

# Digital Media

## Maximizing the Value of Content A Primer on the Digital Asset Management Industry

- **TOOLS FOR A DIGITAL WORLD.** Managing digital assets becomes more and more important as the transition from analog to digital continues, and as companies produce increasing amounts of content. Tools that focus on storage, retrieval, security, and organization of any content are not only “mission critical,” but also offer increased efficiency in work flow processes and revenue-enhancing opportunities.
- **EVERY BUSINESS WILL NEED DIGITAL ASSET MANAGEMENT TOOLS.** Demand for these solutions will grow significantly as all types of enterprises find themselves in a “digital dilemma.” Currently, the biggest users of these solutions are media and entertainment groups, but the technology extends to any enterprise that derives benefit from automation of content-sharing work flow processes. We expect corporations, universities, health care, governments, and other enterprises to become a larger market opportunity as the digital transition continues.
- **THIS REPORT ASSESSES A BURGEONING, YET “BELOW THE RADAR SCREEN” INDUSTRY.** A growing number of companies are committed to developing software, processes, and technology-based solutions for every industry that faces the challenge of a digital world. In this report, we examine digital asset management services applications across a variety of industries and enterprises and highlight the growth potential of this fledgling industry. We anticipate further consolidation, given the large number of players, many of which are private companies or units within larger organizations. Lastly, we profile select companies that we believe merit the attention of any investor interested in this exciting space.

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# BEAR STEARNS

## Executive Summary

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When asset management technology is utilized, digital assets represent incremental real value in an organization. While there have always been many forms and types of content, including text, data, information, and video, its useful life was largely limited to the storage medium it sat on. Today's technology affords the capability to create a "live electronic library" with full functionality, extending the life of valuable content assets into perpetuity, as well as exposing "hidden assets."

However, with this digital transition comes a host of challenges and opportunities in managing this new class of asset. Companies across multiple industries must employ digital asset management technology to improve work flow process design as it creates efficiencies, increases productivity, and augments revenue opportunities.

Many companies first used digital asset management (DAM) technology to build out consumer applications over the Internet. While these continue to be deployed (albeit at a slower pace), the application of many technologies for use inside the organization has proven to have significant market potential. For example, the business of content creation has created demand for products that encode, index, store, and manage video content that can be protected, accessed, shared, and edited according to user preference.

Outside of media companies, the technology extends to any enterprise that derives benefit from automation of information work flow processes, e.g., through automating and networking corporate communications, investor relations, training and distance learning, and text/video mining, to name a few.

Working below the radar screen is a burgeoning industry, with companies committed to developing software, processes, and technology-based solutions for every industry that faces the challenge of a digital world. In this report, we assess the need and importance for digital asset management services, the applications across a variety of industries and enterprises, and examples of results from implementation. We highlight the growth potential of digital asset management services of this fledgling industry, erring on the conservative side given that extensions of the technology could be massive. We believe the industry will consolidate further as there are a large number of participants in this space, many of which are private companies or units within larger organizations. In the report, we profile select companies that we believe merit the attention of any investor interested in the industry.

# Overview of the Digital Asset Management Industry

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## ***Tools for a Digital World***

The shift from analog to digital continues at a rapid pace, and as companies continue to produce and process increasing amounts of content (text, video, film, etc.), the need to manage those assets becomes critical. Tools that focus on storage, retrieval, security, and organization of digital text, video, and other content are not only a necessity for management in a digital world, but also offer increased efficiency in work flow processes and revenue-producing opportunities through leverage of the asset and the infrastructure. Such tools encompass capturing, encoding, indexing, storage, security, rights management, playback, and user interface.

## ***Positive Return on Investment***

Implementing digital asset management technology can be done on a segmented or comprehensive basis, with either solution providing a good return on investment. Without large capital expenditures, implementation of software, technology, and services can yield positive returns. Some of the benefits of deploying a digital asset management solution, according to industry representatives and GISTICS research, include lower direct costs per project, faster product/service cycle times, reduced labor costs on projects, improved process design, opportunities for additional licensing revenue streams, new media production revenues, and increased profits per employee.

## ***Resuscitating Hidden Assets***

Digital assets have intrinsic value but can only reach full valuation by way of managing them and mining them. When digital asset management technology is employed, “hidden assets” are brought to life. They can now easily be used to extend, leverage, or enhance internal- or external-focused businesses, thus creating value in an organization. We believe the highest values of these assets would be attributed to content-rich establishments, like advertising, publishing, entertainment, and media companies.

## ***Broad-Based Across Multiple Markets***

We believe that every business will require some form of digital asset management tools at some point in time. The demand for digital asset management solutions will broaden significantly as all types of enterprises find themselves in a “digital dilemma.” While the large users of digital asset management solutions today are media and entertainment groups, the technology extends to any enterprise that derives benefit from automation and protection of information work flow processes, e.g., through automating and networking corporate communications, training and distance learning, and text/video mining, to name a few. We anticipate that corporations, universities, governments, health care, and other enterprises will offer larger market opportunities as the digital transition continues.

### ***Fast-Growing Industry***

GISTICS, a well-known online consulting firm, estimates that the digital media management market should hit \$5.0 billion by 2004 from about \$1.2 billion in 1999, representing a compounded annual growth rate of 33%. Its research focused on the most applicable and early adopter users of media asset management services, which we believe could prove to be conservative. In addition, IDC estimates that the content, document, and information management technology markets are anticipated to grow at more than 30% annually over the next few years as new technology is adopted.

### ***Near-Term Growth Muted***

While growth prospects for the industry are robust, we anticipate some slowing in-line with technology industry trends of late. With a general IT spending slowdown, sales of digital asset management solutions continue to grow, but the purchasing cycle has lengthened as spending decisions are getting a higher degree of scrutiny. Moreover, demand for applications has shifted from consumer or front-end (dot-com) applications to back-end applications (in-house), adding to the softness.

### ***Fragmented Industry Will Consolidate***

The current market for digital asset management services is fragmented as many private and public companies offer one or several services in the solutions value chain. Many businesses were founded on a particular technological strength, which was exploited to answer market demands. Others were born out of Internet consulting or technology organizations. We believe that there is considerable overlap and some degree of commoditization within the industry, and combined with a tough financing, economic, and IT environment, consolidation will continue. (See Service Providers and Selected Company Profiles sections of this report for companies that participate to varying degrees in this industry.)

### ***Favorable Business Characteristics***

Digital asset management pure-plays enjoy high margins similar to the software industry, as many business models are built on software licensing revenues. Also, the business has high barriers to entry as video search and related technology is extremely complex. Operating in a dynamic environment fuels recurring revenue streams as formats, codecs, and other technology is routinely updated.

### ***Industry Risks***

The level of adoption and embracing of the technology by content creators could impact the evolution of this industry. The content (music) industry is just beginning to test the waters, with comprehensive online digital music distribution services to hit the market in late 2001. Timing, however is critical — the Napster impact on user psychology is a major blow to the development of a legitimate online content market as users are becoming increasingly comfortable with file sharing (and free content). While Napster may ultimately be shut down, peer-to-peer technology appears to be here to stay.

## Digital Asset Management Infrastructure

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### SOLUTIONS TOOLS FOR MANAGING DIGITAL ASSETS

Digital asset management is the process by which customers use technology to create, capture, store, re-purpose, protect, and distribute digital audio, video, or text content. While there are a variety of software and hardware tools that are helpful in this capacity, technology gains have escalated the capability and potential to a much higher order of magnitude, as industries focus on using these tools to increase productivity and monetize digital assets.

We break the services into three categories:

- **Asset Acquisition.** This includes capturing, logging, and converting traditional analog assets such as audio, video, and text into digital form. It also encompasses the creation and storage of assets.
- **Asset Management.** This categorizes and indexes assets, incorporates security and protection features, and also incorporates security and Digital Rights Management (DRM) solutions.
- **Asset Distribution.** This allows users of intranets, PCs, wireless devices, and syndication and subscription services to access and retrieve encrypted digital assets.

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### ENHANCING THE BOTTOM LINE

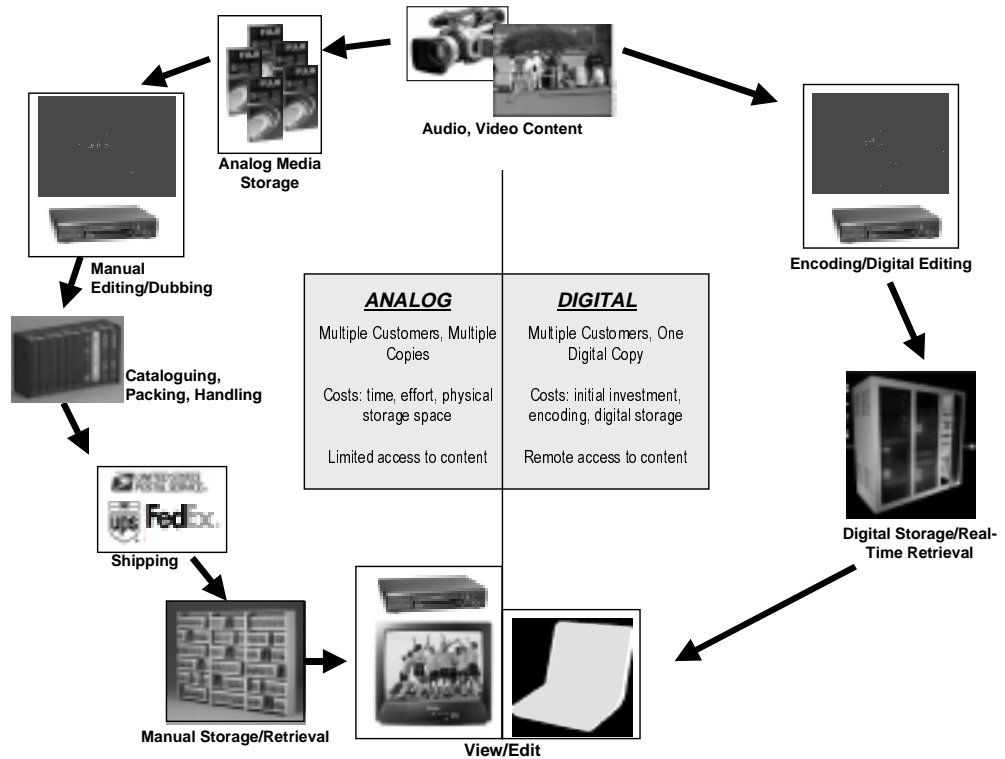
The most compelling reason to implement any digital asset management solution is an enhanced bottom line, which will come in the form of cost savings and/or incremental revenue enhancements depending on the enterprise and the application.

Take, for example, a media organization: DAM technologies provide more effective and efficient ways to manage content, making it digitally available to anyone who possesses the proper authorization. Digitizing content allows for file sharing (meaning what once required multiple analog video copies for many users now only needs one central file that can be shared by many) from any connected place at any time. The technology allows users to review and search for content from the convenience of their desks, providing more adequate control of access to content, promoting online collaboration and annotation, and making provision for archiving and publishing. This allows for easy and cost-efficient digital storage and delivery of content, making it simpler and easier for users to store, retrieve, and deliver content.

In our simple video dubbing/editing example (see Exhibit 1 below), using digital asset management tools reduces a multi-step labor- and cost-intensive process down to an extremely efficient process. It is easy to see the benefits of automating certain processes with the aid of digital asset management technology.



## Exhibit 1. Videotape Editing/Dubbing



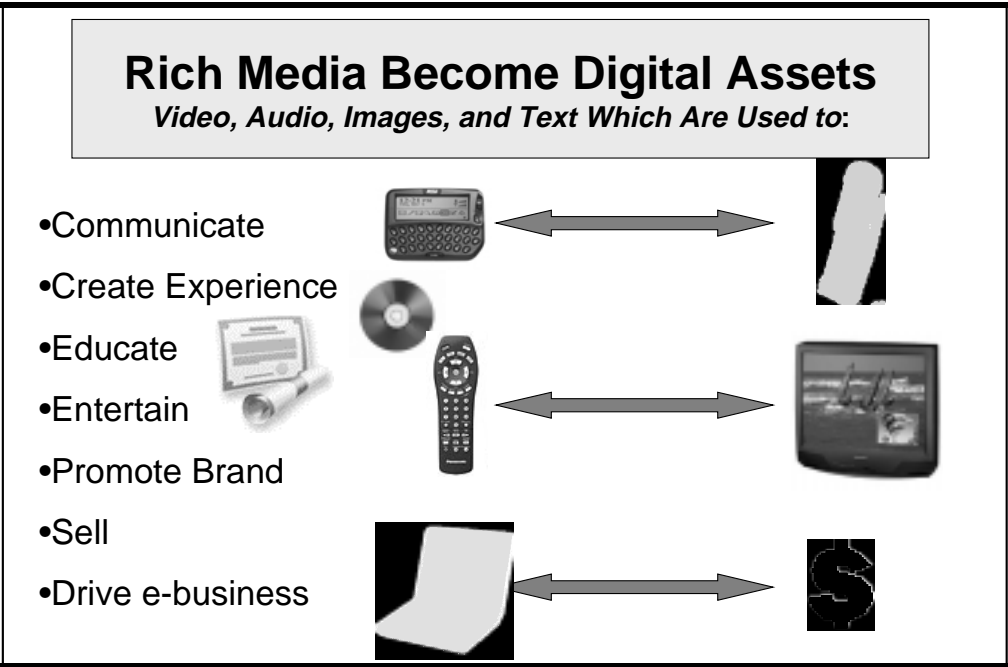
Source: Bear, Stearns & Co. Inc.

### ONE-STEP OR MULTIFACETED SOLUTIONS

Many companies, through multiple device platforms and technology improvements, have only scratched the surface of digital asset management realization. While some have implemented on-line intranet company Web sites, for example, the utilization of a full DAM solution requires an organization-wide, large-scale effort.

For large organizations, this implementation comes down to work flow process design. Full implementation requires many organizations to closely examine how they work, as well as what changes need to be made in the context of automation. The order of magnitude and leverage opportunities within many large media conglomerates calls for a major reengineering of processes to effect a comprehensive asset management strategy. For example, imagine the challenges and opportunities at the new AOL Time Warner!

While opportunities for the service exist across the organization as a whole, there are many applications that can be implemented on a stand-alone basis or are segment- or industry-specific. Not only do solutions take costs out, but they will help transform the way industries package and distribute product. For example, in the case of music, digital media management solutions allow labels to shift their physical and/or analog assets into digital format, employ rights management, and prepare them to be distributed over multiple platforms. In this case, incremental revenue opportunities will ultimately take shape as a legal consumer market develops taking advantage of added power, convenience, functionality, and flexibility. Further opportunities can be found in Exhibit 2.



Source: Bear, Stearns & Co. Inc..

## Applications of Digital Asset Management Technology

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### **MULTIPLE USE APPLICATIONS EXTEND WIDE AND DEEP**

We look at two alternative ways to classify DAM solutions within a company: internal (inside the firewall), or those that bring about cost savings and increased productivity, and external (outside the firewall), or those that are designed to extend a service and yield incremental revenues. As separate applications of the technology, DAM solutions therefore serve two customer sets: employees (inside the firewall) and consumers of content (outside the firewall).

Many times, a company or organization employs “inside-the-firewall” applications, and then looks to extend the technology outside the firewall. Therefore, the sale of the solution comes first from using the product to save money and increase productivity in the back office, followed by extension to monetize it and use it as the base technology for a revenue-generating proposition.

We provide a sampling of applications below that should give the reader a sense of the numerous ways digital asset management can be used inside and outside the firewall of an organization.

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### **INSIDE THE FIREWALL**

Inside the firewall DAM solutions can bring about tangible cost savings and improved efficiencies within enterprises. For example, Simon and Schuster Publishing has created what it calls its “Corporate Digital Archive,” a digital database that provides “as needed” online access to several hundred thousand images, text documents, and videos. The database reduces search time and administrative paperwork, providing “instant feedback” for editors and allowing for change and re-use of digitized files. Providing staff with digital access to archived materials can bring about cost reductions in the form of reduced copying and carrying costs, while improving efficiencies as employees no longer need to spend inordinate amounts of time retrieving information.

The intranet, or company employee-connected systems, is a particularly good platform for DAM tools. DAM solutions are used to enhance and improve corporate communication and information over searchable video sharing by providing quick, easy, and cost-effective access to internal digital audio, video, and documents that can be accessed by many simultaneous viewers.

