



WHITE PAPER


THE CASE FOR CONTENT IDENTIFICATION
**SUPPORTING NEW BUSINESS MODELS AND EFFECTIVELY MANAGING KEY
BUSINESS ASSETS**

OVERVIEW

While the ease and speed with which digital content circulates across the Internet has provided unprecedented opportunities for both creators and consumers, it also presents a fundamental problem: Once content is posted online – whether it’s a photograph, a book, a document, a song, a TV show, or a movie – it is immediately subject to appropriation by well-meaning and unscrupulous users alike. Copyright holders quickly lose the ability to monitor, control and earn royalties from their content because they lack a reliable mechanism for establishing ownership, tracking use, and communicating essential licensing and usage information. In such cases content is, in effect, set adrift in a vast sea of information, untraceable, severed from its origins – greatly diminishing its usefulness or value without any labels or descriptions.

Once content becomes detached from the metadata that identifies it, we also lose the ability to learn how, when and where that content is accessed – information that benefits consumers as well as content owners and distributors. For example, contextual data about usage patterns can be used to provide consumers with new and personalized rich media experiences. This might include links to similar content or complementary offerings in other media, or perhaps the opportunity for consumers to purchase additional premium content. It could also include the presentation of highly targeted ads tailored to a particular consumer’s interests. Such offerings provide additional revenue opportunities for content providers and distributors while simultaneously serving the consumers’ desire for easy access to the content they value and enjoy.

Current technologies for creating, distributing, and consuming digital media generally provide the capability to associate metadata with content; however, too often it does not survive transformations and can easily be stripped – maliciously or unintentionally. In the absence of reliable identification, content can more easily be copied, shared, altered, re-purposed and even sold without the permission or knowledge of its legal owners.



At risk are both the ability of copyright holders to be fairly compensated for the content they have created and the ability of consumers to freely enjoy purchased content on whatever devices they choose.

As a result, consumers are often confused about what circumstances allow for the legal access and use of content, while owners and distributors have resorted to protection schemes that often restrict legitimate uses of content to a single device or, in some cases, to a single use. At risk are both the ability of copyright holders to be fairly compensated for the content they have created and the ability of consumers to freely enjoy purchased content on whatever devices they choose, and at the times and places that are most convenient to them. Furthermore, an important opportunity is missed to deliver more relevant and valuable content to consumers and, in turn, to open the door to new business models based on reliable information about how that content is used.

Without effective content identification:

Copyright holders are unable to maintain control over the uses of their content or to fully monetize it.

Consumers are likely to be frustrated by limitations imposed upon the uses of content they have acquired through legitimate means.

Consumers are deprived of a richer, deeper, more relevant, and more customized online experience.

Content providers miss an opportunity to deliver additional value and enjoyment to consumers and to capitalize on new revenue opportunities.

Businesses must rely upon assumptions and sample-based estimates to gauge consumption for the purposes of determining compensation.

Brands and marketers are unable to accurately measure how, when and where consumers interact with their products, or monitor the effectiveness of campaigns.

Parents who want to protect their children from inappropriate content lack the means to do so easily across the broad range of channels, platforms and devices through which digital content may be consumed.



WHAT CAN CONTENT IDENTIFICATION DO FOR YOU?

In order for digital content to reach its full potential and enrich the lives of consumers, the ecosystem in which it is produced and delivered must meet two primary criteria:

1. Convenient access for consumers
2. Respect for the rights of copyright holders

Although it is commonplace to assume that these two objectives are in conflict, in fact both are achievable to the extent that content can be uniquely identified by individual copies, quickly, accurately, and reliably. Given the ongoing explosive growth of web-based content, and the speed with which it can be transmitted, copied and shared, our ability to locate specific content on the Internet, wherever it ends up, and monitor and manage its many uses will continue to be severely limited without a simple, reliable mechanism for identification.

Content identification helps consumers:

Discover the content they're looking for, find out more about it (e.g., date, title, creator, back story, similar or related content), try it out, and find out where and how to purchase it.

Organize and integrate content with other items in their personal media lists, playlists and libraries.

Enjoy content on multiple devices, including upgrades or new devices they may own in the future.

Access the same content through a variety of channels and platforms, at times and in contexts that suit their individual preferences and lifestyle.

Interact with content and incorporate it into personal media productions.

Recommend content they like to friends and family, and share it in ways that are both convenient and legal.

Control what kinds of content their children have access to on all the devices they use, in accordance with parents' personal values and preferences.



Content identification helps copyright owners, brands and distributors:

Locate and learn about how, when and where content is being consumed.

Authenticate content.

Protect content from unauthorized use.

Audit, report on, and analyze the uses and distribution paths of content with full accuracy and transparency.

