

DIGITAL WATERMARKING
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**Digital Watermarking: Enhancing Consumer Access to
Entertainment Content, Protecting Copyrights**

May 23, 2007

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Agenda for Today's Briefing

- **Digital Watermarking Overview**
- About the DWA
- Example Applications:
- Enabling Public Policy through Digital Watermarking Technology
- Q&A

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Some Statistics

- Tens of *Billions* Watermarked Objects in Circulation
- Hundreds of Millions of Watermark Readers in products today
- Watermarks can be found in...
 - Majority of television broadcasts
 - Microsoft's Virtual Earth Offering (as well as Corbis images)
 - Pre-release movies and music from major studios and labels
 - Adobe Photoshop (for over a decade)
 - Tens of Millions of US driver licenses (for authentication)
 - Emerging Digital Cinema systems...

Just The Start of Possible Applications....

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Digital Watermarks Defined

- Watermarking is a method of providing a persistent digital identity for audio, video, print and images
- Digital watermarks are data embedded directly within content which are imperceptible to humans but readable by computers
- Watermarks can be recognized by enabled software or hardware to provide copyright information, authenticate, track, monitor, enhance security and enable access to additional data, information and e-commerce opportunities across devices and networks



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Benefits of Digital Watermarking

- Creates a persistent identity to enable content to be managed more effectively and help enable new business models, greater security and broader consumer choice
 - Readable by computers/devices while remaining imperceptible to humans
 - Enables content identification or rights enforcement in digital or analog content distribution
 - Communicates copyright information and associated rights
 - Enables interoperability across different content management systems/devices
- Applicable to all content types
 - Photos and images, secure documents, advertisements, TV programming, movies, music, etc.
 - Offers copyright stakeholders persistent content identification and authentication



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Benefits of Digital Watermarking: Continued

- Resistant to standard content processing techniques
 - A/D and D/A conversion, cropping, scaling, compression, encryption/decryption, printing and scanning, etc.
- Adaptable to all media types, platforms, distribution and transmission methods
 - Complementary and enhanced security for encryption/decryption based DRM systems
- Supports new business models by enabling copyright stakeholders the freedom to embrace and balance various management, protection and delivery choices
- Enables Consumer friendly access to content and interoperability across delivery/distribution systems and devices.



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Digital Watermarking Alliance

The Digital Watermarking Alliance (DWA) is a group of companies that share a common interest in furthering the adoption of *digital watermarking* and which are actively involved in commercialization of digital watermarking-based applications, systems and services. Member companies service a broad range of industries around the world.



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Digital Watermarking Alliance Members



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Digital Watermarking Application Examples

- **Copyright Communication**
 - Identifies content owner and rights
- **Copy Protection**
 - Controls recording and playback of content
- **Monitoring**
 - Monitor broadcast and Internet usage
- **Filtering/Classification**
 - Classifies content so it is used appropriately; filters inappropriate content
- **Authentication/Integrity**
 - Verifies that content is genuine, from an authorized source and has not been altered
- **Media Serialization & Tracking**
 - Identifies content and where it left authorized environment
- **Asset/Content Management**
 - Links to DAM/ECM backend system to access metadata/information
- **Rights Management**
 - Links to DRM system to re-associate rights or promote content commerce
- **Remote Triggering**
 - Causes automatic action during distribution
- **Linking/E-Commerce**
 - Enables access to information and purchase of related content



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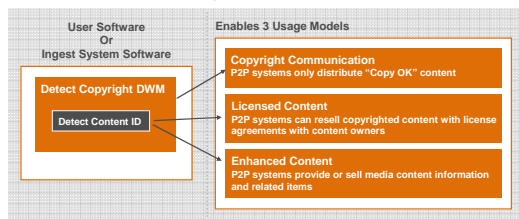
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Example: Identification of Copyrighted Content in P2P Networks

Usage Models

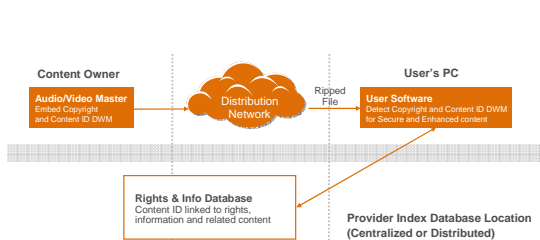


Can be used to address P2P and social network content identification needs as well as providing identification of orphan works and access to metadata/networked information

