Digital Asset Management, XML, Rich Media, DRM and a Traditional Business Value: Profit

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Abstract

This session examines recent Digital Asset Management initiatives undertaken by Random House, a Bertelsmann Company, General Motors and a major global music supplier to integrate their traditional and emerging e-business units. The results show that by building a platform that can integrate what is often treated as two distinct businesses, efficiency and profits increase while risk and waste are dramatically reduced.

1. Introduction

This paper serves as a primer for the session "Digital Asset Management, XML, Rich Media, DRM and a Traditional Business Value: Profit." The session will examine recent initiatives undertaken by Random House, a Bertelsmann Company, General Motors and a major global music supplier to integrate their traditional and emerging e-business units.

This paper will provide a working knowledge of the central technical and business issues that require deeper treatment to best understand the specific user stories that will be presented. Specifically, this paper provides a technical overview of the essential characteristics of a Digital Asset Management (DAM) system and an overview of an implementation methodology that results in shorter payback and greater returns on investment DAM deployments.. The reader can contrast this with more broadly accepted definitions and approaches surrounding other classes of content management, e.g. document management, web content management, etc.

2. Digital Asset Management

This section introduces the core functionality that defines and distinguishes

Enterprise Digital Asset Management. Digital Asset Management ingests, indexes, categorizes, secures, searches, transforms, assembles and exports content that has monetary or cultural value. The defining characteristic of a digital asset is that it is an asset. Digital assets often include rich media such as video, audio and graphics, but this is not a requirement. A timely financial analysis or a hot screenplay are two examples of digital assets that include no rich media content whatsoever.

Conversely, the fact that an asset is represented digitally presents numerous opportunities for revenue generation and operational efficiency; this is the lens through which a digital asset management platform prioritizes functionality and is fundamentally distinct from other classes of software. There are three essential elements that distinguish Enterprise Digital Asset Management solutions from other content management solutions:

1. The single organizing principle underlying security, search results, transactions, rights and all other system functions is the asset, defined as specific combinations of content and data that have financial value.

2. Each functional component of a Digital Asset Management (DAM) solution including, but not limited to, ingestion, indexing, cataloguing, navigation, transformation and export must offer thorough support for all types of media including streaming and still formats and for all traditional and e-delivery channels.

3. The underlying architecture needs to be component-based and "enterprise-worthy", able to assure around the clock operations, scalable performance and distributed access throughout the extended organization.

2.1. Asset Orientation

If the essential characteristic of a Digital Asset is that it is an asset, then it follows that the most important characteristic of an Enterprise DAM solution is that it have an "asset orientation." If a twenty-dollar note is ripped in two, the result is not two ten-dollar notes - it is worthless paper. At a more technical level, an asset orientation implies that security, versioning, transactions, search results, etc. all rely upon the definition of an asset as an organizing principle.

Therefore, the DAM system's definition of an asset is of critical importance. There is general agreement that a digital asset is the asset's content plus metadata (or data about the content). Metadata can include information about format type, rights and permissions, usage history, etc. This kind of information is typically well suited to be stored in fields, e.g. as simple data elements.

Other types of related information are more appropriately modeled as relationships between assets. For example, when the rights and permissions that govern the use of a digital asset are extremely complex, a link to an image of the original contract would be required. Version history of an asset is actually relationships between asset instances. Link engines are a complementary technology that supplements classic metadata fields and can capture these and virtually any other type of relationship one can imagine between complex and compound digital assets.

Another widely used approach for providing context (and therefore additional value) to digital assets is the technique of categorization. Organizing digital assets into hierarchies (or webs) or related categories serves as a powerful organizing principle, simplifies navigation and provides a powerful overlay onto other search techniques.

The following diagram illustrates the logical model for a Digital Asset inside TEAMS, Artesia's Digital Asset Management product offering.

Figure 1 provides a logical view of a Digital Asset. The definition and management of content, metadata (information about the content), and every other related information and behavior is organized around the asset.

