



DIGITAL WATERMARKING ALLIANCE

Digital Watermarking Alliance Charter

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.

Digital Watermarking Alliance Mission

The mission of the DWA is to create awareness and promote the value of *digital watermarking* to content owners, industry, policy makers, and consumers.

Digital Watermarking Alliance Purpose

Create awareness, educate, promote the value of, and advance the commercialization and adoption of a wide variety of digital watermarking-based applications and solutions, including:

- Supporting communications regarding digital watermarking to and between technology and solution providers, consumer electronics and IT companies, infrastructure providers, content owners and policy makers at all levels;
- Promoting digital watermarking by interacting with policymakers and addressing legal or legislative issues through recommendations and education;
- Monitoring legislative activity and regulatory requirements that may affect the watermarking industry and updating members on same;
- Creating a set of best practices, as appropriate, to address, among other things, privacy and technology concerns;
- Fostering the use of digital watermarking in industry standards and specifications; and
- Developing relationships with national and international organizations in fields where digital watermarking has relevance.



Digital Watermarking Alliance

- Membership represents applications and solutions for:
 - Audio and Music Content
 - Monitoring, tracking, identifying, filtering, linking to information and communicating or protecting copyrights
 - Video, Movies and TV Content
 - Monitoring, tracking, identifying, filtering, linking to information and communicating or protecting copyrights
 - Digital Imagery
 - Image identification, copyright communication, authentication, filtering, linking to information, and tracking capabilities for images used by creative individuals, enterprises, governments and law enforcement
 - Identity Documents
 - ID authentication and validation to deter counterfeiting or alteration of driver licenses, passports, travel documents and other identity documents
 - Value Documents
 - Counterfeit deterrence and validation of financial instruments and sensitive or secure document



Digital Watermarking Alliance Members



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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
- Digital watermarks are currently deployed in billions of audio, video, image and print objects and hundreds of millions of watermarked enabled applications



Original Image



Exaggerated Watermark



Digitally Watermarked Image



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 supporting numerous applications while remaining imperceptible to humans
 - Enables content identification or rights enforcement in digital or analog content distribution
 - Communicates copyright information and associated rights
- Applicable to all content types
 - Photos and images, secure documents, advertisements, TV programming, movies, music, etc.
 - Offers copyright stakeholders persistent content identification and authentication

[continued]

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Benefits of Digital Watermarking

- Robust 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 and consumer experiences by enabling copyright stakeholders the freedom to embrace and balance various management, protection and delivery choices

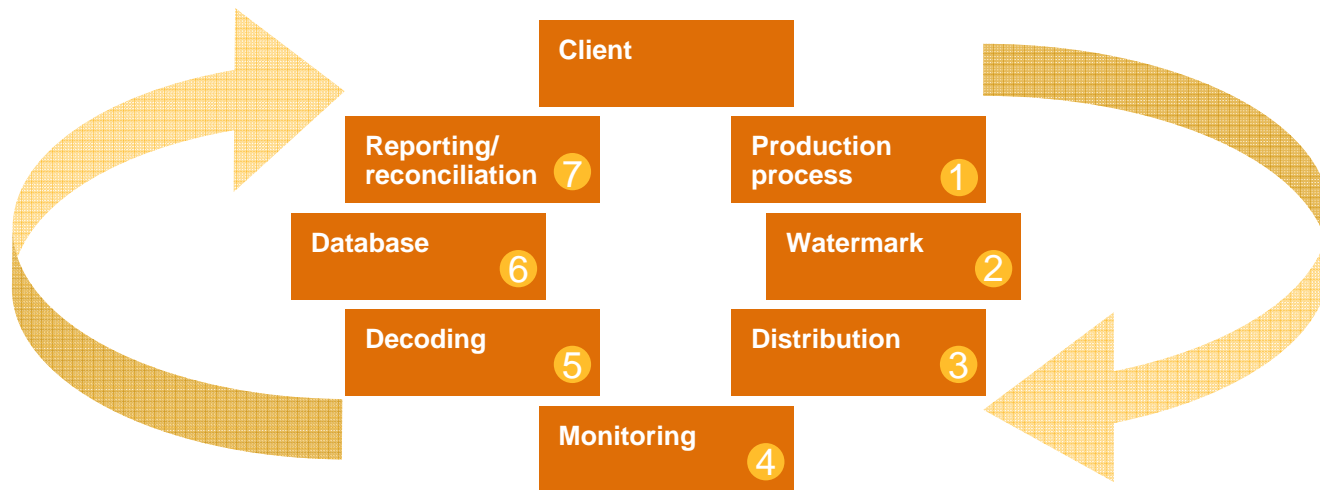
Digital Watermarking Applications Examples