Enrich and enhance content by pairing it with related material, ads, promotions, discounts, interactive games and other creative means of engaging consumers.

Link consumers to and from content that is relevant to their interests.

Provide a way for users to easily identify the source of content by communicating copyright information and identify the appropriate channels for licensing or purchasing.

Organize and manage content in a digital asset management or other content management system.

Identify the source of leaks when confidential content inadvertently or intentionally makes its way onto the Internet.

Individuals and organizations at every point along the distribution chain – from creators, producers, packagers, and distributors to ISPs, web sites, social networks, and individual consumers – all stand to benefit from reliable content identification, which enables more efficient, transparent, and legally unambiguous ways to disseminate the billions of valuable “bits” of information and entertainment that Internet users have come to expect to access on demand.

NEW BUSINESS MODELS

The potential for content identification to open the door to new ways of maximizing content value is already reflected in the emergence of business models that capitalize on consumers’ growing appetite for pertinent, interesting, and entertaining content.

These new business models focus on giving consumers simple, powerful tools to discover, try out and share new content and enjoy it in a variety of contexts on their own time, at their own convenience.

While conventional digital rights management (DRM) technologies have been criticized for imposing cumbersome restrictions on content consumption, these new business models focus on giving consumers simple, powerful tools to discover, try out and share new content and enjoy it in a variety of contexts on their own time, at their own convenience. Instead of simply policing consumption, effective content identification enables legitimate uses and more accurate monitoring and measurement.

In the digital music world, for example, Shazam has attracted millions of users and millions of dollars in venture capital with its mobile phone application that allows consumers to identify songs they may hear in a bar or restaurant or at a party simply by aiming a phone toward the source of the music. Other new online music applications offer access to songs via text-based searches, or by incorporating the recommendations of friends or like-minded users, or by suggesting music that matches user preferences based on listening habits. These applications are generally customizable to user preferences and interoperable on the various computers and portable devices and players consumers are likely to use in their daily lives.



Whether these businesses sell songs individually, charge for a service that provides limited or unlimited streaming of music on demand, or derive income from contextual advertising or from some combination of these practices, all depend on some form of reliable content identification. For consumers, content identification provides a way to discover and instantly experience the content they desire. For providers, content identification provides the means to accurately audit usage in real time (facilitating timely payment and more robust analysis of consumer behavior) and produce appropriate pairings of music with ads, other music, or related content offerings designed to further engage listeners. Similar business models are emerging for other forms of streamed content, including video, film, television and even user-generated productions.

In the field of journalism, publishing syndicates like the Associated Press have begun to explore new ways to monetize their online offerings, using identification technology to crawl the web and track usage of their copyrighted content among affiliates.

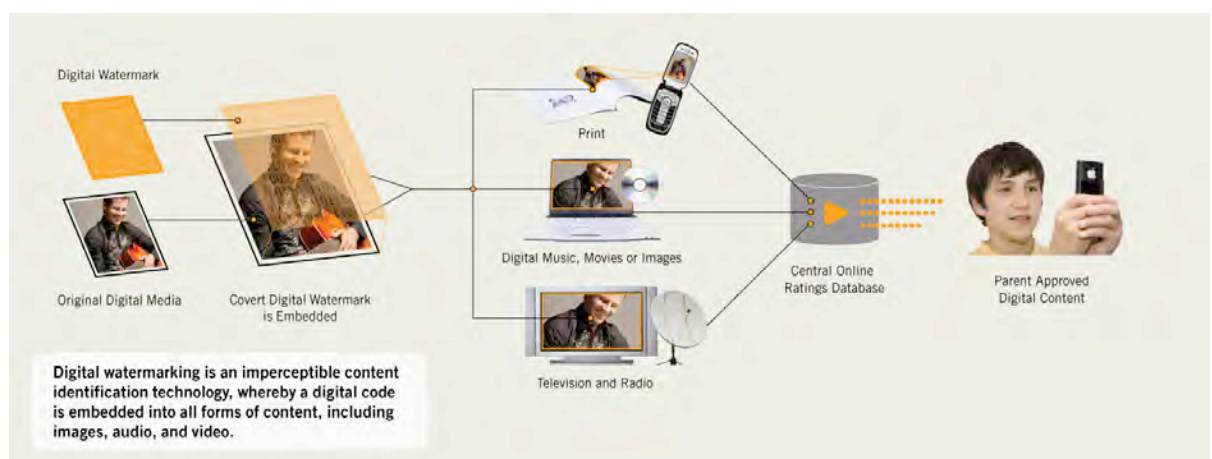
Some magazine and newspaper publishers are also experimenting with content identification technologies that provide readers with new rich media experiences linking printed copy to the web. In these initiatives, imperceptible digital watermarks are embedded into images that appear in a print publication's ads and/or editorial content, essentially transforming the paper into a web portal.



