The Rise of DAMification

To fully leverage digital asset management systems, organizations need to focus on service-oriented architectures and powerful automated workflows that leverage best-in-breed solutions, adapt quickly to change and support positive business growth.

Executive Summary
Companies in most every market segment realize that digital asset management (DAM) is a powerful and necessary tool for enabling their organization to run efficiently and scale effectively. In fact, DAM solutions have to some degree become a commodity item. Nonetheless, once a DAM system is deployed, the inevitable question becomes "What's next?"

Today’s users expect DAM systems to be easy to use and seamlessly integrated with their daily workflows and content supply chains. At the same time, meeting those demands presents a new set of challenges that companies cannot avoid. Having a single “uber DAM solution” or several disparate workgroup DAM systems that cannot communicate with each other is not the answer. This is where and why DAMification comes into play. Understanding what DAMification covers and what its implications are is essential for both users and vendors. Let’s start by using a term and concept that has received much visibility and traction as of late: gamification.

Gamification
Gamification Applies Traditional Gaming Mechanics and Game-Thinking.
Gamification refers to the application of traditional gaming mechanics and game-thinking to create more engaging ways of enticing and challenging individuals to use new applications and processes. Imagine using a mobile application like Foursquare, where the main purpose of the application is for users to “check in” at various places they visit throughout the day. The more often a user checks in at a location (e.g., a restaurant, bar, office, etc.), the more awards he or she earns. For instance, an end user can earn “badges” after checking in at certain places or for a certain amount of time. Users can even earn the honorable title of “mayor” of a particular location by checking in at that place more than any other Foursquare user.

DAMification is very similar to Gamification, except more focused on the use of DAM concepts and DAM systems to enhance existing or new applications and processes.

Using an enterprise DAM system’s out-of-the-box user interface is rare. Variations in functionality and user requirements can prolong the learning curve and undermine adoption. Overcoming these obstacles typically requires costly training. This is where the concepts of DAMification come into play: Users should be able to use a DAM system without even knowing it is a DAM system. Many DAM solutions are moving in this direction by incorporating tools to more easily implement workflows or integrate into existing workflows.

Take the case of graphics editing. Several DAM products now offer integration with Adobe Creative Suite, Adobe Premier, and/or Adobe Drive – allowing designers to essentially stay within their Adobe experience and capabilities. They can grab a file from a virtual folder (from the back-end DAM system) to start the editing process. When they are done making their edits, they can drop the finalized assets into a folder to be automatically ingested back into the DAM system with the support of metadata embedded within the files header. This level of integration helps users achieve the benefits of a DAM system without the cumbersome interfaces or additional activities of search, browse, download and upload.

Although many DAM solutions are touted as the one system that can “do it all,” companies should consider leveraging best-of-breed solutions that incorporate their DAM system as only one small component of a larger and more flexible architecture. The core of this architecture is a service oriented architecture (SOA) bus and business process management (BPM) workflow engine. The beauty behind workflow is that organizations can have more than one — enabling them to accommodate many different applications and different types of users. To help frame the DAMification concept, we need to understand how DAM has evolved over time.

**DAM Evolution and Technology Adoption**

Technology adoption or acceptance typically evolves according to certain demographic and psychological characteristics. Yet as Figure 3 (next page) shows, there are always adoption outliers.

The technology adoption lifecycle model can be applied across almost all IT segments. Take cell
phone usage. In the early days of cell phones, few consumers used them because they were big, bulky and expensive. They were the domain of diehard gadget folks, who in our model are called “Technology Innovators” and “Early Adopters.” However, as cell phones became smaller and more affordable over time, more people began to use them. (Note the rising section of the bell curve in Figure 3). Today, cell phone usage is ramping down as more consumers turn to smartphones; only the late majority and laggards still use cell phones.

The Past
To apply this model to the DAM world, rewind to the 1990s – the early days of digital asset management. Most assets were still in physical vaults (remember videotape and CD-ROMs?). Librarians would manually register, store and retrieve physical assets for content distribution. Large scheduling organizations were deployed using cumbersome manual approaches to locate these assets.

At that time, DAM systems were small and somewhat basic, with functionality focused on the essentials, such as checking content in and out. Users tended to be more tech-savvy individuals, typical of the Innovators and Early Adopters who lead the adoption model. If you think back to other technologies such as the original iPhone or today’s Tesla Model S automobile, early adopters are individuals who are extremely passionate about these areas of technology; they are willing to embrace these technologies just on the principal that even though they may be expensive or still have some bugs to work out, it is worth the effort. The same thing happened early on with digital asset management.