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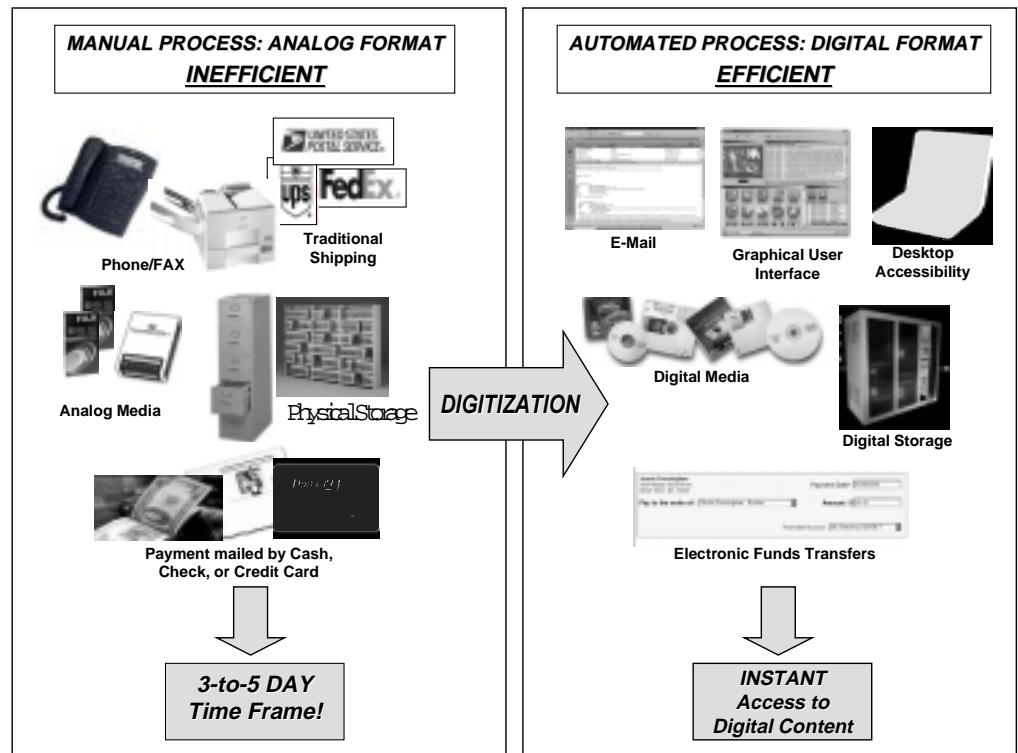
### **CONTENT CREATION PRODUCTIVITY EXAMPLE**

A natural user of digital asset management solutions are typically those with a large supply of “media” assets, or entertainment companies. These first-movers need technological solutions for processes that call for boundaryless storage, management, and access of valuable information in the most cost-efficient manner.

For many content creation businesses, locating footage for production is an extremely time-consuming and inefficient process. The traditional archive/content access process is roadblocked by numerous inefficiencies, as that analog system is constrained by traditional copying and formatting delay times. One of DAM’s major benefits is that it reduces those delay times by centralizing data and making it easily available, streamlining the entire footage search process. In the DAM process, digital data can be searched and transferred quickly and easily, making it possible for larger-

scale individualized distribution that integrates substantial cost savings and less time-consuming manual work (see Exhibit 3 below).

**Exhibit 3. Physical Versus “DAM”ed Content Creation**



Source: Bear, Stearns & Co. Inc.

A similar real-world application of the above was implemented at CNN, where DAM solutions have been utilized to solve the problem of massive separate feeds of video that were needed to serve nine distinct channels and 32 news bureaus. In the past, journalists sharing news resources had to make multiple analog copies of tapes and reports. To tackle this problem and streamline the workflow process, CNN digitized its footage archiving and retrieval operations utilizing a custom-designed digital video indexing application. Implementing the technology involved changing CNN’s traditional analog, tape-based system into a server-based one, and allowed for one digital copy to be simultaneously shared by many reporters and editors. This reduced duplication costs, storage costs, and time costs, allowing for easy desktop access to and editing of video and audio content. Since being implemented at CNN, DAM technologies have made the entire creative process, from script to air, much more efficient.

Until recently, there has been limited technology for media-rich companies to manage their audio, video, and text-based assets. As exhibited above, DAM solutions allow for capture and analysis of any media, collection and organization of metadata, visual summarization of video assets, indexing and searching of visual and textual content, nonlinear access to video segments, editing of streaming audio and video files, and the flexibility for distribution or publishing of content over the Internet and intranets.

Each of these solutions potentially reduces time and paperwork, providing flexibility and “instant feedback,” and allowing for potential revenue opportunities through re-purposing of content. The introduction of DAM technology has streamlined the content acquisition process, hastened the movement of tedious off-line processes into the online space, and simplified the search, acquisition, and application of usable content. Duplication, storage, and time costs have been reduced, and easy desktop access to audio, video, and document content has made the entire content creation process cheaper and more efficient.

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**EXTENSION ACROSS  
ENTERPRISES**

Other DAM solutions are evident in applications such as searchable corporate video conferencing, Webcasting, and document sharing. For example, to enable more effective sharing and management of information, General Motors videotaped and digitized customer focus group interviews, making them available to all relevant parties throughout the design loop. Putting focus group interviews into digital format reduces manual note-taking and editing time, and also allows the video to be indexed and edited using caption data and keywords. The resulting searchable video makes it easier for design teams and product analysts to more easily search customer feedback and input.

While many of the solutions are easily applied to any content producing organization, they are also adaptable by multiple industries that deal with multiple levels of communication of information. One of the services born out of the need in the music industry to protect and manage digital music is Digital Rights Management (DRM). As systems are being set up to share information over IP networks, it is becoming more critical to manage that information according to the rules that apply to its usage.

For example, in a significant deal, Nokia recently licensed InterTrust technology as its Digital Rights Management provider for use in the development of its secure mobile Internet technical architecture. The InterTrust technology will be incorporated into portable devices, allowing the technology to recognize rules specified by content owners. InterTrust plans to extend its DRM software and tools to meet diverse vertical market requirements and support digital content protection over a wide variety of portable devices and consumer appliances.

In another example, TrustData Solutions recently launched a suite of secure health care products and services that incorporates InterTrust’s DRM platform. TrustData’s solutions enable secure exchanges of patient data and other health care information for virtually all health care stakeholders, including doctors, nurses, pharmaceutical companies, and employers. Its “Trusted Messaging” keeps health care information private by incorporating digital rules that specify each user’s access rights to view, copy, forward, print, or modify protected digital content. The system allows for multiple rights specifications, as it incorporates many layers of information access in line with enforcement of privacy policies and legal guidelines to protect patient data.

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**OUTSIDE THE  
FIREWALL**

In contrast to internal customers, whose enterprises derive bottom-line benefits through cost savings and efficiencies associated with DAM implementation, external DAM applications provide actual incremental revenue opportunities for companies. These external, or “outside-the-firewall” DAM applications can leverage the infrastructure already used in-house. It is a clear product extension that can serve as a revenue opportunity as well as a brand or public relations extension.

For example, ABC News uses DAM solutions to make video assets accessible to both its production staff and its Web audience. Production staff can easily capture and access digital content without the hassle of videotapes and editing machines. The resulting reports and features are output as broadcasts and digitized for Web viewers, who can search the digital programming catalog (which includes editions of *World News Tonight* and *Nightline*) for stories and features of interest.

Furthermore, at a minimum, many applications that were built as intranet functions can be re-purposed to give stakeholders better and more complete access to company information, thereby extending public relations efforts. For example, DAM providers offer solutions that allow for searchable broadcast of investor presentations, management speeches, earnings reports, and other company information.

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**BROADBAND  
APPLICATIONS**

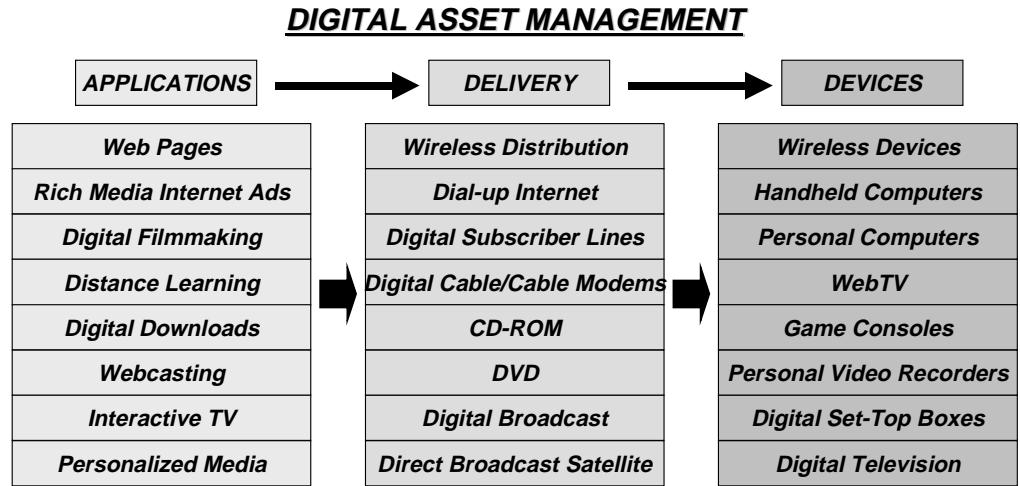
As broadband connections increase, the demand for rich media applications will follow. In addition, technology that lets users personalize and control their experience with content continues to be in demand whether over the Internet or other devices. DAM solutions enable owners of branded high-value content, such as sports leagues, to create compelling customized interactive content that can be integrated into a variety of business models.

In a recent transaction, the National Basketball Association forged an agreement with Convera, a leader in digital asset management solutions, to use its video content management technologies (including its Screening Room product) to develop and distribute interactive NBA content, including personalized highlights, archival material, enhanced broadband programming, and, eventually, more than 1,000 enhanced game feeds per year via the Internet. Convera has provided the NBA with a hosted, end-to-end solution that transforms video footage and other data into a searchable database of rich-media interactive content assets.

Another example is the recent Virage agreement with the Major League Baseball league. Under the terms of the agreement, Virage will provide Major League Baseball Advanced Media (a business entity that is jointly owned by the 30 Major League Baseball clubs, and the holder of Internet rights to the 2,500 baseball games to be played during the 2001 season) with the software tools and application services necessary to deliver searchable and interactive streaming-media game highlights, customized, on-demand instant replays, and video search capability.

The tools available from DAM solutions providers allow for live feeds into software applications, which use patented technology to index the video by analyzing scene changes, facial recognition, closed-caption text extraction, and other metadata recognition technology. This provides almost real-time retrieval, giving sports fans near-immediate access to archived, indexed clips and highlights from any available game. A digitized video index will allow fans to call up any play by their favorite player, rather than watch standard, pre-cut clips posted by news organizations (see Exhibit 4 below).

Exhibit 4. DAM Applications



Source: Sekani; Bear, Stearns & Co. Inc.

## The Market for DAM Services

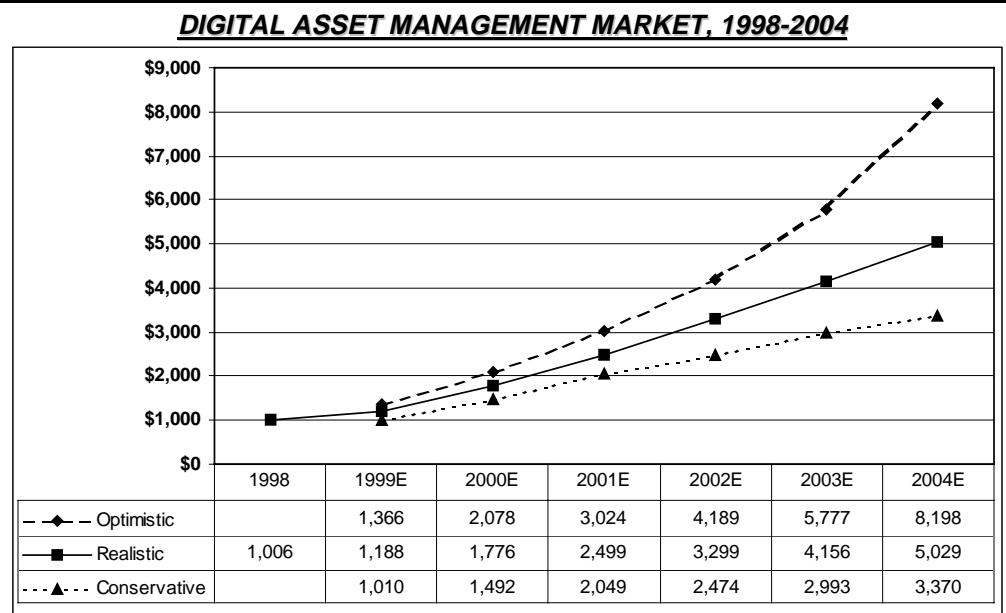
### A \$5.0 BILLION MARKET OPPORTUNITY

In an attempt to estimate the current and potential size of the market, we have presented several different industry forecasts from respected independent sources. As this is an industry that is still developing, the forecasts have a wide standard deviation. Total revenue estimates out three to five years range from \$3.0 billion to \$8.0 billion. A lot of the deviation, we believe, comes from how one defines the industry and/or the users of the technology.

One report that we find to be in line with our definitional views of the market comes from GISTICS, a research and consulting company that is focused on the interactive industry. Its recently published comprehensive study, entitled *Media Asset Management Report*, tracked the North American media producer industry, incorporating 207,000 media-producing firms. According to GISTICS' forecasts, under three different economic scenarios (conservative, realistic, and optimistic), the market for media asset management will, by 2004, reach between \$3.4 billion (conservative forecast) and \$8.2 billion (in an optimistic economic scenario).

Assuming "realistic" is a most likely scenario, GISTICS estimates that the market should hit \$5.0 billion by 2004. In its research, the company focused on 12 industry segments that are the most applicable and early adopter users of media asset management services, including film production, video production, animation and graphics, digital music, new media, desktop publishing/production services, in-house brands, publishing, advertising and marketing services, and training/education (see Exhibit 5 below).

Exhibit 5. Total Digital Content Market Estimates (\$ in millions)



Source: GISTICS.

In another forecast, IDC, a well-known provider of technology intelligence, industry analysis, and market data, looks at the market primarily from a software perspective. IDC projects that the worldwide software market is poised to grow its revenues at a



CAGR of more than 15% through 2004. The fastest-growing segment of the total software market is projected to be application development and deployment software, which is estimated to grow from \$36.5 billion in 1999 to \$90.2 billion in 2004. However, breaking it down further, the fastest-growing segment of the market is the content, document, and information market, which is estimated to grow at 30%-plus annually. We believe this largely overlaps our definition of digital asset management. Specifically, IDC projects the document and content technology market will grow from \$1.1 billion in 1999 to nearly \$4.4 billion in 2004, representing a 32% compound annual growth rate.

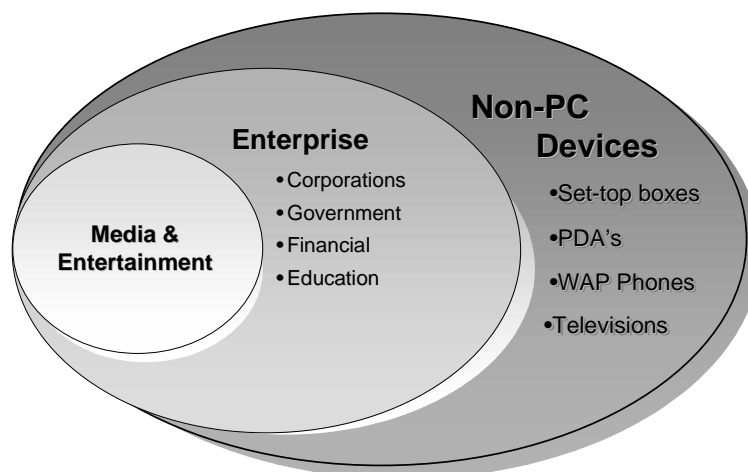
Additional research by Kagan Associates shows that the growth of the digital content market is forecast at \$6.6 billion by 2003, up from \$500 million in 2000. Another estimate comes from Frost & Sullivan, which forecasts the asset management market at \$5.0 billion by 2003.

As mentioned previously, market forecasts are largely subject to definitional parameters of a new and fragmented industry. Nevertheless, we expect above-average growth for players in this industry as solutions to managing digital content become a necessary technology tool for in-house management and a core competency for those content producers.

We believe that every business will require some form of digital asset management tools at some point in time. The demand for digital asset management solutions will broaden significantly as all types of enterprises find themselves in a “digital dilemma.” While the large users of digital asset management solutions today are media and entertainment groups, the technology extends to any enterprise that derives benefit from automation of information work flow processes, e.g., through automating and networking corporate communications, training and distance learning, and text/video mining to name a few. We anticipate that corporations, universities, governments, health care, and other enterprises will offer larger market opportunities as the digital transition continues (see Exhibit 6 below for further details).

**Exhibit 6. Multiple Potential DAM Markets**

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Source: GISTICS; Virage, Inc.