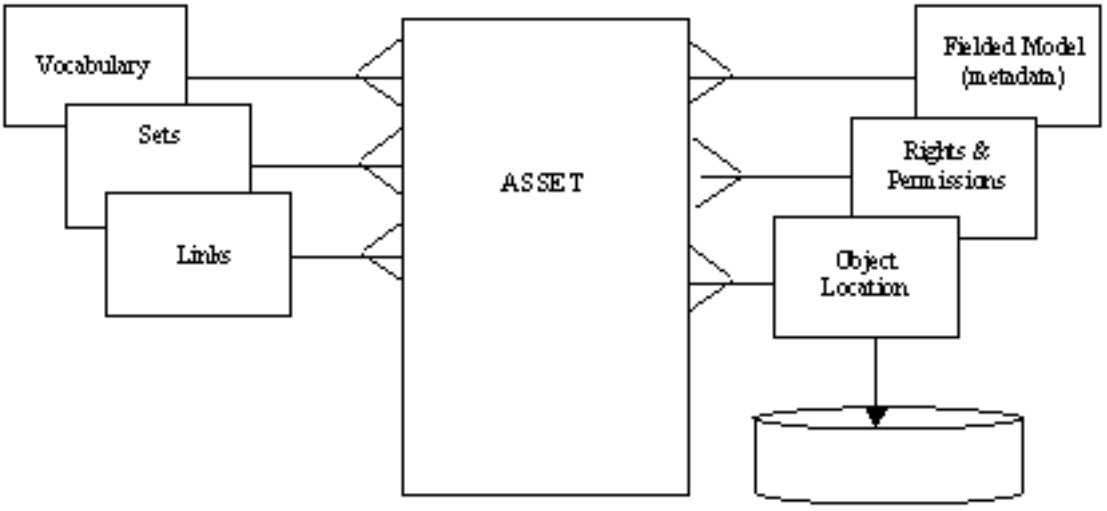

Figure 1. Logical Model of a Digital Asset

In addition to the three powerful modeling facets of fielded metadata, links and categories, this logical model for a digital asset includes additional information about rights and permissions, aggregations of assets (membership in sets) and mapping to the physical location of a digital asset. Note, this extended metadata approach can be used to track physical assets as well.

2.2. Support for All Classes of Rich Media

Every enterprise has a requirement for support for all types of rich media. Publishers require video and audio for promotions and audio books. Broadcasters produce volumes of textual and image content for promotion and established corporations capture all kinds of content that relate to branding, promotion, intellectual property, investor relations, etc.

At a more technical level, it becomes clear that the way one ingests, indexes, previews, navigates, transforms, secures and transports digital assets is highly dependent on the type of media that the digital assets are composed of. The following table highlights three media types and the unique support that each requires. As the table clearly indicates, the behaviors that correspond to DAM

functionality are radically different and demand distinct technological solutions.

An Enterprise DAM solution will not only support a broad array of media types, it must be based upon a modular architecture that will permit incremental extensions to accommodate new media types and increasingly sophisticated behaviors.

	Video	XML	Quark
Ingest	Encode and log	Parse and validate	Decompose
Index	Metadata and closed captions	Structure, attributes and content	Extracted content
Store	Media-server and HSM support	Fragments	de-binerize
Metadata	Format and codex dependent	Semantic web, RDF and industry specific DTD support	Extract
Model	Clips, tracks, key frames and storyboard	DTD or schema	decompose
Search	Visual search, frame accurate, offsets, metadata	Contextual within DTD structure, and metadata	Content and metadata
Navigate	Storyboard, low resolution versions	Xlink, Xpointer	component
Preview	Clip sequencing	XSLT, CSS styles/gist generation	page preview
Export	SMIL, play decision lists	Transform via XSLT, DOM, etc.	re-assemble
Distribute	Transcode, stream	Metadata wrappers	Insert into production workflow

Table 1. DAM Functionality

Table 1 uses three different types of media to illustrate how identical Digital Asset Management functionality requires entirely distinct logic, code and behavior. This reinforces the basic requirement of a modular and component-based architecture

and the challenge of truly supporting all types of rich media.

It is clear from the three examples above that use cases, logical workflows, functional requirements and underlying code are completely distinct as one considers different media types. Just as you would not use a bank that did not accept all currencies and denominations, a bank that treated your twenties like ones would also fail absolutely.

2.3. Enterprise Architecture

Enterprise software has a number of generally agreed upon requirements. The following diagram provides a high-level view into the enterprise architecture of TEAMS and serves as a good example of what one should expect from any legitimate enterprise offering.

Figure 2 illustrates the enterprise architecture for Artesia Technologies' TEAMS Digital Asset Management system. It is n-tiered, load balanced, logically whole yet physically distributed and utilizes computing and de facto standards like XML, JSP and JAVA throughout.