From a DAM vendor perspective, suppliers focused primarily on “DAM first.” Vendors therefore designed DAM systems thinking users would log into them to access all system functionality. For instance, if a user wanted to search for an asset or archive a piece of content, he or she would have had to login to the DAM system; anything else would likely require additional customization and development. From an asset perspective, the types of assets stored in a typical DAM system were smaller digital assets that were finalized and ready to archive, since the majority of assets were still in physical form at that time.

The DAM space had its fair share of challenges during the early days. One of the biggest roadblocks was that DAM systems lacked easy-to-use UIs, and were generally pretty cumbersome. In addition, DAM solutions were limited in terms of functionality and integration – making them even more difficult to work with from a business user’s perspective. As a result, DAM users were typically the more technical individuals within a client organization, and everything (including the metadata) was focused around technical and archive-oriented aspects.

**The Technology Adoption Lifecycle**
Over time, predictions of technology adoption can be modeled by the percentage of a user population and user types embracing a particular technology.
The Present
Since the late 2000s, digital asset management has evolved significantly. With the birth of digital content, the need for DAM systems became more apparent. Companies realized they had to focus on how DAM could be leveraged across the entire digital supply chain, rather than just archived. Consequently, organizations started to develop roles like “data wranglers” and “media managers,” whose sole job was to work with DAM systems to store, restore and deliver digital assets to their various customers, clients and partners. There were also new groups and roles formed around content management. They were responsible for the DAM and content management systems (CMS) solutions. At this point, Early Majority users jumped on the DAM bandwagon. Although they were less technical than Innovators and Early Adopters, they can still be considered technical users.

DAM vendors have also evolved their thinking and solutions. The new trend revolves around workflow integration with best-of-breed tools and solutions. Rather than having to perform many custom integrations with a DAM solution, companies can now make the majority of changes based solely on modifying and tweaking their DAM system’s configurations, or by purchasing pre-integrated adapters instead. As a result, from an asset perspective, DAM systems are now able to ingest more types of assets – work in progress, broadcast quality and marketing, for example – that are beyond finalized, archive-ready assets. Companies are now dealing with distribution assets, and starting to touch the work-in-progress assets as well – traditionally difficult due to the lack of structure, the mass quantity of the assets, and the lack of workflow capability within the DAM solution.

However, in spite of these improvements, there is still room for digital asset management to grow. Enterprise DAM solutions are still very technically focused on a vast array of features built into the user interface. Examining the types of integration that many DAM vendors specialize in, it is clear that individual suppliers remain focused primarily on cloud delivery and mobile access, among other capabilities. This makes sense, given the growing interest in those technologies; however, in general these are issues that IT cares more about than business people.

The Future
We believe that the future will be all about DAMification. As digital asset management continues to evolve, the latter part of the adoption model will offer significant challenges, since DAM vendors and organizations will no longer be primarily dealing with technical users. Instead, users will be more “business-centric casual users” – people who are accustomed to their particular workflows and existing systems they are familiar with. To convince these non-technical users to leverage DAM systems, vendors’ mindsets will have to shift to focus on putting business workflow first, with DAM positioned as an enabling middleware.

Looking forward from an asset perspective, users will be ingesting, managing and distributing anything and everything in digital form. This includes finalized archival assets, distribution assets, and a greater volume of work-in-progress assets, which have typically been hard to obtain, since the workflows around them are less formal, and require more iterative approaches and communication among several different groups, such as legal, creative, etc. Addressing these new workflows and use cases helps to reinforce the DAMification concept, the goal of which is to help users utilize the DAM system without even knowing it.

Trends in DAMification
The future state we just described is not as far away as one may think. In actuality, many leading organizations are moving rapidly toward DAMification. For instance, a lot of companies already have enterprise DAM solutions; some even have more than one DAM system to accommodate different use cases for different business areas. As a result, many businesses want to maximize their investments by leveraging DAM systems in areas beyond finalized assets. Some are seeking aggregated or federated search capabilities that deliver a holistic view of all content.