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**FUELING MARKET  
GROWTH – DEMAND  
DRIVERS FOR DAM  
SERVICES**

Several factors should continue to fuel demand for data management tools and services:

- **Digital Inventory Levels Increase.** Many companies have found that the current amount of digital information they generate on a regular basis is vast and overwhelming to manage. As their intranet and Internet applications have blossomed, the demand for tools for managing this data will come into demand.
- **Increasing Efficiency Within Organizations.** As we have outlined, managing digital assets using software- and technology-based solutions can create efficiency through elimination of labor and increased productivity. The installation of a digital asset management system will be a necessary tool and service for any content-rich organization.
- **Internet User and Broadband Growth.** A recent industry report from International Data Corporation estimates that the number of Internet users will grow from 97 million in 1998 to 320 million by 2002. Furthermore, as the number of broadband households increases, demand on the Internet will shift from text-centric to video- and image-centric, creating greater demand for searchable indexed video. Jupiter Communications estimates that 28.8 million U.S. households (or 36% of total U.S. households) will have broadband access by 2005.
- **Digital Commerce Growth.** We anticipate that the growth of the DAM market will be influenced by the growth in online digital commerce. Digital commerce is expected to grow from \$32 billion in 1998 to \$426 billion in 2002, according to IDC. In addition, IDC estimates that the market for B2B digital commerce is expected to reach \$2.2 trillion by 2004.
- **Other Trends That Should Drive Growth.** It is expected that half of all Web sites will stream video content by the end of 2001. Currently 350,000 hours of A/V content are being added to the Web weekly, and 24 million workers and students have access to high-speed, broadband connections, according to industry sources.
- **Valuation Enablers.** Many entertainment companies have vast libraries of older content, such as films and analog audio and video tapes, that need to be digitized to realize revenue from digital distribution and archived to prevent deterioration. Non-entertainment companies often possess substantial content that can be digitized to reduce costs and introduce previously impossible efficiencies into their business models. Furthermore, continuing advances in digital storage and compression technologies often require these companies to devote substantial resources to migrate content in current digital formats to continually evolving new digital formats.

## Evaluation for Investment

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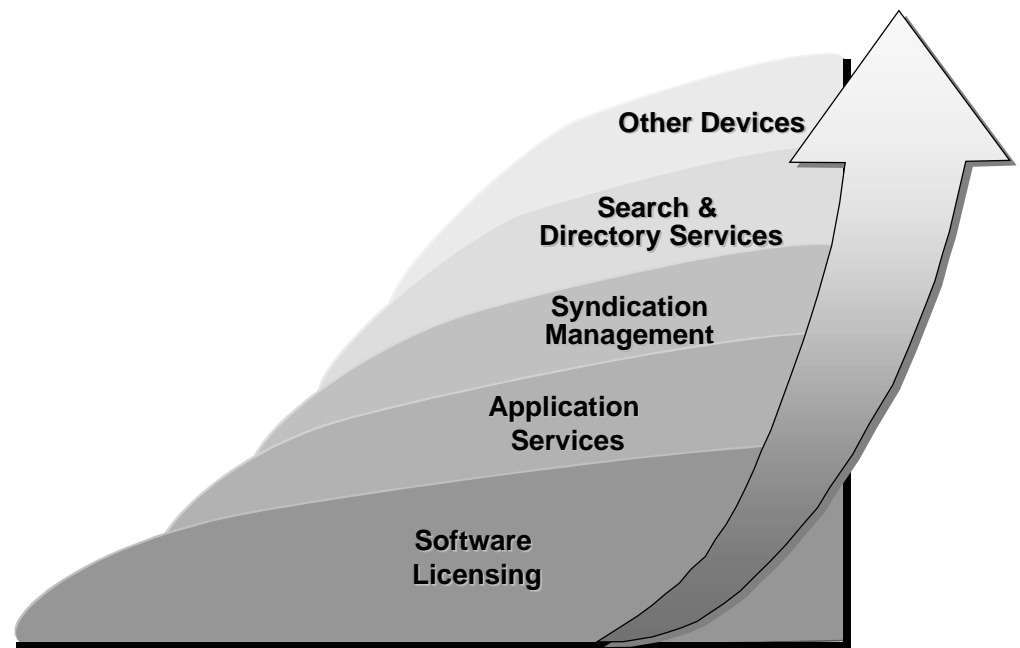
As with any nascent business, particularly one that is partially dependent on the Internet, valuation is challenging. The commonly used revenue multiple metric is less relevant in today's marketplace, but does give a valuation framework. We still believe in a discounted cash flow model as the best framework in which to analyze a potential investment. In a dynamic environment, where profitability is still distant, we also rely on several qualitative benchmarks as another approach to evaluating the players in the industry:

### ***The Business Model***

In this developing industry, we find business models to be a bit of mix and match. Some companies develop a business around a technology that serves a current market need and build on that, while others are putting together the necessary skills and technology to create full-service solution shops that offer everything from soup to nuts. In our opinion, the first movers with superior technology and understanding of business needs will gain momentum, while the others will fill niche markets. Also, there will always exist niche businesses that provide technology addressing a particular market. Certain niches may evolve into commodity businesses and will not be able to prosper over the long term as the economics don't warrant the infrastructure costs (see Exhibit 7 below).

### **Exhibit 7. Digital Asset Management Service Offerings**

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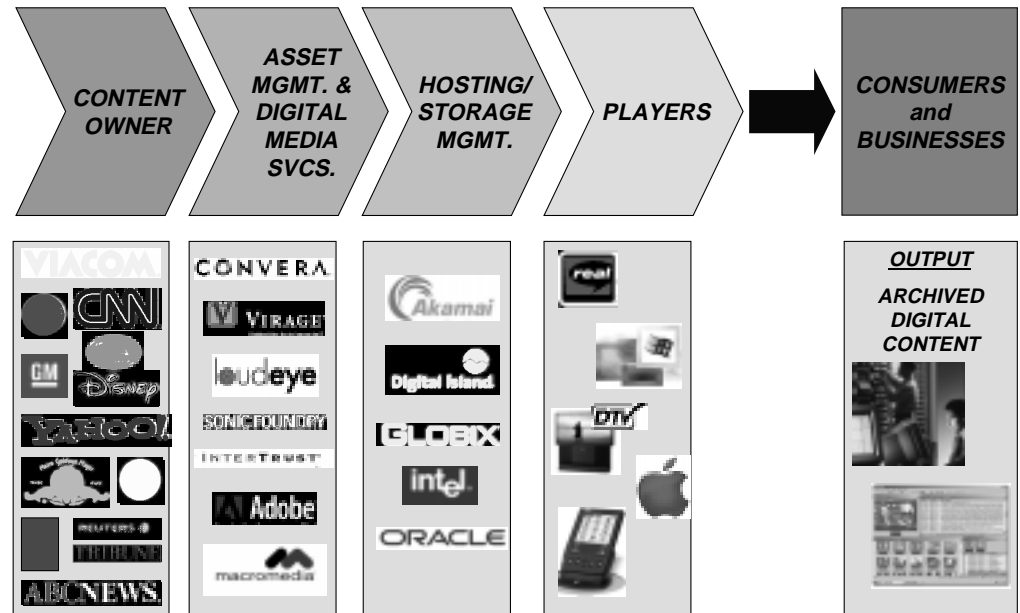
Source: Virage, Inc.

### ***Where Does DAM Sit?***

In our opinion, the digital asset management product sits in the middle of media content and infrastructure. It is imperative for any company to understand the needs of its partners, and in this case, develop the technology with solutions in mind that

will operate and co-exist within the current infrastructure. We elaborate on this in the Applications of Digital Asset Management Technology section earlier in this report. DAM companies are positioned within the “Asset Management and Digital Media Services” column in Exhibit 8 below.

**Exhibit 8. DAM Process Flow**



Source: Company documents; Bear, Stearns & Co. Inc.; Sekani.

***Management Background***

We believe that good, solid management with a wealth of experience is critically important. In an industry that is a hybrid of software, Internet, media, technology, and infrastructure, it is essential to have a high level of skill in those areas as well as the talent to work within the particulars of each of the partners’ working practices.

***Technology and Architectural Superiority***

While investments in the industry must be directed toward those companies with superior technologies, it is not a guarantee that those companies will be successful. As this is largely a solutions business, the companies that know best how to sell and apply technology in specialized industries will lead over their competition. More importantly, the architecture of any solutions product must be flexible, scalable, and interoperable to appeal to a large customer base.

***Financial/Strategic Partners***

Given that technology is a critical underpinning for an investment, we believe that looking at the financial or strategic commitments from recognized prominent industry participants is a key factor. In the current environment, we believe that backers are much more selective and exhaustive in their due diligence process, and would put more emphasis on this criterion than in the past.

### ***Distribution Model/Sales Partners***

Many participants have engaged partners along the process flow chain (see Exhibit 8) to sell core software products and licenses. In this way, partners can benefit from providing a better “solutions” sale by bundling. This increases distribution channels and is an endorsement of a particular company’s product offering; therefore, it is a competitive advantage.

## Glossary of Associated Digital Asset Management Terms

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Many tools and services are used in processing digital information and managing asset acquisition. The glossary below should prove helpful in understanding the business of Digital Asset or Media Management:

**Analog.** Data measured in a physical quantity, such as a waveform, as opposed to a digital format. Analog format includes VHS tapes, vinyl albums, cassette tapes, and paper.

**Archiving.** Process of storing media for an extended period of time with the intent of limiting degradation.

**Bandwidth.** Amount of data that can be sent through a network or dial-up connection.

**Bit Rate.** Speed of data transmission, measured in bits per second (bps) or kilobits per second (Kbps).

**Broadband.** High-speed, high-capacity transmission channel able to transmit data at speeds of 144Kbps and above. Broadband connections include cable modems, digital subscriber lines (DSL), and satellite connections.

**Buffering.** Term used to describe a situation that occurs when a streaming media player saves portions of a streaming media file to temporary local storage (called memory cache) for playback. Most streaming media players buffer a small percentage of a streaming media presentation before beginning to play it, but buffering may occur throughout a presentation if available bandwidth does not match required bandwidth.

**Burning.** Process of using software to copy audio and video files to CDs and DVDs from other CDs and DVDs or a hard drive. Burning involves using software to transfer either compressed or uncompressed digital files that maintain the quality of the original file.

**Capture.** Process of digitizing audio and video content from an analog format.

**Codec.** Short for compression/decompression algorithm, a codec is a scheme used to compress digital audio and video files, making them faster to transmit by discarding redundant data present in the signal. MP3 is a popular codec.

**Content Distribution.** Process of sending and receiving digital audio and video files for dissemination by end users. Once content has been encoded and made ready for delivery, a wide array of delivery methods can be used to circulate content to authorized users. Content distribution also encompasses hosting, Webcasting and syndication.

**Content Management.** Process of centralizing, managing, storing, and distributing digitized content and information in a cost-efficient, easily understandable, and

manageable way. Content management allows organizations to centrally control and oversee content and data, making it easier for enterprises and their customers to access and utilize archived digital content.

**Digital Asset Management (DAM).** Set of coordinated technologies and processes that allow the quick and efficient storage, retrieval, and reuse of the digital files. DAM involves effectively organizing and managing digital media for improved efficiency, increased revenue opportunities, and more effective distribution. Digital files could include photos, videos, audio files, engineering specs, architectural plans, Web pages, text documents, and other pieces of valuable content. DAM provides the business rules and processes needed to acquire, store, index, secure, search, export, and transform these assets and their descriptive information.

**Digital Media Asset.** Individual piece of content that is created or captured digitally and composed of a rich media file itself and associated metadata (information about the media), differentiating it from both analog/physical assets and from standard alpha-numeric digital data. For example, a digital media asset could include high-resolution digital images for advertising campaigns, digital video for training or government tracking purposes, or digital audio files for popular music. Associated metadata could include a low-resolution image “thumbnail,” a key-frame of video, textual information describing the source media in some way, or timecode for the audio or video track.

**Digital Media Infrastructure.** Back-end technology and processes that enable the encoding, management, and distribution of audio and video on the Internet.

**Digital Rights Management (DRM).** Chain of hardware and software services and technologies that govern the authorized use of digital information and manage any consequences of that use throughout the entire lifecycle of the content.

**Downloading.** Content distribution method in which an entire audio, video, or text file is transferred to a user’s hard drive, allowing the user to subsequently access the content without being connected to the Web site. In the case of music, a typical four-megabyte compressed song takes about ten to 20 minutes to download with a 56K dial-up modem.

**Encoding (Content Conversion).** Involves the digital capture, or recording, of analog content (such as raw audio, video, and paper) and compressing or digitally transferring it into higher order digital format. Encoding also involves the conversion of uncompressed digital files into digital formats compatible with Digital Media platforms such as RealPlayer and Windows Media Player. Different types of files are encoded using different bit rates (the richness of quality and detail an encoder or player processes per second). Additional steps in the encoding process include support for additional metadata capture (to allow for searching and sorting through content), encryption, and digital rights application (to ensure ownership and access rights and secure file transfer).

**Enterprise Software.** Caters to corporations with major information technology infrastructures that rely on the Internet and private networks for communications, content distribution, data sharing, and other purposes. Enterprise software runs on

top of a database and uses the technologies such as HTML, XML, or Java to provide flexibility and customization into other corporate systems and business processes.

**Generational Loss.** Audio or video signal degradation caused by tape copying.

**Hosting.** Process of providing data distribution over the Internet. A host computer is connected to an Internet or intranet network and provides an access point to that network. Depending on the environment, the host may provide centralized control of the network. Hosting involves an integrated client/server relationship, offering full media-management functionality without necessitating product software licensing and hardware maintenance.

**Indexing.** Process that logs reference points within an audio or video file for the purpose of searching within the media. Indexing is accomplished by using intelligent software to capture and sort defining events in a stream, such as text capture, scene changes, and other metadata, thereby attributing searchable keyword tags to specific portions of digitally stored content. Similar to television closed captioning, the digitally indexed information, or metadata, includes keywords, time codes, and other relevant tags.

**Logging.** Process of indexing video content by visual scene changes, spoken words, audio types, recognized faces and speakers, and on-screen text, all of which is time-synchronized to the encoded audio or video. Logging supports the addition of editorial annotation to specific moments in the video, provides the foundation for creating and maintaining a dynamic, video-rich Web site, enables a host of applications such as Web publishing, and makes corporate communications, training, and online learning easier and more cost effective.

**MPEG-1 and MPEG-2.** Encoding standards that convert analog video and audio input signals into compressed digital files. MPEG is regarded by many as the only world-recognized standard for digital video compression and enables a number of encoding applications ranging from video and multimedia CDs on a desktop computer, to interactive TV, to digital satellite networks.

**MPEG-3 (MP3).** File format/sound compression technology that stores audio in extremely compressed digital form and packs virtually perfect copies of music into a file small enough to store and distribute. Typically, the MP3 format compresses a “CD-quality” song by a factor of ten to 14 without losing the “CD-quality” of the sound, meaning that a 32-megabyte CD song compresses to approximately three megabytes.

**MPEG-4.** Object-oriented compression format that simplifies management and protection of intellectual property and copyrights, making it easier for authors to produce reusable and transferable content. Improved compression algorithms allow for better-compressed, higher quality audio and video, as well as increased user-content interaction and easier manipulation of audio and video. The inclusion of scalable content support (content is encoded once and automatically played out at different rates with acceptable quality for differing access speeds) eliminates the need for a multitude of proprietary, non-interworking media players and encoding formats.



**Narrowband.** Connection over a computer network that supports a relatively low bit rate, such as 14.400 Kbps or 28.800 Kbps.

**Peer-to-Peer File Sharing.** File-sharing system that does not rely on centralized server storage, instead using other users' machines as local servers for downloading and to distributing files (in this case, MP3 files).

**Perceptual Coding.** Enabling compression algorithm technology for Web audio and video. Perceptual coding takes advantage of human aural and visual characteristics to eliminate certain parts of a file (such as silence within an audio file or a blank screen within a video) without significantly depressing sound or image quality. The technique reduces sampling file size and therefore minimizes download time.

**Ripping.** Process of using software to copy audio and video files from CDs and DVDs to a hard drive. Ripping involves using a codec to compress the digital representation of the file to as little as one-tenth its original size without meaningful alteration of quality.

**Scanning.** Process of capturing digital images.

**Searching.** Process of inspecting digital content for specific subject matter. A typical search takes a user directly to sought-after subject matter by utilizing associated metadata to find the desired element(s). The more metadata embedded in a digital file, the faster and more targeted the search. Assuming that indexing has been properly implemented, searching becomes a simple process, as users can quickly search through entire libraries of content to locate and view certain key portions of content in a fraction of the time associated with manual search and retrieval.

**Streaming.** Technique for transferring digital media on the Internet that processes data in a steady continuous stream as it is received. Streaming allows a user to listen to or view content in real time, without the wait of transfer time of a download. As with most digital content, it is usually necessary to view or listen to streamed content over a player, such as RealPlayer or Windows Media Player.

**Syndication.** Process whereby a content creator (for example, an independent film producer) licenses media to a content user (for example, an online film portal) for specific use.

**Watermarking.** Comprehensive system of embedding inaudible digital information directly within audio program material or within the audio portion of video material. The embedded information usually includes the file's copyright information (author, rights) or other relevant information such as use limitations.

