

Phase 1: Digital Asset Management (DAM) Architecture Design Document

Group 4

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Introduction

The management of digital assets continues to be crucial for organizations across many industries. Many companies benefit from a Digital Asset Management (DAM) system. Our proposed DAM system will provide a platform for storing, retrieving, and modifying digital assets such as images, videos, and other miscellaneous documents. Our solution also incorporates a secondary “content workflow” component. This component will serve as a tool for managing the lifecycle of digital assets, enabling users to track their movement through various stages and tasks and managing deadlines for these tasks.

The objective of this architecture design document is to provide an overview of the proposed DAM system and its accompanying content workflow component. It articulates the vision for the system and delineates its technical specification with an architecture diagram and an entity relationship diagram. The architecture design will specify interactions and data items within the system, as well as interactions with external systems.

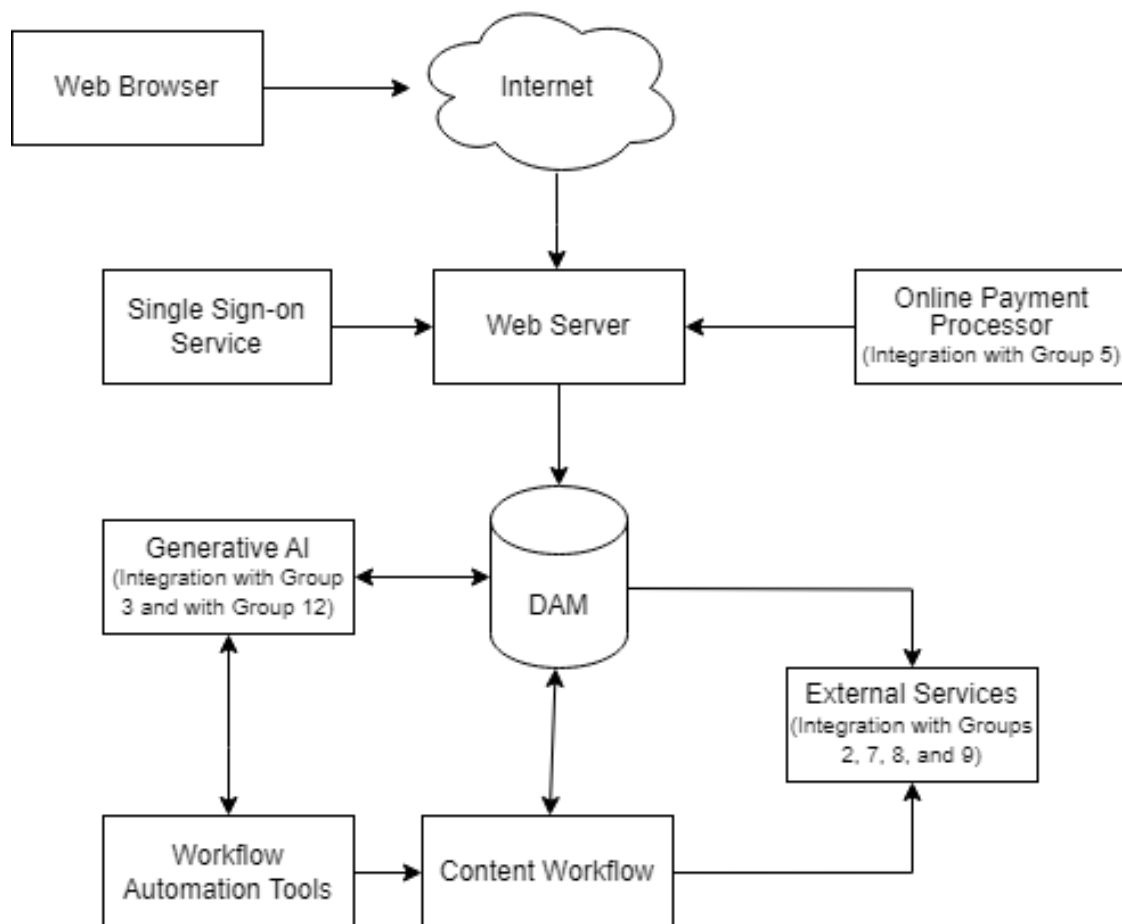
Functional Properties and services offered to external systems:

