POSITION PAPER FOR W3C WORKSHOP ON DIGITAL RIGHTS MANAGEMENT

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ABSTRACT

There exists a strong requirement for interoperable, end-to-end Digital Rights Management (DRM) systems that offer artists, content providers, distributors and consumers a flexible platform for the secure distribution of digital media. Content owners must be able to deliver music, videos, E-Books and other media over the Internet and other pipes in a protected, portable format. Digital content will soon be delivered over "the last mile" to consumers through broadband & media-on-demand services. The associated portals and pipe owners must have a mechanism for monetizing their value-add. Gateways and bridges of many types will soon route this content deep into the home network over both wired and wireless connections. DRM systems must enable consumers to legitimately obtain and consume digital media and while at the same time maintaining the rights and business opportunities of the content owners and distributors. For the sake of discussion at this workshop, a Digital Rights Management system example is described.

THE IMPORTANCE OF DRM – A BUSINESS PERSPECTIVE

The need for strong, flexible, scalable DRM technology has increased due to vast improvements in streaming media, compression technology, broadband delivery, consumer storage devices and home networking. High-quality audio and video are now a reality on the Web. This reality has created one of the hottest trends on the Internet -- downloading licensed, and in some cases, unlicensed audio content. This digital media can be easily copied and distributed, without any reduction in quality. These trends in audio will soon extend to E-Books and video. Consequently, content providers of all types face serious problems protecting their digital media rights while at the same time gearing up for net-based business models.

The software industry has battled piracy for many years. As a result, we have gained a deep understanding of the damage that seemingly harmless media copying can do to artists and corporations alike. With the introduction of media rights management technologies partially derived from advanced software and communications technologies, artists and content providers can now use license registration and media file encryption to protect their digital media rights and stay closer to their customers.

New DRM systems should include both server and client software technologies that enable applications to protect and play back digital media in both connected and unconnected environments. Using these tools, developers may create applications that encrypt digital media files and issue licenses for those media.

Such files can be streamed, broadcast or downloaded to the consumer. Developers can enable applications to automatically acquire licenses for these protected media, or, for some applications using packaged media or E-Books, the keys may be carried with (or internal to) the content itself. The consumer can then play the digital media files back on compatible PCs, portable devices, new-media appliances and advanced digital set top boxes.

HOW A TYPICAL MEDIA RIGHTS MANAGER MIGHT WORK

The media rights manager tools would allow content providers to deliver songs, videos, and other media over the Internet in a protected, encrypted file format. The media rights manager helps protect digital media (such as songs and videos) by packaging media files. A packaged media file contains a version of a media file that has been encrypted and locked with a "key." This packaged file is also bundled with additional information from the content provider. The result is a protected media file that can only be played by a person or application that has obtained a license.

A sample Digital Rights Management process is as follows:

Packaging

Package the media file. The packaged media file is encrypted and locked with a "key." This key is stored in an encrypted license, which is usually distributed separately but could also be transported with the media in some cases. Other information may be added to the media file, such as the URL where the license can be acquired. Universal Program Ids such as SMPTE UPIDs, ISANs or other metadata may also be included to facilitate registry lookup and Electronic Program Guide services.

Some of the recently announced products use the strongest DRM encryption schemes available -- which would take days of supercomputer time to decode. To further raise the protection level, a content owner can change the media file encryption keys daily or even every few hours.

Establishing a License Server

The content provider chooses a clearinghouse that stores the specific rights or rules of the license and implements the media rights manager license services. The role of the clearinghouse is to authenticate the consumer's request for a license. Media files and licenses are usually distributed and stored separately, making it easier to manage the entire system.

Distribution

The protected file can be placed on a Web site for download, placed on a media server for streaming, distributed on a CD/DVD, broadcast over a cable or satellite system, or e-mailed to consumers. The media rights manager would ideally permit consumers to send copy-protected media files to their friends as well.

License Acquisition

To play a protected media file, the consumer must first acquire a license key to unlock the file. The process of acquiring a license can begin automatically when the consumer attempts to acquire the protected content, acquires a pre-delivered license, or plays the file for the first time. The media rights manager either sends the consumer to a registration page where information is requested or payment is required or "silently" retrieves a license from a clearinghouse.

The license acquisition process will allow companies to gather extremely targeted customer information. For example, many music distribution Web sites now request the consumer's e-mail address in exchange for audio file licenses. Music distribution companies can then use this e-mail address to keep the consumer up to date on concert schedules and new CD releases, or to market related merchandise. Alternatively, unsigned garage bands can upload and market their music directly to fans using digital rights management technology, while record labels can generate interest in new bands by offering free downloads of their new music.

Playing the Media File

To play the media file, the consumer needs a media player that supports the media rights manager architecture. The consumer can then play the media file according to the rules or rights that are included in the license. Licenses can have different rights, such as start times and dates, duration, and counted operations. For instance, default rights may allow the consumer to play the media file on a specific consumer appliance and copy the file to a portable device. Licenses, however, are not transferable. If a consumer sends a protected media file to a friend, this friend must acquire her own license to play the media file. This licensing scheme ensures that the protected media file can only be played by the consumer device that has been granted the license key for that file.

References: http://www.microsoft.com/windows/windowsmedia/en/wm7/drm.asp

CONCLUSION - METRICS FOR SUCCESS MUST SATISFY ALL STAKEHOLDERS

Retailers, film studios and record labels are in the process of setting up Internet music stores to distribute media files. Content owners must remain confident that their media files will stay protected, no matter how widely they are distributed.

Digital distribution offers consumers a convenient way to access their favorite content at any time, and sometimes from any place. Consumers will also be able to access higher quality media on the Internet because content providers using DRM will be more willing to make such content widely available. Also, DRM licensing schemes can protect consumers from inadvertently pirating a file. Consumers can be confident that the media they receive is authentic material and they have acquired it in a legitimate manner.

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