## Service Providers — Asset Management Infrastructure

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As we have discussed, the need for digital asset management services among large and small media and enterprise companies is growing significantly as companies realize the many benefits of DAM implementation. Sorting out the players can be challenging. The exhibit on the next page provides a segmented roadmap of the digital media infrastructure industry and segments many of the industry players by their area(s) of specialty. The following points highlight the industry's numerous interrelated vertical segments:

- **Content.** Portals and multimedia audio/video-oriented sites.
- **Production Services.** Companies that handle hosting, content compilation, and streaming services.
- **Encoding.** Companies that enable the analog-to-digital transfer of content.
- **Software.** A diverse category that includes those companies that produce software codecs and content management software to power DAM systems.
- **Hardware.** Companies that make the actual physical components: computers, editing systems, audio mixers, and video capture cards.
- **Infrastructure:** Companies that manage the delivery and distribution of protected content, as well as providing e-commerce and advertising support services.
- **Other.** Various services such as dial-up and satellite ISPs, Web browsers, and audience measurement services.

Exhibit 9 below provides a snapshot of industry segments and players.

# Exhibit 9. Digital Asset Management Infrastructure Industry Participants

Digital Media Infrastructure						
CONTENT	PRODUCTION SVCS	ENCODING	SOFTWARE	HARDWARE	INFRASTRUCTURE	OTHER
<b>Portals</b>	<b>Production Services</b>	<b>Encoding</b>	<b>Codecs</b>	<b>Servers</b>	<b>Delivery/Distribution</b>	<b>ISPs- Nationwide Dialup</b>
Akoo	Akamai	21st Century Media	BramMedia, LLC	IBrick.com	Aerocast	1st Up
AlwaysOnTV	AudioVideoWeb.com	4BN	Clearband	2NetFx	Akamai	America Online
Broadcast America	BeHere Corporation	Accordent Technologies	Digital Bitcasting	Aerocast	Burst.com	AT&T Worldnet
Channel Seek	Bexel Corp.	Activite	eGlobal Digital	Amdahl	Cidera	Earthlink
eClipsNow!	BrainFood Media	AddAudio.com	EnReach Technology	Avid Technology	Context Media, Inc.	Juno
FeedRoom	B-Reel	Anystream	Eyewonder	Big Storage	Digital Island	Microsoft Network
Flip2It.com	Broadcast.com	AudioVideoWeb.com	FastVDO	BitBand	Enron Broadband Services	NetZero
ICast	Broadcast Studios	AVEncoding	Good Stuff Technologies	CacheFlow	Eyepopmedia	Prodigy
Incanta, Inc.	CastPro.com	Bee Multimedia	Microsoft	Ciprico	FastVDO	Spinway
Media1st	Ciprico	Brainfood Multimedia	Minerva Networks	Cisco Systems	Geocast	
OnNow.com	Cognicity	Chyron Internet Services	On2	Data Direct Networks	Global Crossing	<b>ISPs- DSL</b>
Real Networks	Digital Editing Solutions	CompressVideo.com	Pixstream, Inc.	Digital Bitcasting	iBeam	BellSouth
Streaming Media	DSP Films	Creative Broadcasting	Real Networks	Edgix	iBlast	Covad
StreamSearch	Eloquent	CyberTech Media Group	USA Video Interactive	EdgeStream Systems	Intel	Flashcom
VideoNet	eMuzed	Data Direct Networks	Vbrick	Enron Broadband Services	Internet Broadcasting Svcs	FrieeDSL
Worldcasters	Epproach	Digital Farmhouse	Vianet	Entera, Inc.	Multicast Media Network	Northpoint
Yack	eStudioLive	Digital Island	ViewCast	eVcast	Next Venue	Qwest Communications
	eVcast, Inc.	Dotcast, Inc.		GMV Network	Orblynx	Rhythm NetConnections
<b>Music</b>	GEO Video Networks	eGlobalDigital	<b>Content Management</b>	Grass Valley Group	RadioWave.com	SBC Communications
Comedy World	Globix	E-Media	Adaptive Media	Hypnotizer	Reliacast	Speakeasy
DiscJockey	Hypnotizer	eMuzed	Adero	Imaginon, Inc.	Teleglobe	Telety
House of Blues	iBEAM	EncodeNow	Aerocast	InfoLibria	Teletream	Verizon Communications
Listen	Internet Broadcasting Svcs.	EncodeOne	Akamai	Inktoni	Viacast	
Liquid Audio	Intercity	EncodeThis	All Video Networks	Ituner Networks		<b>ISPs- Satellite</b>
Live365.com	MediaNetworks	Eonstreams, Inc.	Burst.com	Lucent Technologies		DirecPC
MP3.com	IVT & Softcom	E-Troop	Chello Broadband	Media	24/7 Media, Inc.	StarBand Communications
MPEG Radio	Internet Television Network	Evoke Communications	Chyron	Midstream Technologies	AdForce	Wild Blue Communications
MTV	ITN	EyepopMedia	Cidera	Nacio Systems	DoubleClick	
Musicbank	Jet Stream Media	Globix Limited	Context Media, Inc.	nCUBE	E-Media	<b>ISPs- Cable</b>
NetRadio	JPL Productions	GMV Network	Convera Corporation	Network Appliance	Global Media	Excite@Home
RadioTower	Jumpcut	GroovyGecko	Data Direct Networks	Network Engines	Imake Software	Roadrunner
Spinner	Look Media Productions	iBEAM	Dialet Digital Media	Omneon	Kasenna	
VirginRadio	Madge.web	iMediaNetworks	Digital Island	Philips Electronics	Katz Interactive Marketing	<b>Browsers</b>
WWW.com	Mass Transmit	iStreamTV	DotCast	Pinnacle Systems	LightningCast	Microsoft
	MediaLink	Jaiva Media	Eloquent	Quad Research	Qpass	Netscape
<b>Video</b>	MediaOnDemand	Loudeye	eMotion	RealNetworks	Real Time Media	
AdventureTV	MediaSite, Inc.	Mass Transmit	Entera	Silicon Graphics	SGI	<b>Players</b>
Atom Films	Narrowcast Networks	Media 100, Inc.	Exent Technologies	SeaChange International	WaveExpress	Apple Computer
Bloomberg Television	Navisite	Media Site	Fantastic Corporation	Sun Microsystems		Beatnik
Comedy Central	Net Video Resources	Medium4.com	Grass Valley Group	Stratacache		Esynch
Heavy.com	Next Venue	Minerva Networks	InfoLibria	VBRick Systems		Eyewonder
IceBox	OverDrive Media	OverDrive Media	Inktoni	ViewCast		Hypnotizer
iFilm	PopCast Communications	PacketVideo	Intel			Liquid Audio
MeTV	ProWebcast	Pictron	Jaiva Media	<b>Switches/Routers</b>		Microsoft
Microcinema	PSMG	Pixelion	Kinomai	3Com	Content Guard	RealNetworks
MovieFlix	Rezn8	PixStream	Laird Telemedia	Alteon Web Systems	Convera Corporation	Vianet Technologies
Net Financial News	SeeItFirst.com	Power Stream	Lariat Software	Arrowpoint	eMotion	
Quokka Sports	Silicon Graphics	SeeltFirst.com	Loudeye	Broadband Access Systems	Intertrust	<b>Audience/Quality Meas.</b>
Sightsound.com	SnapMedia	Sonic Foundry	Luxxon Corporation	CacheFlow	MediaDNA	Arbitron
The Bit Screen	SoFTV	Streamedia Communications	Microcast	Cisco Systems	MediaShell	Ceridian Corporation
The LiveWave Network	Spincam	Streampipe	Microsoft	Cisco Systems	Pay2See	Exodus Communications
	Storyline Pictures, Inc.	Teletream	nCube	Exodus Communications	Reciprocal	Keynote Systems
	Streamcase	Tri-Digital, Inc.	Network Appliance	Foundry Networks	Secure Media	MeasureCast
	Stream Masters	ViewCast	Odetics	Grass Valley Group	Vyou.com	Nielsen/NetRatings
	StreamScapes	Virage, Inc.	Omneon Network Systems	IBM	WideVine Technologies	StreamCheck
	Teranex	WebStreaming.com	Pathfire	Leitch		StreamingMedia.com
	The Cable Channel	Worldcasters.com	Pictron	Lucent InterNetworking		
	Trapeze Media		Pop Cast Communications	Motorola		
	USA Video Interactive		Screaming Media	Nortel Networks		
	Virage, Inc.		SeaChange International	RiverStone Networks		
			SeeltFirst.com	Skystream Networks		
			SGI			
			Sun Microsystems			
			Teranex			
			Voquette			

Source: Broadcasting & Cable.



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## Selected Company Profiles

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## Adobe Systems, Inc. (ADBE: \$29<sup>1</sup>/<sub>16</sub>, Not Rated)



Adobe Systems, Inc. provides graphic design, publishing, and imaging software for Web and print production. Adobe offers a line of application software products for creating, distributing, and managing information of all types. The company licenses its industry-standard technologies to major hardware manufacturers, software developers, and service providers, and offers integrated software solutions to businesses of all sizes.

Professional Web designers use the company's Web page layout, digital video, and digital imaging software to enable and enhance the virtual presentation of products and services on the Web. Graphic designers, production artists, technical writers, and pre-press professionals use Adobe's solutions for professional page layout, illustration, business publishing, and printing visually rich information. The company's software tools are used to create much of the printed information people see and read every day, and its popular Adobe Acrobat software allows users to publish and distribute business documents using corporate e-mail and intranets, the Internet, or CD-ROM. The software lets users collaborate on documents with review, mark-up, search, digital signature, electronic form, document compare, and Web capture tools. Adobe ePaper Solutions enables conversion of traditional paper-based documents into indexable, searchable, platform-independent electronic PDF files for archiving and distribution purposes.

Adobe's partners include communications companies (2Way Corporation, Digital Fountain, Inc.), enterprise software companies (AOL Time Warner, Siebel Systems, Inc.), imaging companies (eCircles, Peerless Systems), Internet business services companies (Conscium, MediaBridge Technologies), Internet infrastructure companies (AvantGo, Virage), and media/publishing companies (DataLogics, Salon.com).

Adobe went public in August 1986 at \$0.35 per share (adjusted). Its 52-week trading range is \$87-\$27. Fiscal 2000 (November) revenues were \$1.27 billion, of which 40% came from Web Publishing, 23% from Print Publishing, 12% from ePaper Solutions, and 8% from OEM PostScript and Other Services. Net income in 2000 was \$287.8 million, or \$1.13 per fully diluted share.

<b>ADOBE SYSTEMS, INC. (ADBE)</b>					
<b>Content/Production Services</b>					
Share Price	\$29.06	FY01 Rev (mm)	\$NA	Net Debt (Cash)	\$(236.9) mm
Basic Sh. O/S	240.9 million	FY00 Rev (mm)	\$1,266.4	Float	240.3 million
Market Cap	\$6,964.5 million	FY99 Rev (mm)	\$1,015.4	52-Wk Range	\$87-\$27

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Macromedia, Inc. (MACR: \$29<sup>5</sup>/<sub>16</sub>, Not Rated)



Macromedia, Inc. develops, markets, and supports software products, technologies, and services that enable users to build Web sites and e-business applications. The company offers a family of software products that work together as a solution to streamline Web workflow from concept to design, development to production. In January 2001, Macromedia agreed to acquire Web developer Allaire in a \$360 million transaction that combines the two companies' server, authoring, and playback software into a full service suite of Web development tools. The company's minority-owned consumer business (shockwave.com, Inc.) provides so-called "next generation" Web-based entertainment content, products, and technologies that utilize "Flash animation" technology. The company also recently acquired online film site AtomFilms in an effort to significantly bolster the content side of its business.

The merged Macromedia-Allaire will offer products and services to enable Web professionals to develop content and applications delivered across multiple devices, integrating a comprehensive authoring and server product line (Macromedia Dreamweaver — visual HTML editor; Macromedia Flash — rich media standard; Allaire ColdFusion — Web application server; Allaire Jrun — J2EE application server) with high-volume, complementary channel software distribution.

The company's partners include traditional computing companies (Apple Computer, IBM, and Intel), as well as front- and back-end digital solutions providers (BEA Systems, Intel, Nokia, and Sun).

Macromedia went public in December 1993 at \$6.00 per share (adjusted). Its 52-week trading range is \$121-\$25. Fiscal 2000 revenues were \$264.2 million, with the majority of revenues from software sales and licensing, and net income was \$8.8 million, or \$0.15 per share.

<b>MACROMEDIA, INC. (MACR)</b>					
<b>Content/Production Services</b>					
<b>Share Price</b>	\$29.31	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(207.9) mm
<b>Basic Sh. O/S</b>	51.2 million	<b>FY00 Rev (mm)</b>	\$264.2	<b>Float</b>	50.4 million
<b>Market Cap</b>	\$1,499.7 million	<b>FY99 Rev (mm)</b>	\$153.2	<b>52-Wk Range</b>	\$121-\$25

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Vignette Corporation (VIGN: \$6<sup>5</sup>/<sub>32</sub>, Not Rated)



Vignette Corporation is a global provider of e-Business application software products and services. The company's e-Business solutions allow both traditional bricks-and-mortar and start-up dot-com businesses to create and manage Internet business channels that are designed to attract, engage, and retain their customers, partners, and suppliers on-line. The company complements its products with a professional services organization that offers a range of services, including strategic planning, project management, and implementation.

Vignette products are focused around three core capabilities: management and delivery of content, integration of applications within and across enterprises, and development of customer relationships. The company's V/5 e-Business Platform provides an open, secure, scalable, and reliable foundation for e-Business, allowing businesses to leverage existing IT investments in tightly integrated content management, scalable content delivery, and personalization. The company currently offers customers a broad spectrum of products and services, including Production Center, Business Center, Development Center, and Vignette Professional Services. These products enable e-business design and implementation, as well as deployment, needs analysis, project management, and site design.

The company has licensed its platform to more than 515 clients worldwide, including financial services (Conseco, JP Morgan Chase, UBS), telecommunications and technology (Hewlett-Packard, Terra Networks, Qwest), media and entertainment (Bertelsmann, Cablevision), automotive (Audi, BMW, Volkswagen), and industrial (Caterpillar, United Technologies) companies.

Vignette went public in February 1999 at \$3.17 per share (adjusted). Its 52-week trading range is \$101-\$6. Major investors in the company include Austin Ventures, Sigma Partners, Adobe Ventures LP, Charles River Ventures, and Morgan Stanley Dean Witter. Fiscal 2000 revenues were \$366.7 million, of which 59% came from Product Licensing and 41% came from Services. The net loss was \$532.2 million, or \$2.59 per share.

<b>VIGNETTE, INC. (VIGN)</b>					
<b>Software/Content Management</b>					
<b>Share Price</b>	\$6.16	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(446.3) mm
<b>Basic Sh. O/S</b>	235.7 million	<b>FY00 Rev (mm)</b>	\$366.7	<b>Float</b>	231.9 million
<b>Market Cap</b>	\$1,427.0 million	<b>FY99 Rev (mm)</b>	\$89.2	<b>52-Wk Range</b>	\$101-\$6

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.



## Verity, Inc. (VRTY: \$26<sup>7</sup>/<sub>16</sub>, Not Rated)



Verity, Inc. is a provider of software solutions that power business portals, including corporate portals that share information within enterprises, e-commerce portals that sell products and services on-line, and B2B market exchange portals. The company develops, markets, and supports products for corporate intranets, extranets, corporate portals, online publishers and e-commerce providers, original equipment manufacturers, and independent software vendors. The company's product family powers business portals that provide personalized information to employees and customers, while enabling enterprise-wide document indexing, classification, search, retrieval, and organization.

The company focuses on several core markets, including intranet-based applications for large corporate and government organizations, information retrieval solutions for e-commerce merchants, Internet sites, and electronic publishers and OEMs. Verity Portal One delivers desktop personalization, search, and navigation; Verity intranet Spider searches and indexes Web and file servers; Verity Knowledge Organizer organizes and classifies corporate information; and Verity Document Navigator enables organizations to view, navigate, and search long structured documents more effectively. Verity's Developer Kit enables developers to incorporate search and retrieval functionality in their software applications; Verity's Profiler Kit enables users to develop applications that use content and metadata to classify information automatically and trigger business events; and Verity KeyView Pro provides desktop viewing, filtering, and compression functionality.

Verity has more than 1,200 customers worldwide, including technology companies (Adobe Systems, AT&T, Cisco, Compaq, IBM), e-commerce merchants (CDNow, CNET, FairMarket.com), financial companies (Ernst & Young, PricewaterhouseCoopers), and information publishers (Dow Jones, Edgar Online, The Financial Times).

Verity went public in October 1995 at \$6.00 per share (adjusted). Its 52-week trading range is \$64-\$13. Fiscal 2000 (May) revenues were \$96.1 million, of which 72% came from Software Products and 28% came from Services. Net income was \$33.0 million, or \$1.09 per share.

