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RIGHTS MANAGEMENT
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SECURE IPR-CONTENT ON THE INTERNET

Four basic pillars for secure e-commerce

IPR-content, i.e. works and other subject matter protected by copyright, is increasingly traded in the network environment. Network is for most commerce only an effective ordering channel and the goods are delivered in physical form to the consumer. Copyrighted works may, however, be also delivered in digital form, in combination of zeros and ones. Thus, we can talk about "true electronic commerce".

In my view, four basic pillars are needed in order to protect the delivery of IPR-content and to encourage rights owners to trade with their valuable products and services over the network. These are prerequisites for effective trade – e-commerce - in the network environment:

- Solid copyright legislation
- Secure marketplace, including effective enforcement
- Effective protection of e-commerce transactions
- Reliable licensing mechanisms and rights management systems

Copyright legislation and enforcement mechanisms are legislative measures. Basically, the new WIPO Treaties, WCT and WPPT, form a good point of departure for legislation, and the ratification of these Treaties world-wide is of great significance.

Effective enforcement measures in the network environment are needed in order to secure a safe marketplace. In this context, the liability of online service providers needs to be addressed. Quick measures on the basis of "a notice and take down –procedure" are needed. Co-operation between ISPs and rights owners is of great importance.

During the *panel on rights management* we will devote ourselves to issues relating to the security of e-commerce transactions and rights management systems. I will give a general background to these issues at stake. The two other panelists will show you how some recently developed systems function and what is their purpose.

Protection of e-commerce transactions

Authors, publishers, producers and content providers are increasingly demanding technological answers to their concerns about copying and dissemination of digital material. In principle, the mechanisms in question fall into two main categories, according to their primary aim:

- Identification of IPR-content
- Technological protection measures.

Identification systems

The purpose of identification systems is to know what work or other subject matter is in question. Identification systems do not as such protect the works from unauthorized use.

Identification systems fall into three main categories according to their purpose:

- Identifiers: numbers and other identifiers
- Digital signatures: addressing authenticity
- Digital marks: watermarks, fingerprints and alike.

Different ***identification codes*** have been developed. The oldest of such identification codes is the ISBN (International Standard Book Number). Records have ISRC-codes (International Standard Recording Code), and identifiers have been also been developed for sheet music.

CISAC (Confédération Internationale des Sociétés d'Auterus et Compositeurs) has developed a whole series of codes for works and right owners under the CIS (Common Information Systems) structure. Together with the film industry a specific code for films and other audio-visual works (ISAN-number) has been developed.

Within the publishing industry a method to identify materials for electronic commerce has been developed. DOI (digital object identifier) can be attached to works or any smaller entity that is tradable. The DOI-system, even though developed within the publishing community, can be applied to any types of material. - Dr. Norman Paskin, Director, the International DOI Foundation, will present the digital object identifier as a necessary prerequisite in e-commerce.

Digital Signature can be used to secure the authenticity of the content of the work and its author. It reveals the author and functions at the same time as a proof that the content has not been modified.

In the identification of works ***digital marks*** can be used. That means hiding of messages in works or documents. That is the rationale of different fingerprinting- and watermarking techniques. Digital watermarks are invisible (for instance in pictures) or cannot be heard (for instance in musical works).

A digital (water)mark travels with the content over cyberspace and copyright owners can trace its whereabouts by using specific software that can trace to mark. That enables owners to monitor the use of files, in order to track unauthorised usage or for royalty tracking.

Technological protection measures

Technological protection measures are effective mechanisms that protect the digital content and prevent unauthorized use by making it impossible to get hold of the IPR-content without permission. For this purpose some access control mechanism is needed. Access can in principle be controlled by two methods:

- Limiting access to the source of the material
- Cryptography.

The first method, ***limiting access to the material***, can be put into practice by limiting access to the databases. For instance electronic versions of newspapers may be stored in databases with access control, either totally or partially. Access control may or may not be coupled with payment mechanisms.

The delivery of copyrighted material may be made secure by putting the material into ***digital envelopes*** *or* ***wrappers***. Opening the wrapper presupposes an agreement with the content provider and the payment of a license fee, if this is the case. This access control mechanism is used among others in delivery of packaged software over the network.

By ***encryption*** the message is altered into such a form that it is not understandable by a user without a decryption device or key. Encryption has been widely used in satellite and cable television, but the same method can also be used in e-commerce.

Another effective technological protection measure is based on ***copy prevention***. The number of copies may be restricted. The most widely known is the SCMS-system (Serial Copy Management System) which enables one copy from a record, but no further copies of the copy. Different devices with copy control mechanism are on the market.