By simply holding a camera phone over ads from such automakers as Ford, Hyundai, Mazda and Peugeot, Autofácil readers instantly access a variety of payoffs.

When a reader's camera phone, equipped with a "reading" application, detects the watermark, it immediately triggers an online payoff, such as additional proprietary information, video, related interactive content, coupons, special offers, games, and so on. Such rich media experiences, enabled by digital watermarking, enhance readers' enjoyment of print publications by encouraging further engagement with the content. Readers may be given the opportunity to interact with real-time news updates or emotionally charged video, or even to make their own contributions to the news. In many cases, these print-to-web experiences also link consumers to exclusive proprietary content that is unavailable through any other means.

Content owners and distributors that provide products for children can use identification technologies to give parents greater, and more nuanced, control over the content their children are able to access on all of the devices they use throughout the day, wherever they are. Cross-platform, item-level identification technologies open the doors for innovators to create better blocking systems that are easier to use and more readily customized, so that parents can set parameters for their children's consumption of media in accordance with their own cultural and social values.



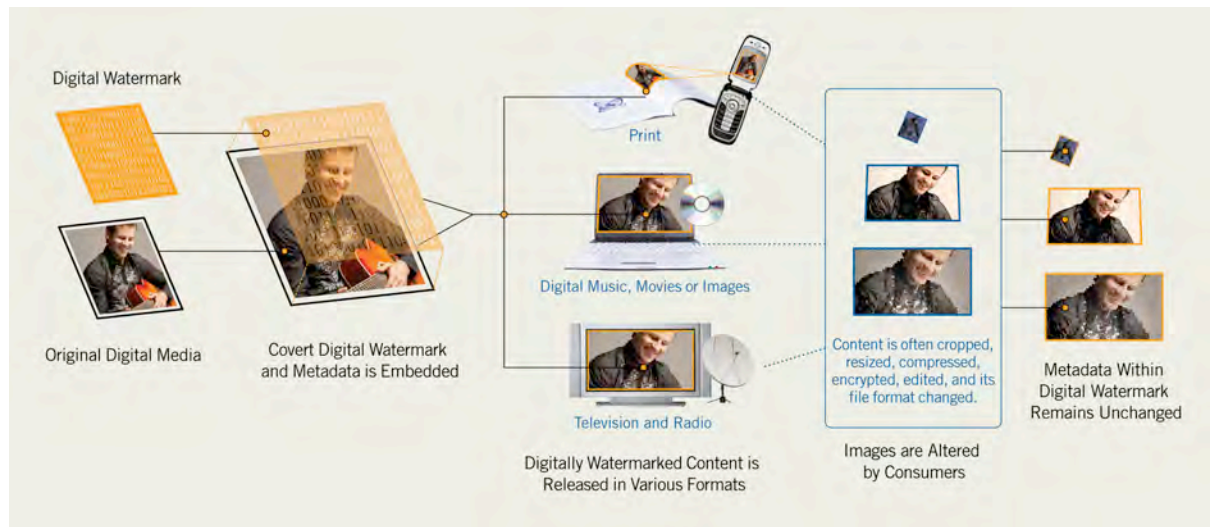
As these, and other, business models mature and are more thoroughly integrated into the marketplace, the most successful ventures will be those that maintain a focus on deployments of technology that dramatically improve efficiency and transparency across increasingly decentralized distribution networks, and provide consumers with hassle-free access to content, independent of devices, channels, or platforms, and regardless of when and where that content is consumed.

CONTENT IDENTIFICATION WITH DIGITAL WATERMARKING

Digital watermarking has been used since the 1990s in an impressive variety of business applications, including broadcast monitoring, deterrence of pre-release leaks of movies and music through forensic content tracking, rights management, remote triggering of devices and counterfeit deterrence.