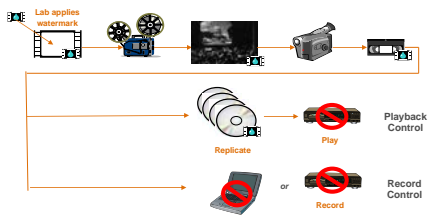


Example: Identification of Content in P2P Networks

Technical Architecture



Example: Copy Protection on Theatrical Showings



- Applies Content Owners' rights and thwarts casual and malicious piracy
- Controls unauthorized playback of content
- Prevents unauthorized recording of content



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Example: Media Serialization

Embedding unique marks as serial numbers in digitally delivered content

- Analogous to
 - "VIN" on an automobile
 - Personal license for a software installation on a computer
- Associates content to a specific device or a transaction - does not directly identify an individual or their use of content
- Enables persistent traceability of stolen content

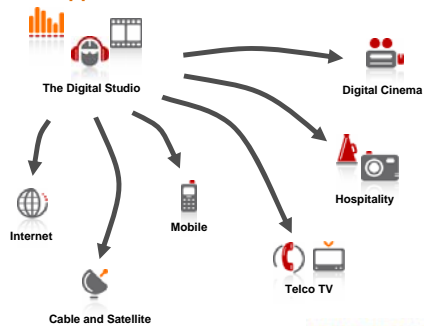
Media Serialization watermarking is an essential complement to any DRM or content management system



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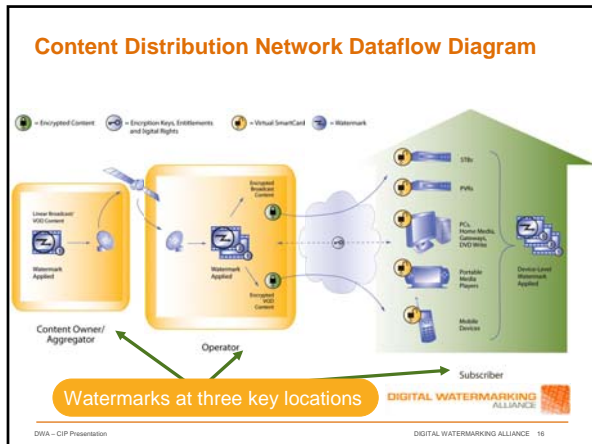
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Example: Media Serialization Professional Uses to Consumer Applications



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- ### Benefits
- **Consumer**
 - Enables interoperability across consumer's personal domain
 - Least intrusive form of content security
 - Potentially enables earlier, more flexible and less restrictive access to high quality content
 - Provides richer media and entertainment experiences
 - **Content Owner**
 - Keeps "honest" people "honest"
 - Identifies prolific pirates
 - Addresses "analog hole" for premium content in consumer systems
 - **System Operator**
 - Protect/Increase revenue
 - Easily implemented in set top boxes, PCs, mobile devices, game consoles
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Enabling Public Policy Through Digital Watermarking

- Digital Watermarking Enables
 - Copyright Communication
 - Identification of Orphan Works
 - Moving beyond the Analog Hole
 - New Media Distribution/re-distribution Models and Interoperability across devices/networks
- The Digital Watermarking Alliance is dedicated to working with private sector stakeholders such as content owners, CE, IT and Peer to Peer Network operators to address these public policy issues
- We urge policy makers to lend their support to private sector led initiatives to address these public policy challenges



Beyond the Analog Hole - Enabling New Media Distribution Models

- Persistent media identification through Digital Watermarking enables media, and associated usage rights, to be effectively and persistently identified across analog and digital domains
- Enables effective identification of copyrighted content as outlined in MGM v. Grokster Supreme Court Ruling
- New DCIA/MPAA/DWA whitepaper identifies several approaches to using digital watermarking to enable new media distribution models.
- Private industry cooperation, with appropriate support from policy makers, can provide richer entertainment experiences for consumers and help broaden consumer choice while appropriately protecting copyrighted content.



Summary

- Digital watermarking offers persistent digital identity carried directly within content and documents
 - Solves content identification issues in digital distribution
 - Communicates copyright information and rights information
 - Enhanced media management and distribution monitoring
 - Enables authentication of documents, images and audio/video content
- Billions of digitally watermarked objects and hundreds of millions of watermarked detectors have already been successfully deployed supporting a large number of print, image, audio and video applications.
- Digital Watermarking Alliance represents wide array of digital watermarking technology, service and solution providers
- Initiatives underway offering unique solutions to other digital content challenges
 - E-commerce, metadata access and interoperability



Q&A



- For further information, please visit:
– www.digitalwatermarkingalliance.org