<b>VERITY, INC. (VRTY)</b>					
<b>Infrastructure: Delivery/Distribution</b>					
<b>Share Price</b>	\$26.44	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(157.5) mm
<b>Basic Sh. O/S</b>	33.8 million	<b>FY00 Rev (mm)</b>	\$96.1	<b>Float</b>	33.6 million
<b>Market Cap</b>	\$884.3 million	<b>FY99 Rev (mm)</b>	\$64.4	<b>52-Wk Range</b>	\$64-\$13

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Convera Corporation (CNVR: \$11<sup>3</sup>/<sub>4</sub>, Not Rated)



In December 2000, The Interactive Service Division of Intel Corporation and Excalibur Technologies joined forces to create Convera, a new enterprise that provides solutions for managing online digital content assets. Convera offers single-source digital content management, which allows content to be captured, indexed, encoded, archived, enhanced, protected, and securely distributed over the Internet.

Convera designs, develops, markets, and supports high-performance, scalable, and secure search-powered multimedia software solutions and offers a full suite of service options, including licensed products, hosted applications, and customized end-to-end solutions. The company also offers a suite of intelligent search solutions for corporate intranets, Internet e-commerce, online publishing and the OEM markets, as well as providing video-centric multimedia solutions for clients.

Convera's software solutions deliver capabilities for ingesting, analyzing, and encoding analog and digital video, managing video content, video content rough-cut editing, Web publishing, real-time profiling and retrospective search, combined full-text and database searching, word meaning-based semantic searching, fault-tolerant pattern recognition-based searching for both text and images, statistical searching, and a full suite of traditional keyword and Boolean search techniques.

The company's customer base includes a sports league (National Basketball Association), government agencies (NASA), utility companies (British Gas), investment banks (Goldman Sachs), media outlets (PBS, Copley Press), and various technology companies (Intel, Nortel Networks).

Convera (formerly Excalibur) went public in June 1980 at \$1.00 per share (adjusted). Its 52-week trading range is \$70-\$12. Major investors in the company include Intel Corporation and the National Basketball Association. Fiscal 2000 revenues totaled \$37.9 million, of which 86% came from Application Software and 14% from Media Services. The company's annual net loss totaled \$340,000, or \$0.02 per share.

<b>CONVERA CORPORATION (CNVR)</b>					
<b>Content Management</b>					
<b>Share Price</b>	\$11.75	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	NA
<b>Basic Sh. O/S</b>	47.5 million	<b>FY00 Rev (mm)</b>	\$37.9	<b>Float</b>	NA
<b>Market Cap</b>	\$558.1 million	<b>FY99 Rev (mm)</b>	\$27.9	<b>52-Wk Range</b>	\$70-\$12

Source: Company reports; Bloomberg, Bear, Stearns & Co. Inc.

## InterTrust Technologies Corp. (ITRU: \$3<sup>31</sup>/<sub>32</sub>, Not Rated)



InterTrust Technologies Corporation has developed a general-purpose Digital Rights Management (DRM) platform that allows industries, organizations, and individuals to protect and manage their rights and interests in digital information. Holders of these rights and interests can easily associate “usage rules” with the digital information and persistently apply these rules throughout the life cycle of the information.

The company believes that its DRM platform represents a “new computing technology” that addresses a key threat to digital commerce — unauthorized users using digital information in an unauthorized way. The company’s DRM platform automates many aspects of the secure commercial exchange of digital information and is designed to allow digital commerce to be conducted more easily and efficiently. The company charges a licensing fee to partners who use its DRM platform to build digital commerce services and applications while seamlessly integrating content management and robust security features with persistent protection and efficient transaction processing.

The company has numerous customer agreements in place with a variety of digital content-oriented companies, including Adobe Systems, Digital Theater Systems, Fraunhofer-Institut, Harris Corporation, and Portal Software.

InterTrust went public in October 1999 at \$9.00 per share (adjusted). Its 52-week trading range is \$95-\$3. Major investors in the company include BMG Entertainment, Matsushita Electric Industrial, Mitsubishi Corporation, MusicMatch, Pricewaterhouse Coopers, and Universal Music Group. Fiscal 2000 revenues were \$7.2 million, of which 55% came from Licensed products, 42% from Software Support and Training, and 3% from Services. Overall, the company’s annual net loss totaled \$42.5 million, which translates to a loss of \$0.51 per share.

<b>INTERTRUST TECHNOLOGIES CORP. (ITRU)</b>					
<b>Digital Rights Management</b>					
<b>Share Price</b>	\$3.97	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(159.5) mm
<b>Basic Sh. O/S</b>	86.8 million	<b>FY00 Rev (mm)</b>	\$8.0	<b>Float</b>	64.1 million
<b>Market Cap</b>	\$344.3 million	<b>FY99 Rev (mm)</b>	\$1.5	<b>52-Wk Range</b>	\$95-\$3

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Virage, Inc. (VRGE: \$4, Not Rated)

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Virage Inc. is a provider of software products and application services that enable media and entertainment companies, enterprises, and consumers to catalog, manage, and distribute their video content over the Internet and intranets. The indexing and encoding capabilities of its technology transform video content into a structured video database that enables content owners and Internet users to rapidly search, locate, and use video content.

The company's software products and application services allow video content owners to adapt their content to the Internet and intranets quickly and cost-effectively. The company's application services facilitate the delivery of video content collections to multiple Internet sites with a customized look, feel, and functionality on each site. Virage's products enable customers to syndicate their video content to other Web sites, allowing each site to be served from the same content database while retaining the site's unique look and feel.

The company's customer base includes media conglomerates and broadcasters (ABC News, Paramount Pictures, The Walt Disney Co.), local media outlets and newspapers (*The Washington Post*), government and municipal agencies (Centers for Disease Control, Department of the Army, FBI), and large multinational corporations (Boeing, DaimlerChrysler, General Electric, IBM).

Virage went public in June 2000 at \$11.00 per share (adjusted). Its 52-week trading range is \$31-\$3. Major investors in the company include CMGI, Dresdner RCM Global Investments, TCW Group, and Alliance Capital Management. Fiscal 2000 (March) revenues totaled \$5.6 million, of which 75% came from Licensing, 20% came from Services, and 5% came from other sources. The company's annual net loss totaled \$13.9 million, or \$1.67 per fully diluted share.

<b>VIRAGE, INC. (VRGE)</b>					
<b>Production Services</b>					
<b>Share Price</b>	\$4.00	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(54.1) mm
<b>Basic Sh. O/S</b>	19.8 million	<b>FY00 Rev (mm)</b>	\$5.6	<b>Float</b>	16.0 million
<b>Market Cap</b>	\$79.2 million	<b>FY99 Rev (mm)</b>	\$3.4	<b>52-Wk Range</b>	\$31-\$3

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Loudeye Technologies, Inc. (LOUD: \$1<sup>11</sup>/<sub>32</sub>, Not Rated)



Loudeye is a provider of Internet media infrastructure services and applications that create a complete solution for the media, entertainment, and corporate markets. The company's proprietary technologies and processes enable high-quality, high-volume, platform-neutral processing of significant quantities of digital media. Its products and services are divided into two categories: digital media services and media applications.

The company's digital media services and applications enable customers to manage their Web-based audio and video content. It offers complete end-to-end digital media services and applications that encompass the conversion, encoding, management, and distribution of digital media. Once content has been encoded, the company provides watermarking, encryption, and other Digital Rights Management technologies to its customers to protect and manage content. The company provides turnkey audio and video solutions for management and distribution, and customers can store video and audio clips at its hosting facility or at hosting or managed distribution facilities provided by its partners. Loudeye has built its own data centers and manages all aspects of servers and connectivity directly to global Internet service providers, and uses its internal hosting capabilities for managing its own applications and key customers with specific requirements. The primary distribution strategy is to service its customers by adding value to its hosting partner network, which allows for higher capacity and more efficient routing across the global Internet.

Loudeye's customers include traditional media companies (Disney, Warner Brothers), music companies and record labels (EMI-Capitol Music Group, Sony Music), online media companies (AtomFilms, Musicbank), traditional media Web operations (CNN Interactive, Universal New Media), and old-economy companies (Coca-Cola and Hewlett-Packard).

Loudeye went public in March 2000 at \$16.00 per share (adjusted). Its 52-week trading range is \$54-\$1. Major investors in the company include Microsoft, AOL Time Warner, NBC, and CBS. Fiscal 2000 revenues were \$11.5 million, of which 95% came from Digital Media Services and 5% came from Applications. The net loss was \$25.9 million, or \$1.35 per share.

<b>LOUDEYE TECHNOLOGIES, INC. (LOUD)</b>					
<b>Encoding/Content Management</b>					
<b>Share Price</b>	\$1.34	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(83.2) mm
<b>Basic Sh. O/S</b>	36.1 million	<b>FY00 Rev (mm)</b>	\$11.5	<b>Float</b>	22.6 million
<b>Market Cap</b>	\$48.5 million	<b>FY99 Rev (mm)</b>	\$2.6	<b>52-Wk Range</b>	\$54-\$1

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Sonic Foundry, Inc. (SOFO: \$2, Not Rated)

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Sonic Foundry, Inc. is a provider of software products and services that allow customers to create, edit, and deliver digital audio and video content. The company's products and services allow customers to record, store, play, and transfer content to digital storage and playback devices, enabling larger-scale Internet transmission and distribution. Many content creators and owners use the company's technology to create new digital content and digitally encode existing content.

Sonic Foundry's product families offer musicians and non-musicians a way to merge short segments of pre-recorded music, or loops, into a song. Other products allow users such as audio and video engineers, broadcasters, and developers to record and modify digital audio and video files and prepare them for delivery on CD or over the Internet using streaming media (such as RealNetworks G2 and Microsoft Windows Media Technologies) and downloadable formats (such as MP3 and AVI). The company's services division uses unreleased proprietary automation tools and audio and video signal processing algorithms to provide format conversion and digital encoding solutions to content owners. These services include translating analog or digital tapes, CDs, films, and other audio and video media into various compression and Internet streaming file formats and cleaning or filtering recordings for improved quality.

Sonic Foundry's customers include music retailers (Guitar Center, Sam Ash Music), enterprise and application hardware and software providers (Hewlett-Packard, Pinnacle Systems, Macromedia), news organizations (CBS News, Disney, MSNBC), and media and record companies (Capitol Records, Universal Studios, Warner Brothers, Sony Music).

Sonic Foundry went public in April 1998 at \$7.50 per share (adjusted). Its 52-week trading range is \$65-\$1. Major investors in the company include CCI International and Charles Schwab. Fiscal 2000 (September) revenues were \$27.4 million, of which 82% came from Software Licensing and 18% came from Media Services. The net loss was \$34.9 million, or \$2.08 per share.

<b>SONIC FOUNDRY, INC. (SOFO)</b>					
<b>Encoding/Content Management</b>					
<b>Share Price</b>	\$2.00	<b>FY01 Rev (mm)</b>	\$NA	<b>Net Debt (Cash)</b>	\$(7.8) million
<b>Basic Sh. O/S</b>	22.0 million	<b>FY00 Rev (mm)</b>	\$27.4	<b>Float</b>	14.4 million
<b>Market Cap</b>	\$43.9 million	<b>FY99 Rev (mm)</b>	\$14.8	<b>52-Wk Range</b>	\$65-\$1

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Artesia, Inc. (Private)

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Artesia Technologies is a provider of digital asset management products and services that enable controlled enterprise-wide development of products and services and enhanced information-sharing with suppliers and partners, with the goal of achieving new levels of efficiency and flexibility. Artesia's solutions apply industry and computing standards to audio, video, images, and text created for or during the course of doing business.

The company's digital media management tools allow creative professionals to become more productive and deliver higher quality products while speeding Web access to content, broadband distribution, and e-commerce. Artesia Technologies' TEAMS product helps customers manage asset archives by offering singular management of rich media, thereby reducing costs, improving productivity, and helping to automate the sharing, licensing, and distribution of digital content.

Artesia is a privately held company with the financial backing of Warburg Pincus Ventures. The company works closely with many other technology companies, including Oracle, Sun, Apple, Virage, and EMC. Its customers include publishers and publishing companies (The Washington Post, Random House, Time Warner Trade Publishing), large corporations (General Motors, The Tribune Company), and government agencies (U.S. Library of Congress).

<b>ARTESIA, INC. (Private)</b>					
<b>Digital Rights Management</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Bulldog, Inc. (Private)

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Based in Canada and serving the North American and European markets, The Bulldog Group develops digital product management and distribution software applications that are designed to transfer digital assets into revenue-generating digital products. The company's software solution provides clients with an enterprise platform to store, browse, manage, and distribute digital media content both within and outside an enterprise through multiple delivery channels, including the Internet and broadcast television. The company's latest product, Bulldog Two.Six, delivers a secure media repository for loading, indexing, searching, browsing, and distributing digital assets.

Bulldog's software solution offers customers the opportunity to utilize an advanced, open architecture for managing, tracking, reporting, and distributing digital assets through multiple channels and delivery applications. Acting as a solution provider and a partner, Bulldog provides custom-tailored solutions to meet its clients' business needs. The company targets four key industry sectors that rely on the management and distribution of digital content as a core business component: Broadcast (traditional and interactive television), Entertainment (music, film, and game development), Publishing (traditional and Web), and Corporate (document management, marketing, and advertising).

Bulldog is a privately held company whose major investors include BCE Capital, Sony Pictures Entertainment, and Sun Microsystems. The company's customers include broadcasters (BBC), entertainment and new media companies (Sony Pictures Entertainment, Quokka), publishers (Kirch New Media AG), and technology companies (Microsoft Studios, Open Interactive).

<b>BULLDOG, INC. (Private)</b>					
<b>Content Management/Digital Distribution</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.



## eMotion, Inc. (Private)

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eMotion, Inc. is a provider of digital media management solutions, offering an array of products and services for storing, searching, collaborating on, and delivering media assets. The company serves advertising agencies, news media, entertainment and broadcasting companies, and large global corporations, providing DMM solutions that allow more effective management, control, and access to valuable digital media assets.

The company's digital media management tools allow creative professionals to deliver higher quality products while speeding Web access to content, broadband distribution, and e-commerce. eMotion MediaPartner software is the company's digital media management solution product. Product highlights include a natural language search engine, advanced indexing, integrated rights management, XML-based interfaces, custom library creation, and support for virtually every major digital media file type. eMotion technology is also leveraged through the company's PictureQuest.com image portal and Footage.net video portal.

eMotion is a privately held company whose major investors include Kodak, Wasserstein Perrella, East/West Capital, The Psilos Group, and Constellation Ventures. The company's customers include advertising agencies (Young & Rubicam), technology companies (Intel), government (National Library of Medicine, U.S. Air Force), entertainment and broadcasting companies (Discovery Communications, Paramount Pictures, Warner Bros.), and large corporations (Nike, McDonald's).

<b>eMotion, INC. (Private)</b>					
<b>Content Management</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## MediaSite, Inc. (Private)

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MediaSite, Inc. is a developer of technology, products, and services for enabling interactive video on the Web, cable, and other emerging wireless platforms. MediaSite solutions deliver video search and navigation options, allowing users to manage and use video assets and transform video resources for e-commerce, subscriptions, and original programming.

The company's products provide turnkey solutions that integrate content processing, custom application development, hosting services, and video consulting services. The company's WebFinder product allows users to search and navigate video, and the Publisher 4.0 product provides tools to annotate and describe video, encode video to different formats, and create customized video indexes.

MediaSite is a privately held company whose major investors include Robinson Venture Partners, Carnegie Mellon University, Birchmere Investments, Critical Path, Inc., and the Western Pennsylvania Adventure Capital Fund. The company's customers include broadcasters (BBC Worldwide Americas, NBC News, Warner Brothers), technology companies (Dell, IBM, Microsoft, Oracle), government (Commonwealth of Pennsylvania, U.S. Army), Internet companies (RealNetworks, Yahoo!), and large industrial companies (Boeing Corporation).

<b>MEDIASITE, INC. (Private)</b>					
<b>Production Services</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Sekani, Inc. (Private)

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Sekani, Inc. provides digital media management solutions that allow companies to integrate advanced media asset management functionalities and enable digital storage, search, purchasing, delivery, and application. The company's products and services combine broadband and Internet technologies with a large rights, clearance, and licensing resource that focuses on three intersecting media areas: advanced Media Asset Management; full-service Media Licensing; and Production and Syndication.

The company offers strategic planning in conjunction with turnkey production, encoding, storing, and distribution services, as well as end-to-end outsourcing solutions that enable digitization, management, and distribution of rich media. These solutions enable encoding, archiving, cataloging, search, retrieval, production, and distribution of content. Sekani utilizes its media licensing channel to provide analog video to users, who can browse an online clip archive that includes footage from ESPN, Metro-Goldwyn-Mayer, and the Smithsonian Institution.