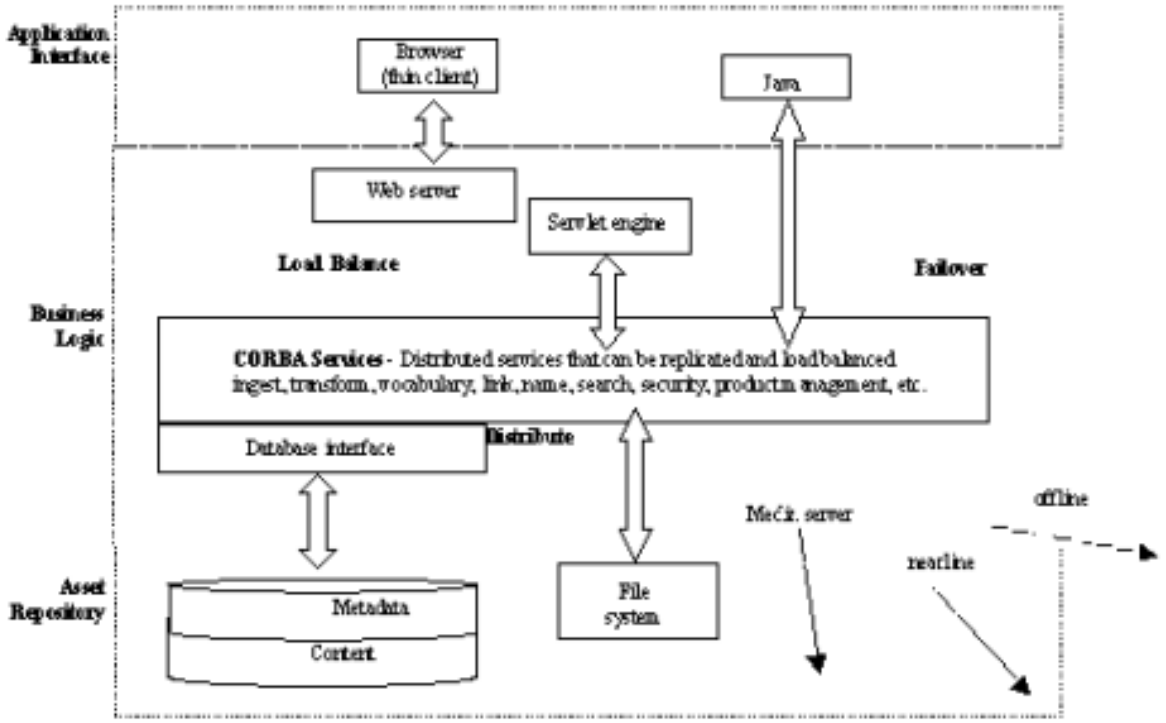

Figure 2. Enterprise Architecture for TEAMS

Application Interface: A thin web client is a requirement for deployment to large distributed devices where administrators cannot afford the cost or the complexity of managing additional software on desktop devices. Java can be used for administration and other specialized small communities of users.

Business Logic: JSP and XML on the server can generate flexible and personalized user interfaces supporting specific roles and diverse user agents (PCs, PDAs, etc). Each individual function should be represented as a separate service - CORBA services build-on load balancing, failover and distributed processing. These are all critical for high availability and flexibility in deployment and load balancing.

Asset Repository: This logical repository is tasked with providing a single view into digital assets whose metadata, links and content may reside on different devices throughout a network (as bandwidth and other considerations dictate). Search, backup, recovery and transactions are examples of the kinds of services that have to be rebuilt to accomplish this technically challenging task.

Of course, each tier and each service within each tier must be accessible by both applications and productized JAVA API's. Finally, as CORBA is used for communication, XML should be used as the primary means of data transport and interoperability.

3. Calculating Payback and Return on Investment (ROI)

In an era where investors and executive management are not as likely to be "enamoured with visions of infinite riches generated by changing the world with new technology," concrete and credible forecasts of increased savings, productivity enhancements and revenue generation are typically required to secure executive sponsorship and funding. The following section offers a brief outline of a methodology that many of Artesia's customers have successfully used to quantify the value of a DAM deployment to their organization and to prioritize DAM-based initiatives based upon desired returns and payback schedules.

Figure 3: A simplified timeline illustrating the steps that are typically required to

define, quantify and document a business justification and complete project plan for a Digital Asset Management deployment.

