders exhaust their distribution right in a copy after the first sale. Premature government approval of DRM systems that do not honor these exceptions could lead to the practical, permanent undermining of users' rights and, thereby, the balance of copyright laws throughout the world. The input of users is therefore essential in any process that could lead to recommendations to government institutions as to the implementation of DRM systems.

Several questions posed by the Draft Report raise issues that are of direct concern to users of informational works. We briefly note each of these topics.

Business models. Several responses indicate that DRM systems can support "any business model." We find few indications that this is true. In particular, it appears that DRM systems are incapable, as a practical matter, of supporting many business models based upon the post-first sale of a work. Many proposed DRM systems either prevent purchasers from re-selling the work, or they require the maintenance of data about the history of possession of the copy. While some current DRM measures might not collect such data, the momentum in DRM development is clearly directed in the opposite direction: rights holders will have means available to them to exert control over commercial and non-commercial transactions involving copies of digital works, even when copyright law would dictate otherwise. Viewed in light of this ongoing constraint, the apparent flexibility of business models under emerging DRM systems is illusory. The flexibility lies largely in pricing models that are compatible with ongoing copyright holder control over the disposition of copies.

Interoperability. The importance of ensuring that different DRM systems can interoperate extends beyond the promotion of competition in the market for DRM technology. The permissions that users must purchase in order to use DRM-protected works must also be portable from one system to another. "Vertical" DRM

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[41] See, e.g., Directive 2001/29/EC, ¶¶ 33-38 (enumerating exceptions or limitations to exclusive rights).

systems that tie a user to a specific platform or device will greatly diminish the quality of users' experiences with copyrighted works.

Complexity. There is a difference between the complexity of a user's interaction with a DRM system and the user's awareness of how the DRM system functions vis-à-vis her legal rights. The desirability of making the DRM layer of user applications invisible to the user does not imply that users should not be informed that they are purchasing or accessing DRM-controlled copies. Quite the opposite is true. At minimum, vendors of hardware and software that provides access and usage rule enforcement, as well as vendors of DRM-controlled copies, should be obligated to inform potential purchasers that their merchandise might lead to a curtailment of the users' rights under copyright law.

Security. The resistance of DRM-controlled content to attacks is understandably presented as the paramount security issue in the Draft Report. The introduction of DRM technology into computing equipment will create the potential for new security vulnerabilities. Currently, users are able to discover and guard against these threats by setting and enforcing their own security policies. DRM technologies must therefore not introduce new vulnerabilities, and they must allow users to continue to set the security policies for their own machines.[42] The protection of copyrighted works should not come at the expense of general computer security.

Privacy. DRM systems, and their associated authentication and authorization systems, carry the potential of generating, transmitting, and storing vast quantities of data about the use of copyrighted works. This data could reveal a great deal about the manner in which individuals explore copyrighted works. DRM thus presents the potential for a level of usage monitoring that is unknown in most uses of digital technology and is unprecedented in the use of informational goods. Unless the use of DRM-related data is strictly limited to enforcing usage and access rules, users are likely to be deterred from accepting DRM-controlled works. DRM systems should generate no more data than necessary, and store data for no longer than necessary to execute their rule enforcement functions.

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[42] *See, e.g.,* Intellectual Property Committee of the IEEE-United States of America (IEEE-USA), Position Statement on Copy Control Systems (Oct. 11, 2002), *at* http://www.ieeeusa.org/forum/POSITIONS/copycontrolsystems.html ("The copy control system must not introduce new vulnerabilities, nor prevent users from securing their systems.").

DRM clearly raises complex issues of law, technology and public policy—far more than we have been able to comment upon in this particular context. We have, however, prepared two documents that explore these issues in greater depth. The first is a statement of requirements for a rights expression language, which we submitted to the OASIS Rights Language Technical Committee[43]. The second is a paper that we presented at the Association for Computing Machinery DRM Workshop, and which will be published in a volume in the Springer Lecture Notes in Computer Science series. We ask the Group to refer to these papers for more detailed explanations of the topics that we introduced in this letter.

D8   UDAC comments

UDAC provided information on Keitaide-Music Technical Specifications, which is now included in the general set of templated

D9   Vodaphone

With regard to the draft Report on Digital Rights Management (DRM) available on the CEN/ISSS web site, I would like to ask you to insert the following sentences in the section 8.17 (numbered 8.16 in the table of

content) which describes Vodafone. I think it is important to add them in order to give a short overview of what our position regarding DRM is.