Sekani is a privately held company whose major investors include RRE Ventures, Corbis, ComVentures, Bessemer Venture Partners, Infinity Capital, WaterView Partners, and the iXL Executive Fund. The company's customers include media companies (20th Century Fox, NBC, Universal), financial companies (Chase, MasterCard, Visa), and large corporations (Coca-Cola, GE, IBM).

<b>SEKANI, INC. (Private)</b>					
<b>Content Management</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## TrustData Solutions, Inc. (Private)

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TrustData Solutions is a provider of software and services for “trusted” e-commerce. The company’s products and services allow parties to create rules, or usage agreements, regarding the privacy of sensitive personal, corporate, and government information. These rules travel with and govern the use of the information whenever and wherever use takes place, facilitating billing, per-use tolling, reporting, and other administrative functions while providing a complete audit trail to allow managers to better control and measure information usage. The company’s products are based on the digital rights management (DRM) platform developed by InterTrust Technologies.

The company’s suite of products includes Secure E-Mail, which integrates into existing electronic mail systems to constantly protect message contents and attachments from unauthorized access and use; Software Distribution Manager, which provides a trusted e-Business environment for software licensing and piracy protection of downloaded software; and Healthcare Information Manager, which allows organizations to protect confidential personal health and financial information from unauthorized access. Other customizable products are being developed to meet the needs of specific health care and financial services companies.

TrustData Solutions is a privately held company whose major investors include The Stephens Group, Roger Engemann & Associates, First Albany Corporation, and InterTrust Technologies. Its customers include media companies (AOL, Massive Media Group), technology companies (Digital World Services, Magex), diversified conglomerates (Samsung, Mitsubishi), digital content service companies (MERCURiX, Reciprocal), and financial services companies (PricewaterhouseCoopers).

<b>TRUSTDATA SOLUTIONS, INC. (Private)</b>					
<b>Digital Rights Management</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt</b>	NM
<b>Shares O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Bloomberg; Bear, Stearns & Co. Inc.

## Verance, Inc. (Private)

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Verance is a developer of watermark technologies for content management, broadcast monitoring, wireless systems, and data applications. The company's technologies and business solutions span a broad spectrum of media and physical formats, from broadcast to the Internet and from analog cassette to DVD, focusing on copyright management, royalty distribution, e-commerce, marketing, and product distribution needs that have emerged as a result of the convergence of the entertainment, media, and wireless telecommunications industries.

The company provides three distinct product and service lines: Digital Commerce, which includes rights management and e-commerce offerings for the music and entertainment industries; Media Information Services, which offers a commercial/programming broadcast verification product; and Wireless Solutions, which focuses on innovations in mobile digital entertainment. Verance technology has been adopted as a worldwide industry standard in both copy-protected DVD-Audio and for the Secure Digital Music Initiative (SDMI), which has developed architecture and specifications for playing, storing, and distributing digital music. The company's watermarking technology makes use of digital signal processing techniques that allow for embedding of multiple layers of virtually unalterable information, in line with entertainment and media industry security requirements.

Verance is a privately held company whose major investors include Constellation Ventures, MMC Capital, and QUALCOMM. The company's technology has been licensed by the five major record labels (BMG, EMI, Sony Music, Universal Music Group, and Warner Music Group), as well as several e-commerce music sites (licensemusic.com, MusicMaker.com, and Mjuice). Other customers include consumer electronics companies (Panasonic, Sony, TDK, Toshiba), digital hardware and software companies (Rioport.com, Silicon Contents), digital media companies (Sonic Solutions), and advertising companies (Audio Auditing).

<b>VERANCE, INC. (Private)</b>					
<b>Digital Rights Management</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Widevine Technologies, Inc. (Private)

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Widevine Technologies provides communications security and network technologies for Internet streaming media. The company's products are platform- and format-independent and provide value-added services and technologies for Internet streaming media and copyright protection.

Widevine Cypher, the company's principal product, is designed specifically for enterprise customers and provides security for Internet distribution of valuable proprietary and confidential streaming media. The company's product line provides "industrial strength" end-to-end security for streaming multimedia, giving artists, filmmakers, musicians, and media companies complete control over the Internet distribution of content. The product also works with any server or media format (including Real, Windows Media, and QuickTime) and supports industry-standard protocols for maximum compatibility with future technologies.

Widevine Technologies is a privately held company whose major investors include Constellation Ventures, Charter Ventures, Phoenix Partners, and Dai Nippon Printing Company, Ltd. Launched in September 2000, the company is currently in its incubation stage and is forging strategic alliances and partnerships with various industry players.

<b>WIDEVINE TECHNOLOGIES, INC. (Private)</b>					
<b>Content/Digital Rights Management</b>					
<b>Share Price</b>	NM	<b>FY01 Revs (mm)</b>	NA	<b>Net Debt (Cash)</b>	NM
<b>Basic Sh. O/S</b>	NM	<b>FY00 Revs (mm)</b>	NA	<b>Float</b>	NM
<b>Market Cap</b>	NM	<b>FY99 Revs (mm)</b>	NA	<b>52-Wk Range</b>	NM

Source: Company reports; Bloomberg; Bear, Stearns & Co. Inc.

## Digital Compression and MP3 Technology

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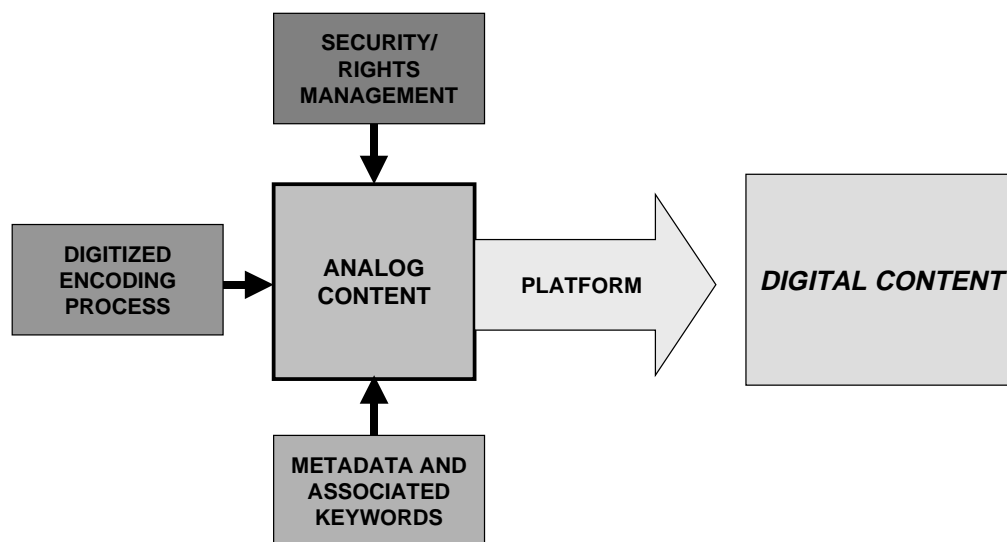
### THE BASIC PROCESS: ANALOG TO DIGITAL

In order to make traditional content such as audio, video, and text accessible to online users, content must be converted from analog format (videotape, paper) into digital format (computerized — bits and bytes). Digital encoding converts an analog signal or image into a “stream of numbers.” In digital encoding, it is the stream of numbers that is stored rather than a perfect copy of the original signal itself. The correct “stream of numbers” is captured through electronic sampling of the original content, assigning a unique digital signature to each variation in the audio, video, or image. Digital content quality can be improved by increasing either the sampling frequency or the sampling rate (number of possible signal variations), bringing about a closer digital representation of the original analog signal.

Once the signal is converted, the digital encoding process can utilize an integrated security/rights management system to protect the content, adding embedded information, or metadata, that allow the content to be searched and indexed using several key “tagged” elements or topics. In the case of music files, metadata can include song titles, album lyrics, keywords, and other complementary information. The final desired result is a secure digital property that is transferred over an automated system, allowing media content buyers to access and use the content easily (theoretically) while maintaining the integrity of the content owner’s copyright or intellectual property protection (see Exhibit 10 below).

**Exhibit 10. Digitizing for Distribution**

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Source: Bear, Stearns & Co. Inc.

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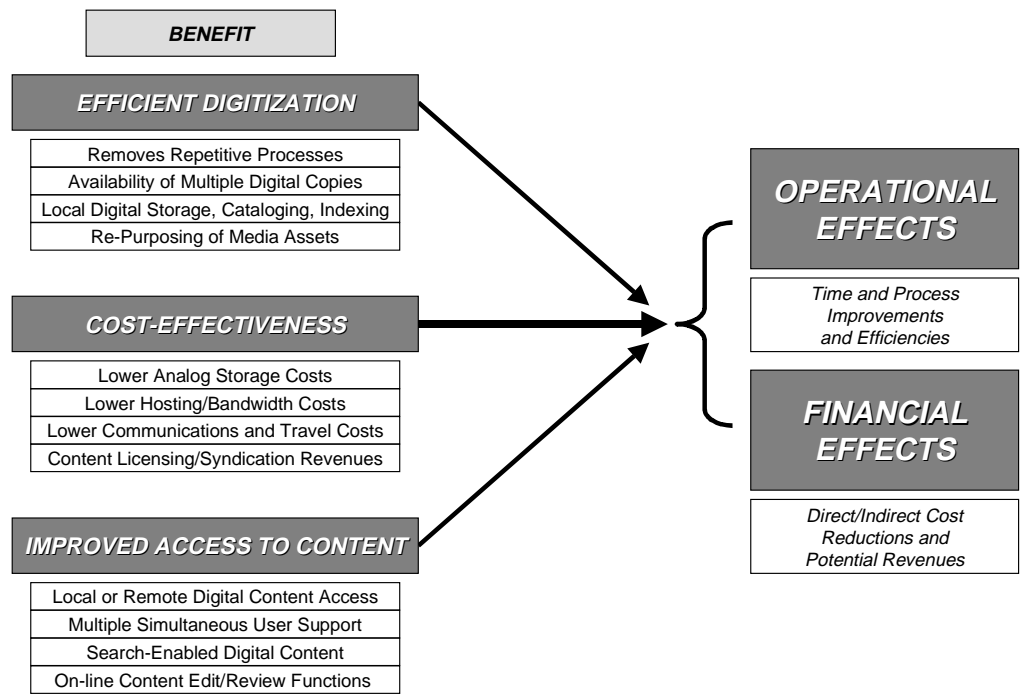
### COMPRESSION TECHNOLOGIES

Data compression technologies allow enterprises to reduce storage requirements and lower data transmission bandwidth usage. The basic goal of compression codec technologies is to allow content files to be many times smaller than the originals, and thus easily broadcastable through the Internet or transferred on portable media with only a minor loss of quality. The most effective compression technology, and, as a consequence, the one with the greatest chance of near-universal adoption, is the one that combines the highest quality at the lowest bit rates with processing speed and portability.

Digital signal compression is the process of digitizing analog content, such as raw audio, video, and documents, by encoding that content into “1s” and “0s.” This compression process eliminates certain redundant details from each track of audio and frame of video. This allows for smaller file sizes, and allows data to be more quickly squeezed through digital pipelines.

Traditional analog copies of content are bulky and often need to be physically duplicated, as analog content wears out over time. While digital files are, by their very nature, intended to reduce the need for material, storage, and carrying costs, they can become bulky and just as expensive (due to disk storage space costs) as analog content if left uncompressed. Compressed digital files provide “near original” quality for multiple simultaneous users that takes up considerably less storage space and does not degrade or wear out over time. These and other resulting benefits of compression technologies can be felt both operationally and financially, as Exhibit 11 below shows.

**Exhibit 11. Benefits of Compression Technologies**



Source: Bear, Stearns & Co. Inc.



As a viewer or listener, it is likely that the difference between compressed and uncompressed output will go largely unnoticed. The benefit is that the file size will be significantly reduced. The major trade-off in reducing file size is that quality can be reduced if the compression is not optimal or if the compressed content is accessed over slower-streamed connections. Another trade-off is that in exchange for reduced file size, the original copy of the content cannot be returned to its original uncompressed format without encoding another copy of the original file.

Several popular and widely accepted compression codecs are currently popular among digital media companies. The type of codec used by an encoding company depends on which platforms the content provider wishes to support. Because the



proprietary platforms have differing standards, it is necessary to encode a separate copy for each sampling rate and format (RealAudio 28.8 and RealAudio 300KBps; Windows Media Player 56k and Windows Media Player 100KBps). The two most popular formats are RealNetworks' RealPlayer G2 and Microsoft's Windows Media Player 7.0. Exhibit 12 provides an overview of today's popular digital content formats.

**Exhibit 12. Digital Audio Formats**

<i><b>PUBLIC DOMAIN FORMATS</b></i>	<i><b>PROPRIETARY FORMATS</b></i>
	
<ul style="list-style-type: none"> <li>•Free, "public use" formats</li> <li>•Downloaded as .WAV and .MP3 files, usually not streamed</li> <li>•File download time is only bandwidth issue</li> </ul>	<ul style="list-style-type: none"> <li>•Protected formats</li> <li>•Media Files are typically Streamed (Acrobat and Quicktime files are Downloaded)</li> <li>•Multiple bandwidths (28.8, 56.6, 100K, 300K)</li> </ul>

Source: Bear, Stearns & Co. Inc.

## **THE MP3 FORMAT AND DIGITAL DISTRIBUTION**

We believe that there are two simple reasons why digital distribution is important to media entities:

- The Internet is a relatively unregulated haven for the distribution (authorized or otherwise) of copyrighted content. Napster has demonstrated that peer-to-peer technologies facilitate sharing of any file type, with music (and ultimately video) being the most popular.
- Internet-enabled digital distribution provides the cheapest and easiest distribution method ever available. Personalized, targeted content can be sent to specific users with specific interests, who are more likely to respond favorably to highly targeted content.

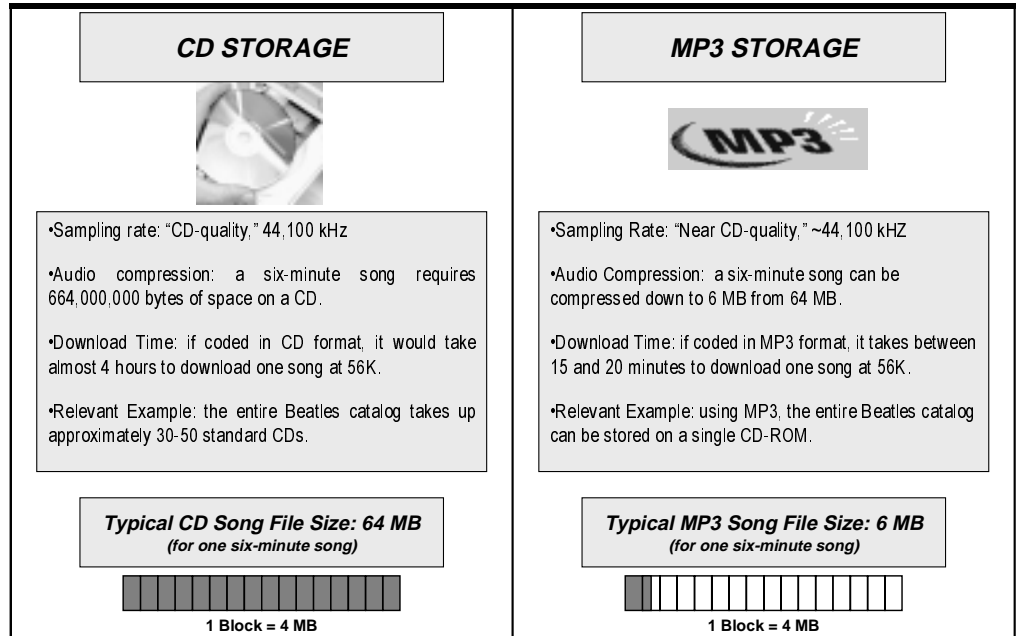
The music industry's digital distribution experiences should provide valuable insight for film studios and other content creators: as technology develops, companies that do not embrace digital distribution and integrate it into their business models run the risk of massive copyright infringement and potential loss of incremental revenue streams.

Music, given the MP3 compression format, has and continues to suffer the growing pains of a new medium in an undeveloped legal and technological market. The digital distribution of music will have a significant impact on the underlying

economics of the music industry, affecting the way music is made, sold, archived, and distributed. The MP3 file format is based on a data compression algorithm that shrinks packages of information and makes it practical to transmit those compressed files across the Internet. Decompressed upon receipt and playback, this digital information can take the form of music, video, text, or computer software.

The MP3 format has gained acceptance because it is convenient and efficient in its use. With digital music files stored in MP3 format, they are compressed down to a fraction of their original size, meaning they require less time, less space, and less effort for the person downloading the MP3 song file (see Exhibit 13).

**Exhibit 13. Digital Storage: CD Versus MP3**



Source: Bear, Stearns & Co. Inc.