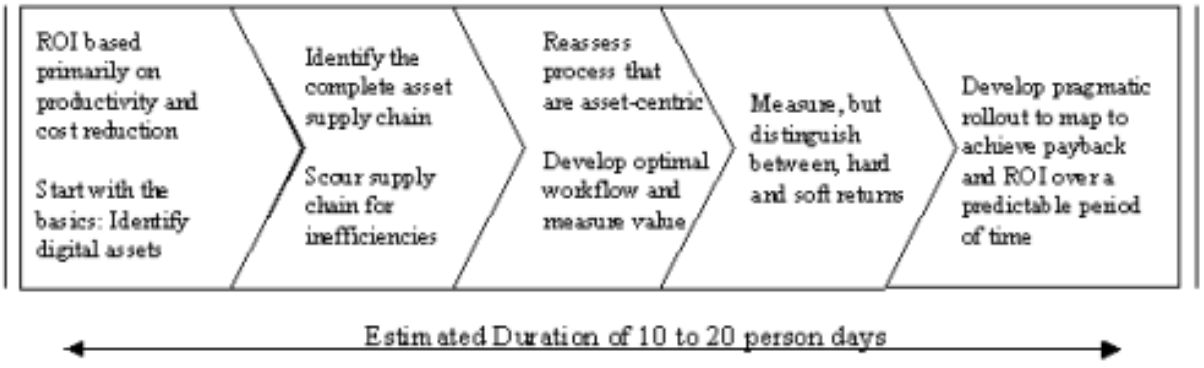

Figure 3. DAM Project Definition Timeline

3.1. Identify Digital Assets

While Artesia may define a Digital Asset as "content + metadata", publishers think of "inside matter", advertisers think of "campaign jackets", production companies think of "trailers" and music executives value "tracks." In fact, the first step in understanding the value of DAM and your organization's dependence upon Digital Assets is to inventory the Digital Assets that are already a part of your operations.

The following sample list illustrates the kinds of Digital Assets that are found in media, entertainment, publishing and branded organizations. As one would expect, Digital Assets come in every flavor of media, from print to high-resolution video. The common thread is that this digital content has financial value.

Two metrics are extremely effective in determining whether digital content qualifies as a digital asset a high degree of reuse and/or inclusion if brand or other intellectual property.

Global 2000	Publishing	Media & Entertainment
· Logos · Print ads · Video commercials · Radio ads · Cataloge image and	· Tip sheet · Author/contributor photo · Author questionnaire ·	· Biographies · Stills · Trailers · Rushes · B-rolls · Cover shots · Catalog ·

content · Courseware - video - documentation - audio script - training templates · Creative archives - video, image, text,etc. · Rights guidelines · Co-branding material - rights - fees - usage guidelines - content · Web content · Sales collateral · Partner material · Focus group content · Product fact sheets · White papers · Physical archive catalogue	Copy edited MS · Cover shots · Catalog · Reviews · Quotes · Insert · Cover copy · Jacket mechanical · Sample pages · Book excerpts final pages · Book description · Sell Sheets · Press releases · First pass pages · eBook files in all renderings · Audio abridged manuscript · Audio cover · Print ads · Newsletter · Audio final script · Radio ads · TV ads · Audio master	Reviews · Quotes · Derivative works · Music · Music videos · Book tie-in · Book excerpts · Press releases · Press kits · Scripts · Catalog copy · Print ads · Radio ads · TV ads · Audio interviews · Video interviews · Newsletter · Audio final script

Table 2. Example Digital Assets by Industry

Table 2: A sample table listing examples of digital assets that are relevant to various industry segments. This is the first step in "following the money" and assuring that the value proposition for Digital Asset Management is complete.

3.2. Capture the Digital Asset Supply Chain

Use the assets as a guide to the people and business processes that are likely to be impacted by a DAM deployment. The following chart shows a simplified table of the first phase of this process. The table can suggest clusters of reuse, redundant workflows, stovepipe processes and other areas ripe for optimization and automation.

	Production	Creative Services	Marketing	Brand.COM	Legal
Sales Collateral	Derive Work	Create	Derive Work	Derive Work	Refer
Book Tie-in Art	Derive	Create	Derive Work	Derive Work	

	Work				
Logos	Reuse	Create	Reuse	Reuse	Refer
Movie Trailers	Create	Reuse	Reuse	Derive Work	
B Rolls	Create	Reuse	Derive Work	Derive Work	
Cover Shots	Create	Reuse	Reuse		
Press Releases		Reuse	Create		Refer
Catalog Layout		Create		Derive Work	
Press kits		Reuse	Create		
Reviews		Reuse	Reuse	Reuse	
Quotes		Reuse	Reuse	Reuse	Refer
Music Tracks	Create	Reuse	Reuse	Derive Work	Refer
Web Design		Create	Reuse	Create	
Music Videos	Create	Reuse	Reuse	Derive Work	Refer
Contracts	Refer	Refer	Refer	Refer	Create
Book Tie-in		Create	Reuse	Derive Work	Refer

Table 3. Relationships between Stakeholders and Digital Assets Lifecycle

Table 3: The table above is a sample of how an organization can begin to capture the relationships between a Digital Asset lifecycle and stakeholders. High degrees of interaction indicate likely opportunities for optimization.