- **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
- **Product 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



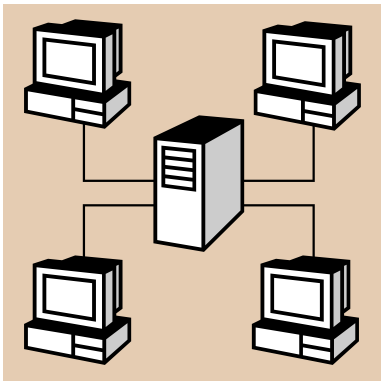
DWM Applications: Broadcast Monitoring

- Tracks and monitors where, when and how content is being aired via cable, satellite and terrestrial delivery
- Automates manual reporting system, resulting in cost effective tracking and reporting solution
- Real-time reporting enables faster responsiveness to broadcast information (e.g. programming changes, ad frequency changes, etc.)



DWM Applications: Internet Monitoring

- **Application:** Content owner/distributor can track use of their content over the Internet
- **Benefit:** Providing usage data and locating illegitimate content on the Internet
- **Watermark:** Content and distributor identification
- **Critical Components:** Web spiders and reporting
- **Content Focus:** Image, Audio and Video



Content Distribution



Content Detected /
Checked for
Appropriate Usage

IMAGE REPORT	
Corbis	Last Viewed: 1/23/2003 7:40:14 PM 270 Images Found
Site: http://abidis.org	
Page: http://abidis.org/abidi.htm	Image Name: bg-eye.jpg Image TransID: 13048373 Image Found: 1/10/2003 Image Size: 49135 bytes
Site: http://andy.weblogger.terra.com.br	
Page: http://andy.weblogger.terra.com.br/	Image Name: dntc.jpg Image TransID: 12393942 Image Found: 1/7/2003 Image Size: 14635 bytes
Site: http://aster.iespana.es	
Page: http://aster.iespana.es/	Image Name: cargador.jpg Image TransID: 11119625 Image Found: 12/30/2002 Image Size: 10193 bytes