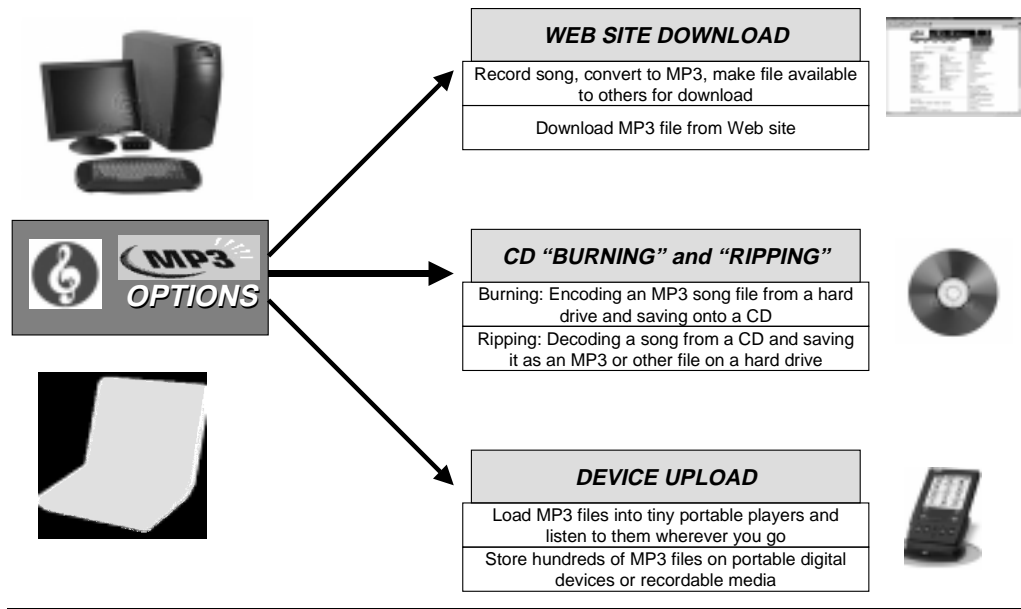
While MP3 technology allows for convenient Internet distribution, the format itself is not protected, and is, therefore, not the distribution format of choice for content and copyright owners. Those owners seek more secure solutions that protect their content from copyright infringement and illegal or unauthorized distribution. Currently, streaming technology is the preferred Internet content distribution method, as it provides the most secure means for content owners to distribute their content with the least fear of illegal reproduction. As Digital Rights Management technologies improve and content protection increases, content producers and copyright owners will likely be more willing to digitally distribute their content.

It is important to point out, however, that MP3 technology itself is not illegal — it is illegal distribution of pirated MP3 music that has perturbed record companies. Record labels and content owners simply want to be assured that their content is not being reproduced without their consent and that they are properly compensated for use of their content. All told, MP3 technology has made it simple for people to find, access, download, and manipulate, for free, any song that has been encoded in MP3 format. The following is a brief overview of the versatility of the MP3 platform and technology.

**MP3 DISTRIBUTION  
OPTIONS**

There are several simple and easy ways to distribute MP3 files, making it more and more difficult for content and copyright owners to protect their content. Web site downloads allow for unregulated transfer of MP3 files, commercially available CD “burners” allow for easy copying and re-distribution of any MP3 files, and the rise of portable devices has created another distribution method that encourages the use and transfer of any type of MP3 files (see Exhibit 14 below).

**Exhibit 14. Digital Distribution: MP3 Options**



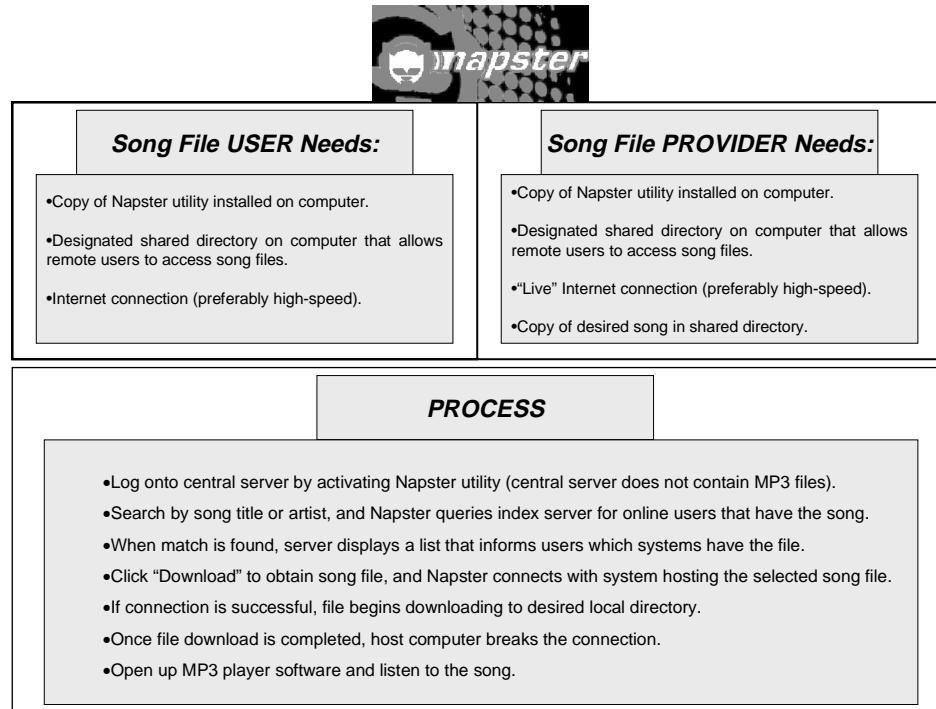
Source: Bear, Stearns & Co. Inc.

**NAPSTER AND  
PEER-TO-PEER  
TECHNOLOGY**

Napster and peer-to-peer technologies have revolutionized file sharing, forcing record labels to address mass illegal distribution of content in a very public way. The Napster case and its offshoots have forced record labels to accelerate efforts to embrace technology and make music widely available for Internet users. However, as time goes on and other file sharing technologies proliferate, it will be increasingly difficult to convince users to pay for what they have come to expect for free.

Napster and other P2P utilities eliminate the need for a central server, allowing users to directly connect with other users (or song providers) and letting every user logged on know what content is available. Decentralized P2P networks are virtually impossible to monitor, mainly because there is no central server to target. Together with a lack of an electronic “trail,” decentralized control, and more effective masking of users’ identities, it is increasingly hard for record companies, content owners, and legal authorities to protect copyrights and intellectual property laws (see Exhibit 15).

## Exhibit 15. The Napster Network: An Overview



Source: *How Napster Works*, Jeff Tyson; Bear, Stearns & Co. Inc.

Despite a recent investment by Bertelsmann, the future of the current free Napster and future paid service remains in question. Napster can be held liable for “enabling” the illegal distribution of copyrighted content, so underground software developers have created other options for distributing files on the Internet. These newer peer-to-peer (P2P) search programs, which include the “Gnutella” file-sharing program, allow *any* type of media file (including illegally ripped CD audio files and DVD video files) to be shared, forcing content owners and creators to again consider fundamental strategic changes (such as making catalogs available on-line) to protect and maintain the viability of their assets.

There is no guaranteed method of stopping the transmission of illegal digital content, but offering up an alternative, legal product will reduce piracy and MP3 bootlegging. The key for record labels is to implement DMM solutions to increase the number of secure legal digital copies in the marketplace, with the hope that those higher-quality and authentic legal copies will replace poorer quality bootlegs. It is clear that record labels must embrace digital distribution technologies, or else free MP3 bootlegs will eventually replace legal CDs as the music format of choice.

As demonstrated by the Napster phenomenon, P2P provides an easy-to-use and highly effective file sharing technology. If left alone, however, this technology will never develop into a legitimate revenue-producing business, as there is no acceptable licensing fee structure or accompanying business model to ensure that content producers and copyright owners are properly compensated for the use or distribution of their works. As a result, asset protection technologies such as Digital Rights Management have been developed to build the legal market for media assets that can be securely transferred and accessed using P2P distribution.

## Asset Protection Technology

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### DIGITAL RIGHTS MANAGEMENT INDUSTRY EVOLVES

Because of the ease of “burning” content in an unprotected file format from physical discs, the entertainment industry has embraced Digital Rights Management Technologies as a necessary component to digital asset management. While the industry has been slow and careful as it tries to strike a perfect balance between functionality and security, the necessity of protection has been fueled by the popularity of the Napster service (and the resulting “Napster effect”) and the potential development of a “Napster for movies,” thereby escalating the commitment to DRM technologies.

Digital Rights Management technologies protect and manage rights and interests in digital information using “rule” specification. DRM software is designed to allow content owners to specify the circumstances under which content access is authorized. The technology is applicable in any industry that distributes information that can be put into digital form, including music, videos, software, games, publications, business information, and images. DRM also applies to organizations and individuals who want to protect the vast amount of proprietary and personal information that has been computerized.

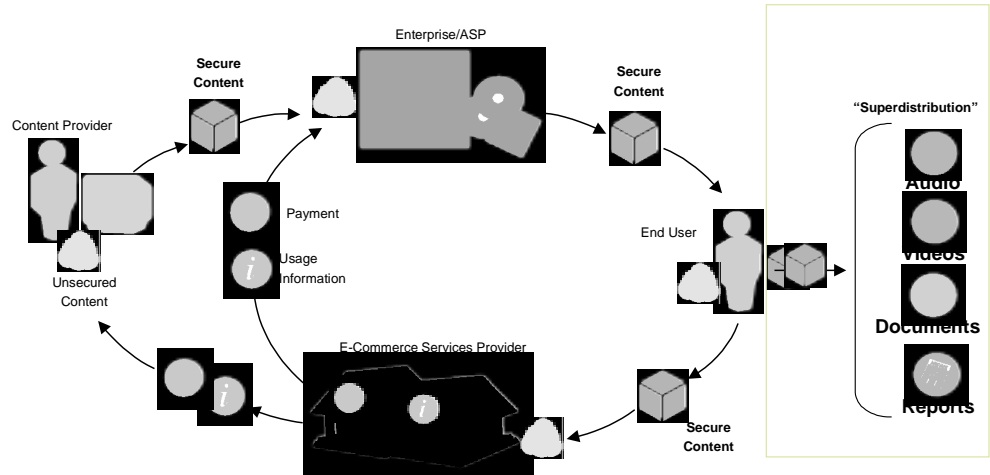
DRM enables companies to apply “rules” to their digital information that allow for tracking of usage and sharing. In a nutshell, DRM technologies allow companies to protect their content while reducing the likelihood of potential piracy. DRM highlights include the ability to enforce mandated usage rules continuously (even when users are off-line), to construct a complete audit trail of usage, to track compliance with privacy rules and regulations, and to enforce payment terms.

As the amount of information exchanged on the Internet expands at a rapid pace, the need to protect information and content becomes more important as owners are exposed to potential fraud and piracy. Indeed, the primary driver of the need for DAM solutions is the need to protect content from unauthorized use and access.

#### ***The DRM Process***

Here’s how Digital Rights Management works: Digital info, such as a song, program, or text document is “wrapped” and protected by a digital code. The file can be sent to any user, but only users with the key to undoing the digital “wrapping” can access the actual content. This control assures content owners and creators that their content will be protected and accessed only by users who comply with their usage terms (such as payment or other qualification). See Exhibit 16 below.

## Exhibit 16. DRM: Secure Encoding, Distribution, and Sharing



Source: TrustData Solutions.

According to InterTrust Technologies, an effective DRM platform provides the following benefits:

- **Robust Security.** DRM platforms employ multiple layers of security and tamper-resistance to protect content — different types of digitized audio, video, and documents have different monetary values and authorized user bases.
- **Persistent Protection and Management.** This functionality allows content owners to protect their information by applying lifetime rules of use that apply each time the content is accessed or sent to others.
- **Flexible Business Models.** Built-in flexibility allows content owners to establish dynamic digital content management rules that can be changed to present differing offers under differing circumstances and to cater to identity characteristics such as student discounts, membership in affinity groups, or employment at a specific corporation.
- **“Super-Distribution.”** P2P distribution allows authorized users to pass along content to others, ensuring that providers get paid through persistent application of rules and protection of content and encouraging other users to join the digital commerce system.
- **Multiple Content and Media Types.** DRM platforms must support multiple content types (audio, video, documents), various means of digital distribution (CDs, DVDs, Internet, broadband), and all forms of electronic transactions for any content available in the system.
- **Efficient Transaction Processing.** Eliminates inefficiencies, integrating off-line order processing, efficient “batch payment” and information transfer scenarios, immediate payment across a value chain, and automated application of provider-supplied rules.

- **New Advertising Models.** DAM technology allows Internet advertising to expand beyond traditional Web-based banners, providing local management, tracking, and payment (each time a user sees an advertisement); incorporating the ability to operate off-line, and to securely store and forward collected data; and enabling cost-effective ways for companies to generate revenue and price content.
- **Personalized Marketing.** Because DRM technology can also locally process online and off-line advertisements and promotions, identification and profiling of individual consumers becomes easier, allowing for more effective matching of content, offers, and ads to specific users (subject to user consent and privacy rights).

### ***DRM Solution Options***

Because the DRM solutions market is still in its formative stages, there are several competing technologies and platforms that are looking to supply the market with the best solution. The key to industry growth in Digital Rights Management is a universally trusted online system that protects rights while enforcing terms and conditions, allowing digital content to be viewed by a wide variety of platforms. Content rules must be totally objective, consistent, and automatic.

There are currently several viable DRM options available in the marketplace, each of which is based on the idea that rights-enabled digital content can be simply and easily transferred by trusted users and customers, integrating usage rules, rights, and specifications to regulate use. Below, we provide a brief overview of several popular DRM alternatives.

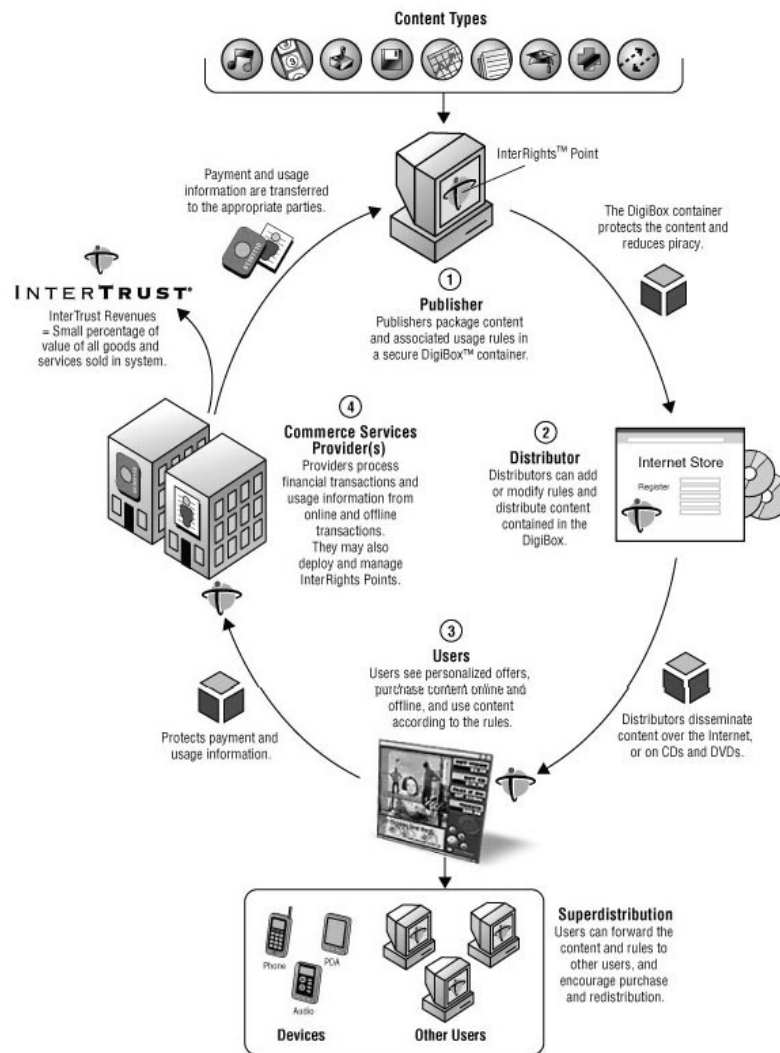
#### ***Method 1: “Digibox” (InterTrust)***

InterTrust Corporation’s DRM platform uses provider-specified rules to enable digital distribution of protected content “Digiboxes” through a network of independent, protected junction points. The platform has four primary elements: InterRights Point, Digiboxes, Usage Rules, and a Transaction Authority Framework.

- **InterRights Point.** As a “core element of the InterTrust architecture,” an InterRights point creates local, secure databases that store user rights, identities, transactions, budgets, and keys, acting as secure junction points that remotely store and manage users’ digital rights.
- **DigiBox Container.** InterTrust’s system stores encrypted information in a DigiBox container, which is essentially a file “lockbox” that does not allow protected content to be unlocked and accessed without proper authorization codes. DigiBox containers remain protected even after users have accessed them, providing continuous protection and control over content, regardless of where the information travels. DigiBox containers allow information to flow across unsecured networks (since it cannot be accessed), and only those users and access points that satisfy the required rules can access and view the content.