3.3. Map "Before" and "Ideal" Digital Asset Lifecycles

Typically, the "before" processes reflects site-specific anomalies relating to acquisitions, reorganization, legacy technology investments etc. The "after" should be based upon a centralized logical view of the enterprise's assets and should include the following kinds of information:

- A ranked list of the user communities that have the greatest dependence on the highest value Digital Assets
- User-centric functional requirements such as "search for logo's by campaign usage and media type."
- Provide detailed scenarios where reuse replaces recreation, self-help replaces

human support, and digital distribution replaces shipping, transportation and travel.

3.4. Do the Math

This is a straightforward exercise that can often yield a break-even of less than 12 months including hardware, software, professional services and training. It is important to distinguish between hard paybacks such as direct cost savings and soft upsides such as anticipated incremental revenue and customer satisfaction (because your management certainly does). A short set of examples can include:

- Re-licensing: Savings in staff time required to retrieve digital assets for re-license and re-use as well as legal support to track down and validate rights and permissions associated with those assets.
- Material Distribution: Savings in printing, delivery and postage costs by sending materials digitally including promotional, creative and sales collateral.
- Art: Savings in art directors and designers filling requests for cover art.
- Asset Creation: Reproduction cost avoidance of recreating marketing collateral.

3.5. Execution

The following chart illustrates the kinds of services Artesia routinely offers its customers and its partners. Whether this work is outsourced to a vendor, a systems integrator or conducted "in-house", a formalized, documented methodology is an essential ingredient in managing the deployment of a Digital Asset Management solution to a budget with concrete objectives.

Figure 4: This table summarizes the variety and sequence of value-added services that are often important in assuring that the ROI and intangible value propositions are fulfilled.

<table>
<tr><th>Strategy</th><th>Planning & Analysis</th><th>Implementation</th><th>Enhancement</th></tr>
<tr><td>Strategic Objectives</td><td>Requirements Determination</td><td rowspan="3">TEAMS Deployment
– Customization
– Integration
– Data loading
– External system integration
– Testing
– Documentation
– Training</td><td rowspan="2">Analysis
– Performance
– Usage
– Business objectives</td></tr>
<tr><td>Business Case Development</td><td>Asset Modeling</td></tr>
<tr><td>Organizational and Operational Readiness</td><td>Architectural Planning</td><td>Rapid Enhancement Methodology</td></tr>
<tr><td>Success Criteria</td><td>Implementation Planning</td><td>Application Development</td><td>Asset Modeling</td></tr>
</table>

Figure 4. Value-Added Services

3.6. Conclusion

Digital Asset Management has clearly emerged as a critical component of IT infrastructure and has left behind its early niche as specialized software for pre-press, video production and publishing departments. The Internet revolution and the convergence of digital media has catapulted Digital Asset Management across the enterprise and into virtually every industry. The session will explore three applications of DAM in publishing, manufacturing, and music entertainment. See you in Berlin!

Glossary

DAM	Digital Asset Management

Biography

Sebastian **Holst**
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Sebastian Holst - Sebastian Holst is the Vice President of Marketing for Artesia Technologies, the suppliers of TEAMS™ Digital Asset Management Solution. Sebastian is responsible for product direction and traditional marketing activities. As digital assets emerge as a mainstream market segment, he has been focusing on leveraging the XML family to promote better support for rich and streaming media and to enhance digital rights management. He has spent over 15 years in the software industry bringing to market DBMS, web publishing and other XML-based technologies. Previous positions have included Vice President of Strategic Marketing at Inso where he managed numerous XML and SGML publishing and content management products, and President, Texcel Research where he led the US operations for this XML repository vendor that was ultimately acquired by Broadvision. In addition to his regular duties, Sebastian is Artesia's representative to the World Wide Web Consortium (W3C) Advisory Committee and is actively engaged in promoting the emerging family of XML recommendations.