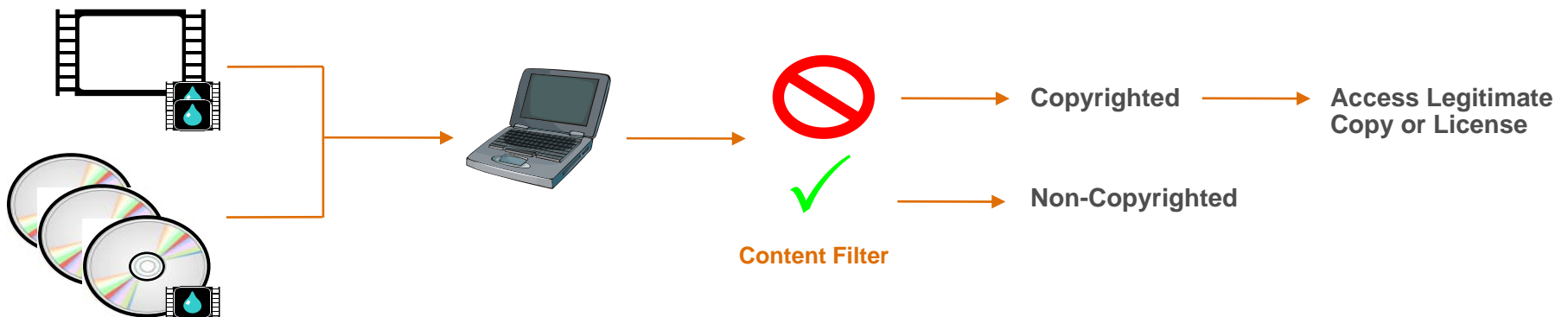
Report Generation

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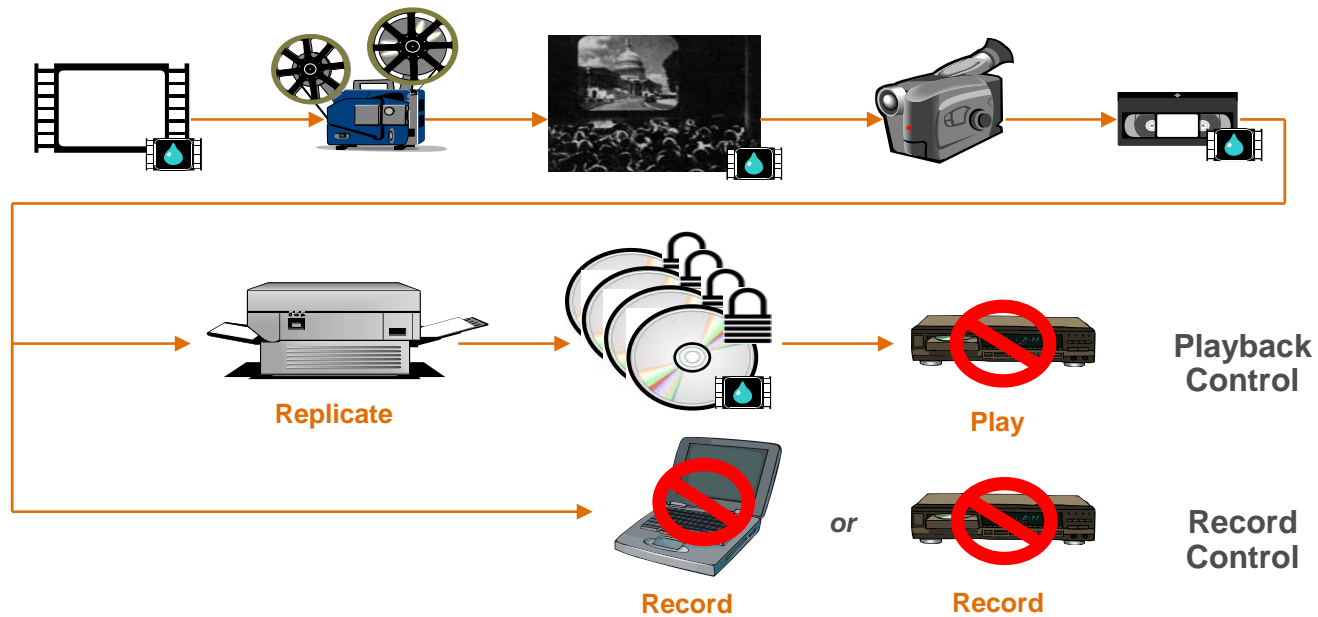
DWM Applications: Filtering & Classification

- Can support existing, established and/or new Classification Systems or content identifiers such as MPAA film ratings, ISAN or ad identification codes, etc.
- Filtering can occur at the whole content level and/or at a more granular level identifying copyrighted, sensitive and/or questionable material for the given audience
- May be key element of identifying copyrighted content to support legitimate P2P distribution