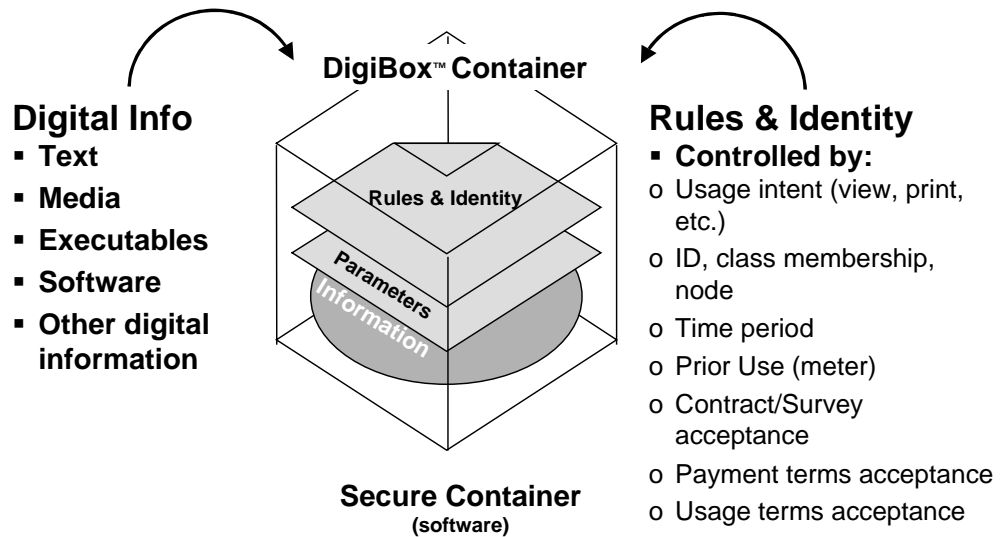
- **Usage Rules.** Because content usage is governed by rules including price, play, view, print, and save, InterTrust allows providers to create and change those rules. Rules are stored in DigiBox containers for distribution and are protected in the same way as content, meaning that rules travel *with* content and can be changed after delivery. Ultimately, adherence to rules is ensured by InterRights Points along the distribution path.
- **Transaction Authority Framework.** The Transaction Authority Framework connects InterRights Points to processing data centers, allowing for rules-based transaction record storage, processing, and fulfillment. The Transaction Authority Framework also allows for efficient communication of payment confirmation, InterRights Point management, fraud detection, revocation, security updates, and backup services. Exhibit 17 provides an overview of InterTrust’s DRM process, and Exhibit 18 offers a closer look at InterTrust’s “DigiBox.”

**Exhibit 17. DigiBox and the InterTrust DRM Process**



Source: InterTrust Technologies.





Source: TrustData Solutions; InterTrust Technologies.

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### **Method 2: Watermarking by Digimarc**

Digimarc’s “SecureDocuments” technology provides protection against unauthorized digital counterfeiting, piracy, and alteration by offering a range of solutions that apply digital watermarking technologies to a wide range of content.

**Digital Watermark.** A watermark is used to convey ownership and copyright information about a piece of content in order to reduce copyright infringement. According to Digimarc, the best way to describe a digital watermark is to compare it to a traditional watermark. Traditional watermarks offer proof of authenticity on some types of paper, and are not visible unless they are held up to a light. Digital watermarks work in much the same way, as they are embedded in content and can only be seen by a computer.

The watermark is imperceptible, robust, and platform-agnostic, carrying messages containing information about the content (such as price, number of permitted views, copyright and ownership information, and content licensing details), surviving image edits and format conversions, and integrating with other software and hardware components (including printing, inspection, and reading systems). In terms of benefits, digital watermarking provides creators and distributors with copyright protection, content usage tracking, and incremental revenue from embedded advertising.

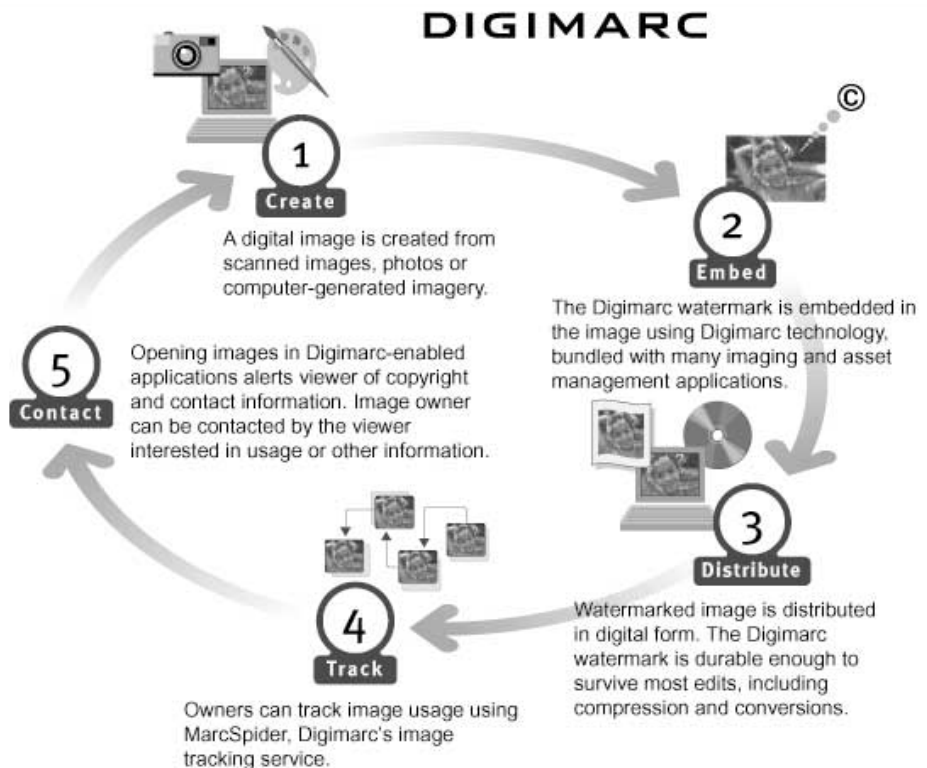
Highlighted “covert security features” embedded in watermarking technologies include:

- **Imperceptibility.** The watermark signal is embedded in the document and cannot be perceived by humans, but can be readily detected and read by proprietary software.

- **Machine-Readability.** Watermarking search and authentication is automatically read and processed by PCs or servers.
- **Data-Transferability and Personalization.** Digital data can be “piggybacked” with the watermark and can be customized and changed to suit the content or the owner.
- **Self-Authentication.** Content data can be correlated to other local or remote data to verify its authenticity and originality.

Exhibit 19 provides a closer look at Digimarc’s Watermarking process.

**Exhibit 19. Digimarc Watermarking—How It Works**



Source: Digimarc.

### **Method 3: Watermarking by Verance**

Verance’s “ConfirMedia” watermarking technology also provides protection against unauthorized digital counterfeiting. The company’s patented audio watermarking technology provides the means for both encoding and decoding “invisible” information tags placed within various broadcast program material, including advertising, promotional announcements, music, and syndicated programming. As the encoded material is aired over broadcast media, these tags are monitored, decoded and verified, then compiled into a centralized database, where they can be accessed by customers as either data files or reports.

ConfirMedia tracked and reported data provide a comprehensive, accurate, and timely means for content owners to audit and verify actual airplay of their material.

Broadcast advertisers and agencies can access precise confirmation and reconciliation of all advertising, music writers and publishers can track broadcast performances of their works, talent and performing rights organizations (ASCAP, BMI, SAG) can track and verify performance of member material, and film and television studios and syndicators can track airplay of programs and promotions.

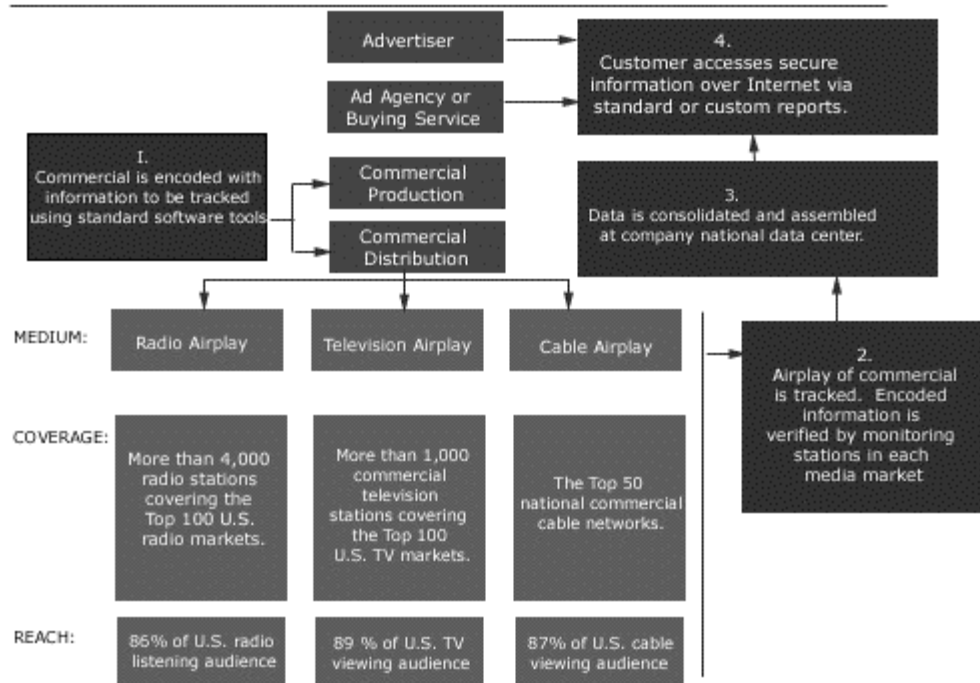
Features of the ConfirMedia watermarking technology include:

- **Transparency.** The audio watermark has been shown to have no discernible effect on the audio quality under studio listening conditions with expert listeners.
- **Survivability.** The watermark is detectable after the audio has been subjected to a wide variety of distortions introduced by broadcast, audio compression algorithms and Internet distribution, home recording devices, and studio manipulations.
- **Efficiency.** Encoding and decoding of the watermark data is achievable at a very low cost in terms of circuitry and computation.
- **Security.** Watermarks are designed to be resistant to attempts at forgery, alteration, erasure, and decoding by unauthorized parties.
- **Data Throughput.** Watermarks provide a high rate of data transmission in comparison to other approaches and enable the decoding of watermarks from very short-duration segments of audio.

See Exhibit 20 for a more detailed view of Verance's ConfirMedia technology.

## Exhibit 20. Verance CorfirMedia Watermarking—How It Works

### ConfirMedia™ for the Broadcast Advertising Industry



Source: Verance.

### Method 4: XrML Rules-Related System (ContentGuard)

Extensible Rights Markup Language (XrML) is a programming method for specifying rights and issuing conditions associated with the use and protection of digital content. XrML enables content owners to apply Digital Rights Management technologies to audio, video, and documents, providing a scalable, flexible open architecture that can be customized for different systems and customers.

Licensed on a royalty-free basis, XrML incorporates structured usage rights, supports e-commerce, offers compliance testing and evaluation to vendors, and provides flexibility and room for platform growth and modification. Additionally, XrML allows content providers to more effectively manage risk, guarantee certification, and integrate legal agreements into the digitally delivered content. According to ContentGuard, the XrML programming language creates an easily understandable machine-enforced rights structure that determines what specific rights accompany digital content.

Benefits of XrML include:

- It provides support for publishing and sales of digital content, such as audio, video, and documents;
- It provides access and use controls for the non-financial exchange of secure digital content.

- It simplifies content use through computer-based rules that provide consistent language and syntax.
- It provides compatibility for all leading hardware and software systems and platforms.
- It lowers implementation costs by using off-the-shelf products that are employed on other commercial sites.

Exhibit 21 offers a detailed look at ContentGuard’s XrML-based DRM solution.

**Exhibit 21. Digital Rights Management Using XrML**



Source: ContentGuard, XrML.org.

**A TRADE-OFF:  
SECURITY VERSUS  
EASE-OF-USE**

We don’t attempt to identify which security device is the ideal solution for content protection, and it is most likely some combination that will work best. However, it comes down to consumer adoption and acceptance that will determine the successful online digital distribution method.

For content creators and providers considering online distribution, there is a key trade-off between security and ease-of-use that must be considered. It is true that protection of content is quite important, especially since digital distribution makes unauthorized sharing so simple and easy. Built-in security features are quite important in terms of protecting copyright and restricting access to content. It is also important, however, to make it easy for content consumers to actually access content. Too many built-in security features could very easily backfire, discouraging use and causing customer frustration. Therefore, secured digital media must be easy to use, and customers should not have to take any significant extra steps to access their content. In other words, the process should be a relatively passive one, letting customers access content without even knowing that the content has been “unlocked” by his or her PC.

In our opinion, the ideal content security system has seven key characteristics:

1. It is technology-based.
2. It is platform-neutral.

3. It is scalable.
4. It is focused on multiple vertical markets.
5. It is focused on recurring transaction-based revenue streams.
6. It adds value to all components of the distribution value chain.
7. It has mass consumer appeal.

Companies mentioned:

Allaire Corp. (ALLR-8<sup>25</sup>/<sub>32</sub>)  
AOL Time Warner§ (AOL-44)  
Apple Computer (AAPL-18)  
AT&T Corp. (T-23)  
AvantGo (AVGO-5<sup>1</sup>/<sub>8</sub>)  
BEA Systems (BEAS-38)  
Boeing Co. (BA-62)  
Cablevision Systems Corp.§ (CVC-78)  
Caterpillar Inc. (CAT-42)  
Charles River Associates (CRAI-8)  
Cisco Inc. (CSCO-24)  
CMGI Inc. (CMGI-4<sup>1</sup>/<sub>16</sub>)  
CNET Networks Inc. (CNET-12)  
Coca-Cola Co. (KO-53)  
Compaq Computer (CPQ-20)  
Conseco Inc. (CNC-14)  
Critical Path (CPTH-2<sup>47</sup>/<sub>64</sub>)  
DaimlerChrysler (DCX-49)  
Dell Computer (DELL-22)  
Disney (Walt) Co.§ (DIS-31)  
Dow Jones & Co. Inc. (DJ-62)  
Eastman Kodak (EK-45)  
Edgar Online Inc. (EDGR-2<sup>1</sup>/<sub>64</sub>)  
EMC Corp. (EMC-40)  
Fairmarket, Inc. (FAIM-2<sup>5</sup>/<sub>32</sub>)  
General Electric Co. (GE-47)  
General Motors Co.§ (GM-53)  
Goldman Sachs Group Inc.§ (GS-92)  
Guitar Centers (GTRC-16)  
Harris Corp. (HRS-25)  
Hewlett-Packard Co.§ (HWP-29)  
IBM Corp.§ (IBM-100)  
Intel Corp. (INTC-29)  
InterTrust Technologies Corp. (ITRU-3<sup>31</sup>/<sub>32</sub>)  
JP Morgan Chase§ (JPM-47)  
Matsushita Electric Inc. (MC-19)  
McDonald's Corp. (MCD-29)  
Microsoft Inc. (MSFT-59)  
Mitsubishi Corp.¤ (MSBHY-14)  
Morgan Stanley Dean Witter (MWD-65)  
MusicMaker.com Inc. (HITS-5<sup>1</sup>/<sub>2</sub>)  
Nike Corp. (NKE-39)  
Nokia (NOK-22)  
Nortel Networks (NT-18)  
Oracle Corp. (ORCL-19)  
Peerless Systems Group (PRLS-<sup>3</sup>/<sub>4</sub>)  
Pinnacle Systems (PCLE-11)  
Portal Software Inc. (PRSF-7<sup>5</sup>/<sub>32</sub>)  
QUALCOMM§ (QCOM-55)  
Quokka Sports (QKKA-<sup>5</sup>/<sub>32</sub>)  
Qwest Communications (Q-37)  
RealNetworks Inc. (RNWK-7<sup>3</sup>/<sub>16</sub>)  
Salon.com (SALN-<sup>5</sup>/<sub>8</sub>)  
Schwab (Charles) (SCH-21)  
Siebel Systems, Inc. (SEBL-38)  
Sonic Solutions (SNIC-1<sup>1</sup>/<sub>2</sub>)  
Sony Corp. (SNE-72)  
Sun Microsystems (SUNW-20)  
TDK Corp. (TDK-70)  
Tribune Co. (TRB-41)  
UBS AG (UBS-160)  
United Technologies Corp. (UTX-78)  
Volkswagen¤ (VLKAY-11)  
Washington Post Co. (The) (WPO-622)  
Yahoo! Corp. (YHOO-24)

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