'Vodafone supports the developments of DRM systems, as they shall contribute to the development of content, to the benefit of all stakeholders. We believe a standard is required, but that developments should be market-led. In particular, Vodafone supports the OMA standard for DRM and is actively involved in its work.'

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[43] OASIS Rights Language Technical Committee, http://www.oasis-open.org/committees/rights/.

Annex E – Comments Resolution Table

Originator	Comments made	Resolution
AIDAA (International Association of Audiovisual Writers and Directors)	First three paragraphs presenting AIDAA	Agreed - included in section 8
	Next five paragraphs dealing with ISAN	**Agreed** - included as a new section in 5.2 (standards activity)
	IDA – International Documentation on Audio-visual Works	**Agreed** - included under 5.1 "identification systems
	Final three paragraphs	**Agreed** - included in section 7.1 as individual contributor position
EICTA	*First set of comments*	
	Disagreement with footnote 2 to section "3.2.8.2 Open Standards" – ie the statement that it is taken to imply standards requiring no IPR fees	**Agreed**. delete the words "but in general…licence holder" in the first sentence
	Section 8.7 start with "boilerplate text" provided	**Agreed**
	Second set of comments	

	Comment 1 – delete "financial" in the editor's introduction, point iv) page 6 as Government funding should not be sought	**Agreed**: Funding may be sought not for the creation of standards but for the dissemination of these standard. EICTA..
		Agreed
	Comment 2 – insert two references to encryption in EICTA comments in section 6.1.5 and amend interoperability comment in section 6.14.5	

European Blind Union	2. General Principles	**Agreed**: included as a general statement in introductory material.
	2. Definitions: proposal to add elements relating to visually-handicapped in definitions of "inter-operability" and "compatibility"	**Agreed:** included a specific short section in section 3.2 on issues relating to people with special needs,
	3. Consumer involvement	**Agreed:** included in a specific short section in section 4.1 on user/consumer issues.
	4. Relevant standards	**No action needed**: a template on DAISY already exists.

	5,Levies	**Agreed**: included in section 6.11
European Bureau of Library, Information and Documentation Associations	EBLIDA position on DRM systems, February 2003	**Reject.** This is an official position paper of the organization on DRM, and not drawn up as a comment on or contribution to the report

GESAC (European Grouping of Societies of Authors and Composers)	Contribution 1	**Agreed**: included in section 8
	GESAC presentation	**Agreed** : included in section 8
	Implementation of DRM	**Agreed** : included in section 5.6 as additional contribution
	Standards: do standards have a role to play in the development of DRM?	**Agreed**: included in section 6.1 as additional contribution
	Regulatory issues: do regulatory issues have an impact on DRM?	**Accepted in part:** included the first three paragraphs (omitting the bracketed reference to

		EICTA) in section 6.11 as additional contribution.
	Regarding the private copying issue and the link with DRMs	**Reject** the inclusion of the text sub-headed "Regarding the private copying issue and the link with DRMs" as this is responding to other individual contributors' position, which the Group declined to do.
	Individual contributor conclusion	**Agreed**: included in section 7
	Regarding rights management regime in the EU	**Reject**: This is a general comment and not specifically relate to the report.
Nokia (Kalervo Kontola)	Remove comments in the first person plural where these do not relate to the collective view of the DRM Group (list provided)	**Accept** (editorial) Where it seems sensible
Samuelson Law, Technology & Public Policy Clinic – Boalt Hall, School of Law, University of	Business models	**Agreed** :Included in section 6.2 as an additional contribution, with editorial modification to first two sentences

California	Interoperability	**Agreed** :Included in section 6.3 as an additional contribution
	Complexity	**Agreed** :Included in section 6.5 as an additional contribution
	Security	**Agreed** :Included in section 6.6 as an additional contribution
	Privacy	**Agreed** :Included in section 6.7 as an additional contribution
	Submission to OASIS Rights Language TC	**Noted** Treat only as background information for the DRM Group
	Paper on implementing copyright limitations in rights expression languages	**Noted** Treat only as background information for the DRM Group
Swedish Standards Institute	Consumer/user issues inadequately addressed; proposal to complement the report with schemas similar to ISO/DTR 12449 and a specified list of stakeholder needs/responsibilities, including creators, producers, distributors, schools, libraries, archivists,	**Deferred**: might be a very useful generic set of material to add to the present section 4.1 but resources are lacking

	consumers	
UDAC	Templated information on **Keitaide-Music Consortium**	**Agreed** :Included in the general set of templates to be annexed to the final report and published on the web
Vodafone	Insert an additional sentence in their contribution in section 8	**Agreed** :Included in section 8

Final
30 September 2003