DWM Applications: Theatrical Copy Protection

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

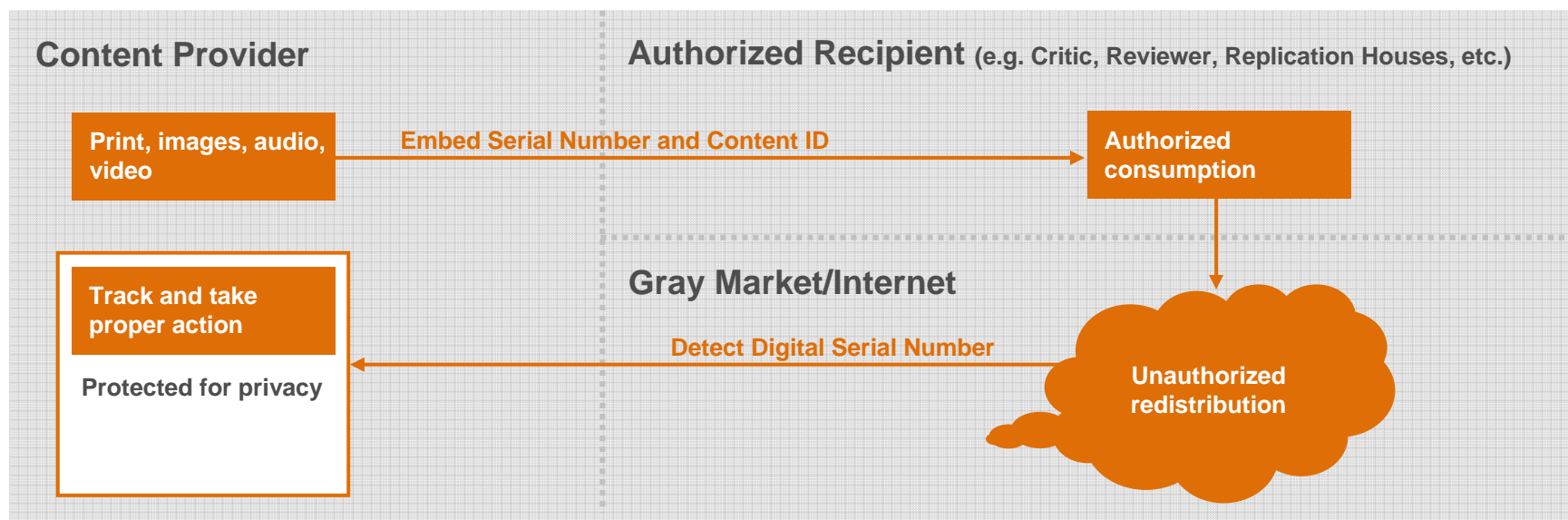


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DWM Applications: B2B Digital Media Product Serialization

- Content leaked prior to commercial release has a significant impact on sales
- Digital media serialization supports ‘best practice’ security policies among creative industries by automating content management and tracking
- Awareness of watermarked content by authorized recipient creates deterrent against unauthorized copying and distribution
- Provides accurate identification of source of unauthorized content discovered on the Internet and/or physical media