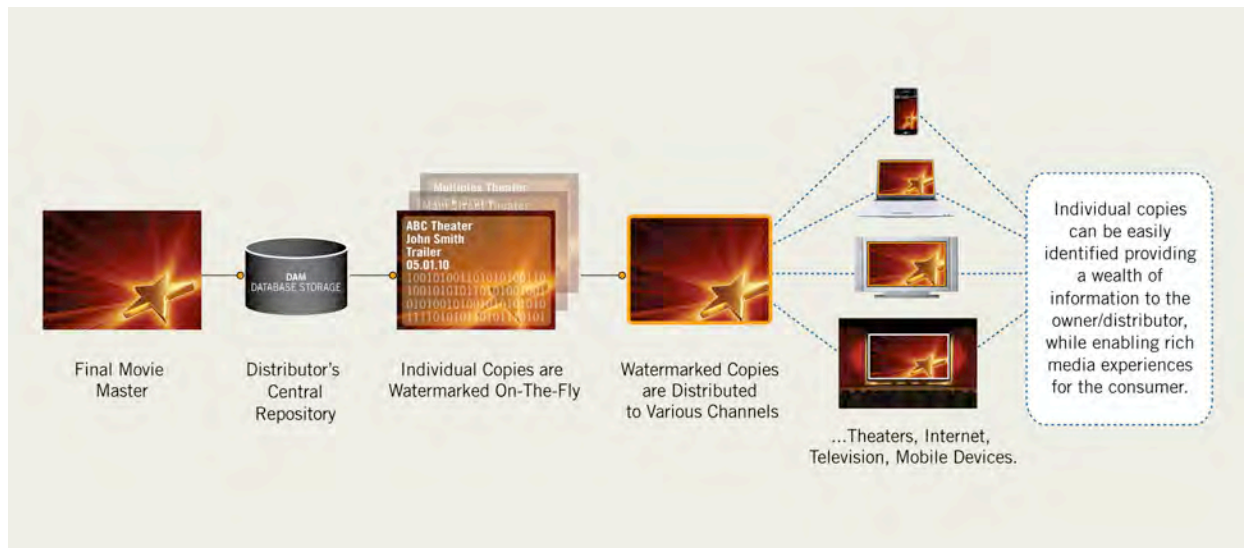
Watermarking is a proven, scalable and widely deployed technology that identifies content accurately, reliably, and quickly. The technology has already been integrated in both traditional and digital workflows in multiple industries.

Digital watermarking involves a simple process of embedding imperceptible digital information into all forms of content, including images, documents, audio and video. Because the watermark is imperceptible, it will not interfere with consumers' enjoyment of the content they consume. Once embedded, the watermark persists with the content through manipulation, copying, compression, file conversions and virtually any other transformation that digital content can undergo. The watermark can carry information that allows the content itself to "communicate" where it comes from, who owns it, how it may be used, and whatever other information the holder of copyright wishes to convey. A watermark may also be used to trigger predefined automatic actions, including linking to websites or other interactive experiences.



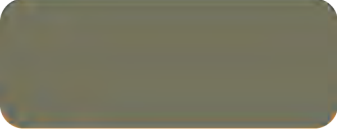

The persistence of digital watermarks is important, because online content is routinely copied, shared, transformed and re-purposed in an increasing variety of ways, which means that identifiers and metadata carried by the container of the content (file headers, bit streams, etc.) can easily be damaged or lost as content is disseminated across the web. A watermark persists as an intrinsic part of the content, independent of the container or how it is packaged, and it is easily detectable by devices – from enterprise servers to the smallest consumer handhelds – equipped with a reader application. The watermark's persistence in the content itself means that it is always present and fully functional as an identifier, independent of packaging, distribution channels, platforms or devices that deliver the content to the consumer.

Another key characteristic of digital watermarking is its ability to identify content at the level of individual items. Unique identifiers can be embedded in every instance or copy of a particular piece of content. For example, the distributor of a movie can watermark each individual copy of that movie with its own unique identifiers, so that the digital path that each copy takes as it travels among organizations, individuals and devices can be traced. The same mechanism can be used to distinguish between trailers and full-length copies of a film. Such features become especially useful when content identification is used for tracking, auditing and reporting, and can provide important insights into usage patterns and consumer behavior in highly specific contexts.



CONCLUSION

While content identification technologies, like digital watermarking, offer obvious and impressive advantages for rights management and anti-piracy efforts, their potential for refining and enhancing consumers' online experience and stimulating innovation in the digital marketplace remains a largely untapped enabling technology. The extent to which content identification can serve the common interests of consumers and copyright holders is only beginning to be properly understood. Schemes for monetizing digital content are unlikely to succeed in the long term without first meeting the fundamental goal of managing legitimate content use established by content owners while giving consumers convenient access



to a rich media experience that is thoroughly engaging and narrowly targeted to their individual interests. Accurate, reliable content identification establishes the foundation for such an experience. The technology is an essential means of enabling consumers to locate and access the content they want easily and quickly, and in the contexts that fit their individual lifestyles. At the same time, content identification provides content owners and distributors a powerful tool for monitoring, measuring and reporting on usage, and for understanding consumer behavior in highly specific contexts, so that a more nuanced, efficient and productive relationship can be realized between consumer demand and the delivery of digital content.

For more information on the many uses of digital watermarking, visit the *Digital Watermarking Alliance* web site at www.digitalwatermarkingalliance.org.