There is also more focus on the digital supply chain – always a hot topic for media and entertainment (M&E) companies. However, given the ongoing adoption of workflow tools and the increasing focus on the interoperability of DAM services, its resurgence is being felt not only by M&E companies, but also in other sectors (consumer products, life sciences, etc.). Many organizations want both human workflow and service-based process automation, and need the agility that both bring about to adapt quickly to new processes designed around the changing business environment. Moreover, a lot of companies have created new organizational roles to accommodate their burgeoning digital workflows and supply chains. These new roles are
purely focused on ways to boost the value of the multitude of files in the DAM system, address new ways to use them, and create automated order through fulfillment and delivery systems.

From a metadata perspective, companies previously concentrated on getting descriptive content into their DAM systems. Now, they are broadening their focus – looking to move more metadata around each asset so a wider audience can utilize them. Rigor, consistency and automation of metadata tagging are quickly becoming a requirement throughout the supply chain – all the way back to content creation. Along with that, metadata asset discovery through manual or automated introspection tools such as XMP, EXIF, IPTC and MediaInfo are becoming a required step in processing the growing volume of data.

Metadata transformation and servicing will be mandatory for organizations needing to automate outbound content distribution. Some companies have organized around the concept of “centralized quality assurance,” “metadata servicing bureaus,” and “asset metadata management operations” to ensure that metadata is completely and accurately filled out upon ingestion and that content is formatted correctly for consumption by their various distribution channels. As more and more business units are brought into enterprise DAM systems, these metadata management groups will be critical for the governance of their enterprise’s metadata standards, and to ensure that existing metadata models can scale to accommodate the new business use cases.

Lastly, from a delivery perspective, a large variety of new platforms has emerged in which assets are being consumed. Among them are smartphones, tablets, TV Everywhere, UltraViolet, Google Glass, smart watches, etc. However, with all of the new platforms available more considerations must be taken into account from an accessibility perspective. This includes creating more distribution files (essence and metadata), building new over-the-top portals and apps, quality checking distribution files, and integrating them with additional systems.

To address these requirements, user customers and DAM vendors will need to focus on being technology agnostic to leverage best-of-breed solutions in the market. Going hand-in-hand with this necessity is the need for a service-oriented-architecture based approach to ease the integration of new solutions into existing environments. The focus can then be on building out the core-event and message-oriented architecture to handle all the communications between these various technologies. The combination of these factors can help a company build powerful automated workflows that truly benefit the business and support future growth and change.

The Power of Workflow Automation

Typically, DAM is the core system, with all other systems integrated around it. However, the ongoing shift toward business process and workflow being at the heart of the system positions other features/functions such as storage, search, transcoding, hierarchical storage management (HSM) – even the user interface – as integrated components.

Architectures of Systems Past

Early on, DAM architectures focused on features and functions like asset storage, medium security around critical assets, and a simple user interface to access these assets and perform basic activities (ingest, download, and basic transformations). Content consisted primarily of finalized assets; generally, the IT group defined DAM platform requirements. Users were required to know DAM principles to effectively utilize the system.

Meanwhile, organizations using DAM systems aspired to become technology agnostic to meet market demands. Yet getting there proved to be difficult due to the prohibitively expensive costs of redesigning or replacing existing DAM systems, many of which were monolithic, and complex. Lastly, DAM systems in those days required a good deal of customization to keep pace with users’ required business functions. Despite these challenges, these systems still delivered customer benefits in terms of storing, organizing, and managing finalized digital content.

Today’s Architectures

Today, the concept of DAM has matured. Organizations have started to realize the value of DAM systems and have slowly increased their investment. The need to integrate with multiple systems becomes more apparent, and as a result, DAM vendors and integrators have started focusing on documenting APIs, and supporting integrations with custom UIs, external systems, and the development of numerous connectors to enable DAM repositories to handshake with multiple systems.
These types of integrations need more flexibility in metadata and taxonomy modeling. Detailed metadata helps categorize assets, and is critical as the amount of digital information grows. Every time metadata is added to assets, the value of each asset grows due to improved accessibility and manageability.

Another important piece to a DAM system is the ability to search for and access the right content. As a result, vendors began offering integration with premium search products, including faceted search, relevancy ranking, advanced search, quick search and full text search. This improved operational flexibility, enabling end users to find and retrieve the right content.