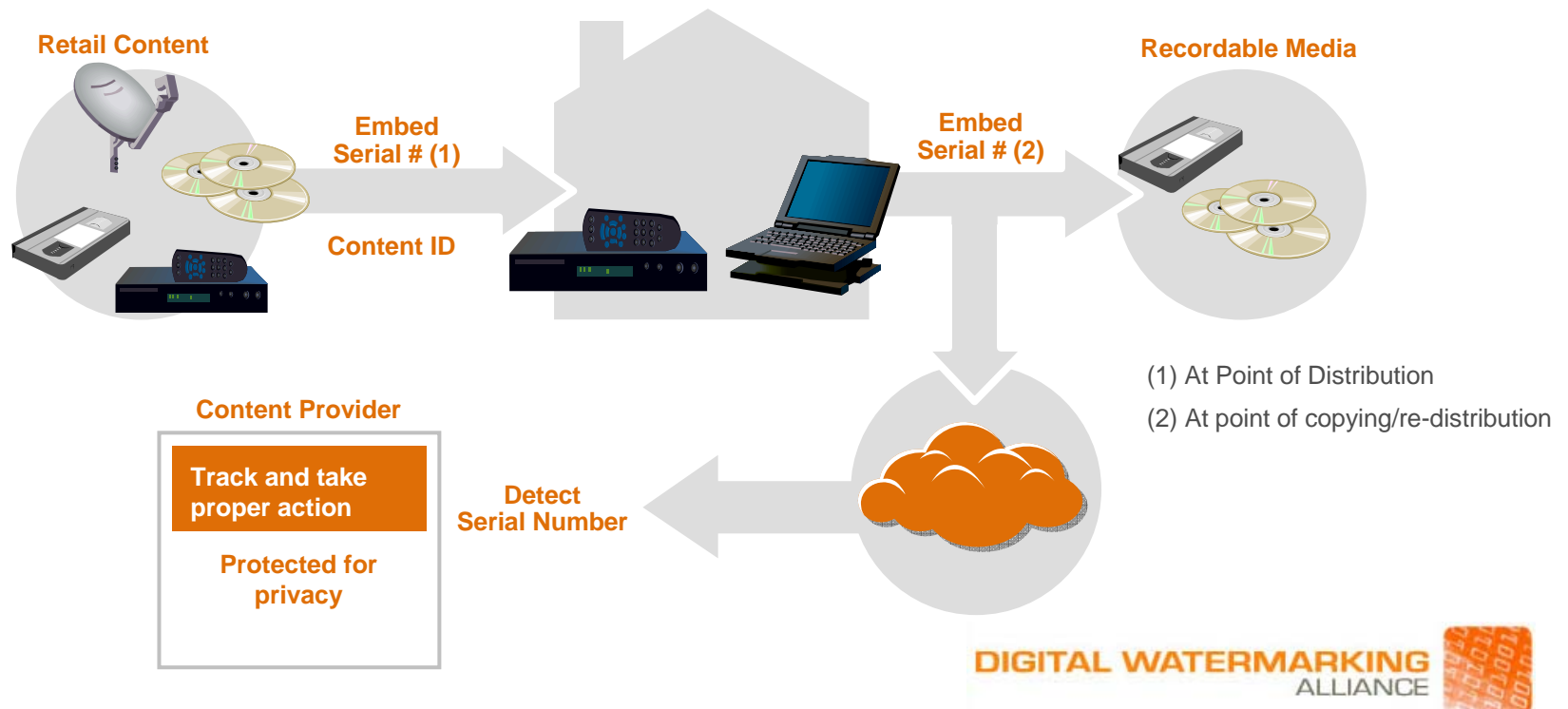


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DWM Applications: B2C Digital Media Serialization & Tracking

- Identifies content owners and rights while communicating copyright information
- Awareness of watermarked content by consumer creates deterrent against unauthorized copying and distribution
- Provides accurate identification of source of unauthorized content discovered on the Internet and/or physical media



DWM Applications: Connected Content/Linking

- Watermark reading enabled for:
 - Promoting & Facilitating M-Commerce
 - Location based services
 - Multimedia access
 - Streaming audio
 - Music
 - Multimedia
 - Bookmarking

Captured CD e-logo links to
web and music downloads



DOWNLOAD:

- Ring tones
- Buy tickets
- Reviews
- Tour dates
- Samples
- Band info

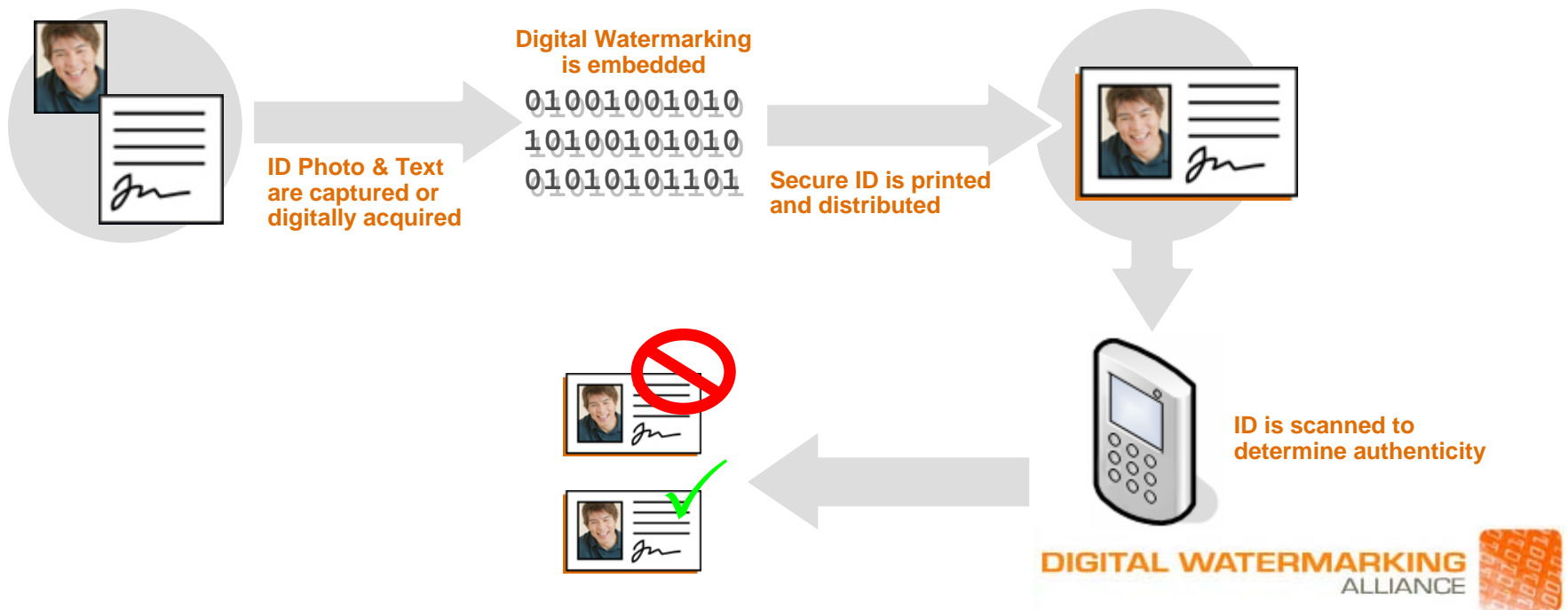


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DWM Applications: ID Security

- Digital watermarking of travel/identity documents protects against:
 - Alteration, regeneration, photo swapping and counterfeiting
- Can enable cross-jurisdictional authentication without standard ID design
- Automates document authentication
- Provides forensic analysis and tracking
- Provides compatibility with both new and existing ID designs



Summary

- Digital Watermarking Alliance represents wide array of digital watermarking technology, service and solution providers
- 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
- Digital watermarking represents platform or foundation technologies which enable unique and/or enhanced applications and services
 - Authenticate, enhance security and enable new marketing opportunities

[continued]



Summary

- Field proven and widely deployed
 - Billions of watermarked content objects and hundreds of millions of watermark-enabled applications or devices worldwide
 - Users include major record labels, movie studios, broadcasters, advertisers, financial institutions and governmental document issuing agencies
- Trials underway offering unique solutions to other digital content challenges
 - E-commerce, security and interoperability
- For further information, please visit:
 - www.digitalwatermarkingalliance.org

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DIGITAL WATERMARKING CASE STUDIES

Case Study – Broadcast Monitoring

- End User
 - ABC Television Network, network promotion division providing television program promotions to ABC stations and clients in the US
- Market Need
 - Determine the effectiveness of marketing promotions
- Business Solution
 - Video watermarking to electronically track the US television airings of TV show promotions
- Real World Experience
 - Company produces thousands of promotions every year that are featured in news, daytime, primetime, late-night and sports slots and uses video watermarking to monitor the return-on-investment (ROI) of those efforts

Case Study – Broadcast Monitoring

- End User
 - A major US broadcaster news feed service providing television news content to affiliate stations and clients in the US and internationally
- Market Need
 - Monitor broadcasters' compliance to subscription agreements and provide timely reporting on usage of supplied news footage
- Business Solution
 - Video watermarking, detection and near real-time reporting services for news video disseminated to broadcast affiliates around the globe
- Real World Experience
 - Company employs broadcast content and deployed video watermarking technology at an international event to electronically track usage of its live and taped news coverage by broadcasters around the world



Case Study – Digital Media Product Serialization

- End User
 - Music record label
- Market Need
 - Identify source leaks of pre-release music and thwart pre-release piracy. If an album is widely available prior to commercial release, it cuts into album sales and caps consumer demand
- Business Solution
 - Audio watermarking to embed an identifier unique to each authorized recipient, such as Music Critic, Radio Station, Duplication Service, etc.
- Real World Experience
 - Company individually marks each pre-release (critic's release, radio release) in order to identify source leaks to the Internet. Pre-release watermarking has become an industry practice and fewer leaks now stem from watermarked copies sent to authorized recipients

Case Study – Document Security

- End User
 - Document security company
- Market Need
 - Protecting digital documents and image files against fraudulent or accidental alteration
- Business Solution
 - Digital watermarking is used to authenticate digital documents and image files
- Real World Experience
 - Company uses digital watermarking to ensure the integrity of digital images such as bank documents, checks and other negotiable instruments