Rights management

Rights owners have an interest to trade with their creations and to secure payments from legitimate usage. Rights clearance for copyright protected works is an essential element in e-commerce. Some systems secure rights clearance alone, mainly in up-stream licensing instances. Digital rights management (DRM) systems have been developed mainly for consumer trade. In the following, some examples are given from both categories to highlight their primary purpose and rationale.

- Rights management systems without technological protection
- Rights management systems with technological protection measures.

Mr. Nic Garnett, Senior Vice President, InterTrust Technology, will highlight some essential elements in recently developed DRM systems.

In the following the functioning and purpose of these rights management systems are highlighted, using some current systems as examples.

Rights management systems without technological protection

Online permission services for copyright clearance have been developed. For instance online newspapers and magazines seem to favor a "trading" model that keeps their content freely available but that offers to the users a possibility to license the content in total or in any part. Newspapers and magazines are not are not in the business of keeping their content locked away, suggest the developers of these online licensing systems.

Copyright Clearance Center, Inc. (USA) is a rights management organization that represents a large number of print publishers, such as the New York Times and The Wall Street Journal. CCC has developed a number of licensing options for the rights owners. A text link existing on the site leads the user to a step-by-step licensing process.

For same kind of purposes ***iCopyright*** (USA) has an online licensing system, starting with the Los Angeles Times in 1999. It is question of digital reproduction rights - reuse, republish, redistribute the content. Without readily existing permission services there would be more rampant unauthorized uses. With an icon that exists on the web, users can by clicking get a relevant license to reuse the copyrighted material.

A European version of an online copyright clearance service is offered by ***Info2Clear*** (Belgium). Its services are demonstrated during this Conference in the workshop concerning electronic publishing.

Copyright management organizations in the field of music, visual arts and literature have developed or are in the process of developing online licensing systems. Some of these organizations are also developing online licensing platforms for multimedia users. Especially in the field of photographs users can get simultaneously the digitized content.

Rights management with technological protection measures

There are many digital rights management (DRM) systems that have been developed for the consumer trade of copyrighted material. They normally incorporate some identification system and one or several technological protection measures. Their aim is to secure rights clearance and revenue collection. They are complete trading systems or end-to-end digital rights trading solutions, mainly designed for consumer trade (down-stream licensing).

The purpose of DRM has been described as follows:

- DRM means management of digital content distributed via the Internet
- DRM prevents content from being napsterized
- DRM does not only protect, but distributes and markets content as well
- DRM can keep honest people honest and turn pirates into authorized redistributors

In the DRM zone, advanced technology is used for management of content through the application of dynamic usage rules. DRM software systems frame a set of rules that allow the rights owners to decide who can see the content, in what territory and in what form. They may also contain information on how many times the content may be accessed, or make the content expire after a certain time.

The phenomenon of music file-sharing system Napster and copycat peer-to-peer services affecting the music, film and software industries, call for solutions that can solve the redistribution of licensed material, called for superdistribution.

There are basically two main types of players in the DRM commerce chain:

- packaging and encryption providers
- clearing house providers.

Packaging and encryption services provide the secure containers in which content is transmitted. Clearing houses take care of the transactions between the consumers and the content providers or rights owners. - There are a number of options, none of which is normally sufficient alone. Partnerships are common.

The DRM market is a highly competitive market. Only a few examples of DRM system providers can be mentioned here, as an example.

InterTrust's MetaTrust Utility product and ***Xerox's ContentGuard*** play a key role in packaging and enryption. In principle a software platform plugs into the systm of a content provider and that of a clearing house and allows content, transaction information and usage information to be passed around the DRM commerce chain. - ContentGuard has developd a proprieatary version of XML (XrML – eXtensible rights Markup Language) that allows users to create content with specified rights and usage permission embedded in it.

Reciprocal's core business is in clearing, but it offers – like most of the other providers – turnkey solutions to publishers and other content providers. ***Magex*** offers financial institution clearing and transaction services.

Market development

Copyright industries are in a different phase of development as far as online trading is concerned. Some industries, like music, have experienced Napster and alike, i.e. huge unauthorized use. In the audiovisual sector bandwith has prevented similar use in such a massive scale, but the situation is rapidly changing.

Market figures are difficult, especially when estimating the future is in question. However, some indications about approximate figures today and in a few years time may give you perspective and an idea about the development.

The software industry (BSA) has earlier this year made the followng estimation:

- 10 % of packaged software trade came from online sales in 1999
- 60 % of packaged software trade is estimated to came from online sales in 2005

Similar figures rom ***the music industry*** (IFPI)indicate that:

- less that 1 % from music trade came from online sales in 1999
- between 5 and 15 % is estimated to come from online sales in 2005

In ***the publishing industry*** the following estimation has been made: digital downloads of texts will represent 13 % of all books sold online by 2004 (Electronic Publlishing Services, October 2000).