**Existing DAM**
From a technology perspective, DAM vendors have started utilizing SOAs in their products, rather than exposing traditional APIs, to enable essential and basic feature interoperability. Interestingly, additional focus has been given to cloud-based solutions, including private and public clouds, with heightened emphasis on Software as a Service (SaaS) delivery models. This provides even more flexibility and cost savings for user organizations since the infrastructure and application maintenance are provided by the vendor. It has also has helped them become even more technology agnostic to better meet market demands. Even with more focus on technology integration, DAM systems have only scratched the surface in attracting business users.

Future Architectures
Looking ahead, DAM organizations must realign their strategies to focus more on the business and less on the underlying technology. Technology should act as an enabler to achieve business goals. Companies need to build a system with business process and workflow at its heart, with all other integrations, such as search, transcode, distribution and transformations, pivoting around it. This is important, since most customers are looking for automation to help run their business more efficiently. Business processes should be driven by workflow, which underlies the system. Moreover, users should access the DAM system without even knowing the technology or DAM system behind it. This can only be achieved with robust integration services, a strong message-oriented architecture, a powerful workflow engine, and reliable automation processes. Figure 6 depicts an architectural framework to help organizations march toward their vision.

By adopting this framework, organizations can create a solution that is easier for business users to embrace and generate value from. Businesses would be able to build their own user interfaces for both internal and external users by adopting a service-oriented approach which is technology agnostic. These portals can be business specific and leverage the core enterprise DAM as a service to meet each business’s unique requirements. Seamless integrations are possible with multiple repository types such as marketing materials content, television and distribution content, regular office documents, and any other external content.

Architecting a DAMification Vision
From a metadata perspective, there are many standards followed across various industries. An out-of-the-box DAM system will not support all these formats and integrations, and it is not ideal to customize a single DAM solution to focus on all of these integrations. These features should be added by adopting a service-oriented, business-process and workflow automation approach. Doing this will increase the system’s scalability and help organizations to achieve their digital supply chain potential.

Keep in mind that workflows will differ by industry. For instance, take distribution workflow in the entertainment world. Workflows may be more video-centric and involve accelerated file transfer software for extremely large hi-res files (i.e., 200GB-plus). However, a distribution workflow in the marketing space will likely be more image-centric, and would not necessarily require an accelerated file transfer solution since these files are smaller. However, since the general architecture for workflows is somewhat similar, organizations would still need a SOA, with a message-based architecture at the core of the workflow.

**Use Case 1: Work-in-Progress Assets**

Many organizations are now focusing on “work-in-progress” solutions to address the needs of multiple users from different geographic locations and different organizational groups, accessing different assets at different stages of the asset’s lifecycle.

An asset can have different usage rights based on which group is using it or the location from which they plan to use it. For instance, rights to an asset may vary based on whether the rights were licensed in the United States versus China. Moreover, a television distribution group may have different usage rights that apply before a home entertainment group exercises its usage rights. To deal with varying usage rights – and the agile nature of these assets – an iterative review and approval process is needed.

The main objective for business users is to find, comment, annotate and assign assets to the appropriate team or individual to update or reversion them. At the end of this process, the business user typically wants to see an approved asset that is ready to go the next stage in the lifecycle.

Figure 8 (top of next page) highlights the challenges of the current work-in-progress environments, possible solutions, and benefits for these solution approaches.

The use case outlined below is a work-in-progress application that we implemented for a client using this architectural approach. (See Figure 7).

- **Step 1: Find assets and assign to a user.** The first step of was to have a simple user interface where a user could search for an asset with appropriate metadata, and assign a task to another user. As soon as the user assigns the task, the system on the back-end generates an event/message and triggers the next step in the workflow.

- **Step 2: User task page.** Next, the assigned user must be able to see a list of his/her tasks. The simple user interface would provide basic information about the task that was assigned
to the user. On the back end, the system polls all the tasks assigned to that user based on various events/messages triggered by the workflow.

- **Step 3: Task details and actions.** Once the assigned user accepts the task, the user interface can provide detailed information about the task and appropriate actions associated with it. Typical actions include reassigning the task to another user, changing the task details, approving the task, and rejecting the task. Each action corresponds to a different business process defined and controlled via the workflow.

- **Step 4: Asset viewer and annotation tools integration.** Lastly, assigned users typically wanted to add comments and annotations to the actual content. This required integration with an external annotation tool, which was much easier to achieve since a service-oriented architecture provided the foundation for the entire solution. Based upon the type of content (image, video, etc.), a different annotation tool could be seamlessly integrated into the workflow as needed, and users could more easily make comments and annotations using the tool that handled the asset type best. All the changes made to the content resided in the metadata associated with the file, and as such, the file could be submitted to the next iteration of the review and approval process to capture additional changes.