Case Study – Copyright Protection

- End User
 - Government mapping agency, covering the production, maintenance and marketing of a wide range of maps and geographical information
- Market Need
 - Protecting copyright ownership and tracking digital assets that have cost millions to provide to consumers and businesses
- Business Solution
 - Maps are digitally watermarked before electronic distribution
- Real World Experience
 - Company uses digital watermarking to discourage fraud, map alteration and copyright infringement

Case Study – Copyright Communication

- End User
 - Corbis Corporation - Stock photography and media supplier
- Market Need
 - Identify out-of-scope, unauthorized uses of their digital imagery on the Internet
- Business Solution
 - Digitally watermark imagery distributed on-line. Subsequently, using web crawlers to identify Corbis imagery through the presence of their unique digital watermark
- Real World Experience
 - Corbis identifies up to 50 cases of unauthorized commercial use of their images per month. Each case is directed to sales for follow-up, or directed to the legal compliance group for actions such as recapturing otherwise lost revenue

Case Study – Copyright Communication

- End User
 - Microsoft Corporation
- Market Need
 - Identify and protect tens of millions of geospatial images distributed through Microsoft’s Virtual Earth on line service
- Business Solution
 - Digitally watermark imagery distributed on-line with watermarks which can be easily read using standard image editing software
- Real World Experience
 - “Microsoft takes the protection of intellectual property and copyrighted materials very seriously. Protecting and communicating the copyrights for the satellite and aerial images used in the Virtual Earth platform is essential to our business,” - Stephen Lawler, general manager of the Virtual Earth Business Unit, press release, May 2, 2006



Case Study - ID Authentication

- End User
 - State of Nebraska
- Market Need
 - Growing number of young drivers involved in alcohol-related fatal crashes; identity theft and fraud; wanted to improve traffic safety and enhance ID security by authenticating driver licenses using digital watermarks
- Business Solution
 - Machine inspection and authentication of driver licenses using digital watermarks within retail, law enforcement and DMV environments
- Real World Experience
 - Today approximately 60 percent of the Nebraska licenses in circulation carry a digital watermark with age-specific information. By providing reading devices to law enforcement, bars, and retail outlets, the state enabled retailers to authenticate the age of individuals trying to purchase tobacco, alcohol, and lottery tickets.



Case Study - Piracy Deterrence

- End User
 - Academy of Motion Picture Arts and Sciences
- Market Need
 - Deter piracy through tracking of pre-release movies using digital watermarking. Estimated piracy loss is \$3 billion annually due to illegal distribution of Academy Award Screeners and other pre-release movies on DVD or over the Internet
- Business Solution
 - Post production work being digitally watermarked with digital serial numbers by studios and forensically tracked; Justice Department/FBI Task Force
- Real World Experience
 - In 2006, a man who allegedly uploaded a copy of "Walk the Line" that was intended for an Academy Award voter, faces up to a year in prison and a \$100,000 fine. In 2004, an Academy member was ordered to pay \$600K and expelled from the Academy for sharing screener copies which were later pirated. Additional cases pending.



Case Study - Piracy Deterrence

- End User
 - Digital cinema producers/distributors
- Market Need
 - Illegal copying is estimated to cost the movie industry more than \$4 billion per year, with camcorder recordings made by cinema goers identified as one of the most important sources of content leakage
- Business Solution
 - By embedding date, time and place watermarks into the picture and soundtrack of digitally projected movies, moviemakers are able to trace camcorder-captured copies back to the cinema in which the illegal copying took place
- Real World Experience
 - Digital Cinema Initiatives (DCI) has made forensic anti-piracy technology a mandatory requirement in its Digital Cinema System Specification



Case Study - Piracy Deterrence (online content)

- End User
 - Organization in charge of television archives
- Market Need
 - Dissuade users from illicitly re-using TV archives made available as online video library via the Internet
- Business Solution
 - Individual copies are digitally watermarked prior to download by users
- Real World Experience
 - Company uniquely marks each digital copy being downloaded, as part of the back office process and as a complement to the DRM used to secure the delivery of the content

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