The key for this work-in-progress example is that the business users leveraged the functionality of a DAM system without even knowing it or having to deal with complex user interfaces of the enterprise DAM system. Everything was customized to deliver an optimal user experience and coordinated through workflow automation.

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**Use Case 2: Localization and Digital Delivery**

Localization and digital delivery of marketing content was another DAMification use case we built for a client in the entertainment space. Localization is the creation of a unique version of an asset for a different locale in which the content is being consumed. For instance, a film trailer made in the U.S. often needs to be localized for different markets such as China. But in China, the studio may have different rating cards, and might not have rights to the particular song used in the background, and a different language track is required. As such, a new version of that trailer would need to be produced with some minor edits in order for it to be effective in the Chinese market.

The studio’s users were using external creative agencies to create and distribute localized content. The agency would localize the master video clip, upload it to the local YouTube channel, and create PlayStation and X-Box versions of those same assets. In some cases, a major release could have up to one hundred localized versions of the trailer. It was determined that a good deal of the content that was being created was actually based on content that was already stored in the DAM system. As such, a new workflow leveraging assets in the DAM system was needed to streamline the localization process.

The new workflow-based solution was beneficial in several ways, ranging from time-savings in video editing, manual upload, and audio processing processes. In addition, business users (non-creative and non-technical) would be able to add security features such as textual- and visual-based watermarking. Most important, this would reduce costs from external agencies because business users would be able to create all the different localized versions themselves.
The localization and delivery workflow can be broken up into three main areas: input, transform, and output (see Figure 9).

- **Step 1: Find asset inputs.** The first step of localization in this use case involved determining inputs. The solution allowed a business user to pick the different video parts that they wanted to use. For instance, they could pick a rating card file for the header, the main trailer content for the master, and the credits file for the tail. Users could then either choose existing assets that were already in the DAM system, or opt to upload their own files that would then be transparently ingested into the DAM system for future repurposing.

- **Step 2: Transform assets.** Next was the transform portion. Users could choose what additional items they wanted besides the video. For instance, they could choose what watermarks they wanted to dynamically apply, and whether to use a specific watermarking graphic, logo, or text, such as the name of the person to whom it would be sent. Additionally, they could choose which subtitle file to use, and even select the format of the output audio such as 5.1 surround or stereo. Moreover, by leveraging the SOA-enabled transcoding farm, content could be stitched together with all the appropriate video, audio, watermarking, and/or subtitling files to create a new localized version for automated distribution.

- **Step 3: Output localized asset.** Lastly, in the output section, business users would specify what syndication outlets they wanted their content to reside on. Often, depending on where a company is distributing (e.g., Hulu, iTunes, Netflix, Web CMS), each distribution point requires its own unique XML format for the metadata or a unique video file format (size, aspect ratio, format, bitrate, etc.). The solution was able to maintain these delivery profiles or instructions to transcode additional localized files to the appropriate video and audio formats, create the metadata files unique to each syndication point, and even transfer them via accelerated file transfers to their syndication points. Business users were shielded from the complexity involved in the content production pipeline. All they needed to do was focus on a simple and appealing user interface to input their preferences. The automated workflow on the back-end managed the content management and system components, such as transcode and delivery.

![Localization and Delivery Workflow Diagram](image-url)
Looking Forward
In summary, to embrace DAMification organizations must consider the following:

- **End users want to use DAM systems without even knowing it.** If a company, organization or group wants to get non-technical business users onboard, it is going to take streamlined, simpler user interfaces or ones with which users are already comfortable.

- **Make sure to leverage the power of workflow automation to simplify tasks for end users.** If a task involves several different manual steps, non-technical folks will quickly become uninterested and will stop using the system.

- **Be sure to think about the business users first.** This is core to the two points above. Even though technology continues to evolve, organizations must focus first and foremost on how and where DAM will truly add value for the business by making operations simpler, more efficient, or by reducing unnecessary costs and steps.

If your organization manages to keep these three DAMification focus areas in mind going forward, it will be able to address the requirements of different digital supply chain areas, ranging from content production to storage to delivery, and break them down into their core functional areas and activities such as logging, editing, distributing, and archive. This in turn allows the reuse of those core functional building blocks to address new use cases that arise, such as work-in-progress and localization.

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