1. **Searching & Filtering:** enables users to find and retrieve assets to improve productivity quickly.
2. **AI-generated tagging feature:** Each time an asset is uploaded to the DAM, the asset will be scanned by an AI model and will retroactively apply tags to the asset. The AI model will use reinforcement learning techniques to progressively get better each time it is used, since engaging with it will train the model. Users can also set preferred tags to make it more likely for the AI to set those when applicable.
3. **“Quick-create asset” feature:** The user can provide a prompt to the generative AI model in the DAM, and the requested asset will be generated through the use of AI. Similar to the tagging feature, the AI model will get better at generating the asset the more that the model is interacted with and trained, as well as by analyzing the usage data of past assets to better predict how to generate higher-quality assets in the future.
4. **Real-time Collaboration Integration:** Enable external collaboration tools to facilitate real-time collaboration and feedback on assets to improve communication. Note that this feature is not out of the box functionality, but rather, the integration with collaboration tools will be done at a per-client level depending on which tools the client’s business already uses in their day-to-day operations.
5. **Content Distribution:** Enable organizations to distribute digital assets across various channels, markets, and platforms. This component of the DAM will allow for integrations with platforms such as Hootsuite, Dynamics 365, and other platforms that help manage content distribution to customers.
6. **Single Sign-On Authentication & Security & Access Control:** Enforce security and access policies guaranteeing that the right users have appropriate permissions. Single Sign-on authentication will also be done to help make the integration of the

DAM with the client company's other business processes more seamless, since they will only need one set of credentials to access the DAM and their company website.

7. **Brand Asset Management & Consistency Assurance:** Since every department within an organization will be using the same DAM, it will be much easier to achieve brand consistency since the established brand guidelines will be at the corporate level rather than the department level.
8. **Workflow Management & Version History:** collaborate in real-time on images, documents, and video. Organize recurring campaigns entirely in the system. Helps to schedule tasks and show which tasks are dependent on which digital assets. Furthermore, since the content workflow component will be integrated with the DAM, this means each time a small adjustment is made to an asset, each task
9. **Single Source of the Truth:** serves as the primary repository ensuring that all users have one area that everything exists in. It also allows variations of existing assets to always point to the original asset, so that any changes made to the original will transfer to the variations.

Software Architecture



Component Description

Web Browser: In order to use the DAM, the user must first use a web browser to log into their account. This interface in the browser will provide the user interface for the DAM, allowing users to upload, search, and edit the organization's digital assets.

Internet: Each device that connects to the DAM must require an internet connection in order to communicate with the system in real time.

Single Sign-on Service: An authentication service that allows users to securely access the DAM, enabling organizations to have confidence in cybersecurity since users will need to provide credentials. This single sign on feature also allows the user to directly connect their organizational account to their DAM credentials, which makes the integration to external services even more seamless.

Web Server: The servers dedicated to hosting the web-based interface of the DAM to users over the internet, ensuring efficient use of the digital assets and functionalities. This web server handles the logistics of sending and receiving HTTP requests whenever the user decides to try uploading, searching for, or editing digital assets.

Content Workflow: This component will effectively be an out of the box project management tool that helps organize the deadline of tasks that may or may not require digital assets beforehand. Since it is integrated with the DAM solution, it makes it easier for the content workflow to always point to the most up-to-date version of the asset rather than a copy, which makes operations way more efficient if frequent edits occur and if a particular asset is used in multiple projects.

Workflow Automation Tools: Software tools integrated into the content workflow that helps visually map workflows (ie, task dependencies), monitor analytics regarding workflow progress, and automate the completion of menial tasks.

Specific Incoming Connections from Existing or Upcoming Companies:

Generative AI (Group 3 and Group 12): AI technology integrated within the our system to automatically generate metadata, tags, and creative assets. Part of the generative AI model that the DAM uses can be done via an incoming integration with Group 3's "Image classifier and Retrieval" system when it comes to the automatically generated tags that our system creates for each asset. Furthermore, Group 12's ScrobbleShow will be another incoming connection in this segment, since their technology can help our system search for video content based on the metadata of the video.

Online Payment Processor (Group 5): In order to collect payment for our system, we require an online payment processor to integrate with, and this is facilitated through Group 5's system.

External Services: Third-party services utilized by the DAM that extend its functionality, discussed in detail below:

Specific Outgoing Connections To Existing or Upcoming Companies

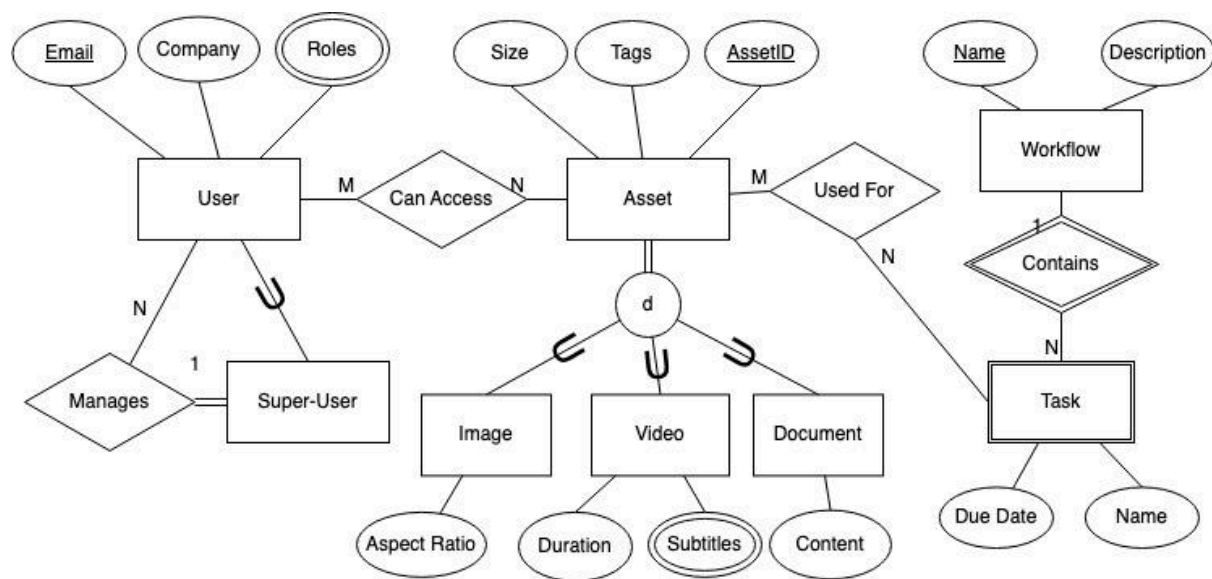
Healthcare Pro (Group 7): Our system integrates with Healthcare Pro as we provide the backend hosting for their image management and storage. Our AI model will also be very accurate at generating appropriate tags that help determine the particular illness based on the uploaded images. Healthcare Pro can also use our content workflow component to track the status of different patients and their diagnoses statuses.

Digital Marketing Platform (Group 9): Our system will supply the generative AI portion of the digital marketing platform, enabling them to offer automatic and custom marketing pieces for their clients seamlessly.

Learning Management Tool (Group 2): Our system can be used to store all of the notes and promote cross-collaboration among users of the app. Our system's AI tagging feature and its "Quick Create" feature can also help search and create notes based on a user-provided prompt.

Data Marketplace (Group 8): Our system can store the data that is being bought / sold in encrypted miscellaneous documents, and the content workflow component can help manage any tasks associated with selling data once it is in the database that we help provide.

Data Model



Super-User and User: Each account will have a role attached to it. By default, the two roles that are available are "User" and "Super-User", but the client company can choose to create more roles, which will change the ER-diagram based on the roles that are created. Generally speaking, the main difference between a User and a Super-User will be that a Super-User will have more administrative privileges, such as user-account management, access permissions, and system settings. Each user account has a unique email, and other important data for a user

is the company that they work for, and a multi-value attribute named “Roles” to keep track of any roles the user may have.

Asset: Each asset has a key attribute of “AssetID” that is automatically generated per asset uploaded, as well as tags associated with the asset, and its size in bytes. Assets can fall into either images, videos, or miscellaneous documents. Out of the box, the DAM can use lots of the metadata from images and videos to apply tags and easily search for them. For example, the DAM can find videos or images based on text that appears in a particular frame of a video, or audio that is detected from a video, or any other metadata that the data model stores on these assets. Depending on the organization's needs, more sub-categories can be created and customized to meet their needs.

Workflow: Each workflow contains multiple tasks, and each task may or may not depend on multiple assets from the DAM in order to complete them. Having this connection between the workflow and the DAM helps the client company always refer to the most up-to-date asset in their workflows.

Conclusion

In conclusion, this report provided an overview of the DAM system proposed by Group 4, covering its functional properties, components, external integrations, and data model. The functional properties outlined include key features like AI-powered asset-tagging, brand asset management, workflow automation, and more. The software architecture shows the modularity of the system, and the data model as presented with the entity relationship diagram specifies the interacting components and attributes in the system. This design document will guide the next phases of this project through its articulation of the vision for the system and its components.

Appendix A: Project Diary

Who	What	Duration	When
Everyone	Meeting #1*	30 minutes	Jan 24
Everyone	Meeting #2*	1 hour	Jan 26
Kareem	Created ER diagram + System Architecture diagram	2 hours	Jan 26
Helen	Digitized diagrams, wrote the introduction, market research	2.5 hours	Jan 28
Everyone	Meeting: #3*	1 hour	Jan 28
Everyone	Meeting #4*	20 mins	Jan 29
Everyone	Meeting #5*	1 hour	Feb 2
Everyone	Meeting #6*	1 hour	Feb 4
Everyone	Meeting #7*	1 hour	Feb 5
Brennan	Completed System Architecture writeup portion	2.5 hours	Feb 6
Kareem	Worked on external services portion	1.5 hours	Feb 6
Kareem	Worked on “incoming connections” portion	2 hours	Feb 8
Helen	Summarized document through conclusion	0.5 hours	Feb 8
Rares	Updated meeting minutes, looked over and reviewed document content and formatting	2 hours	Feb 8

*Meeting notes can be found in Appendix B below

Appendix B: Meeting Minutes

Meeting #	Date	Description
1	Jan 24	Met up to brainstorm ideas about our project, and decided to come back with our ideas to our next meeting to vote on the topic we liked most
2	Jan 26	Came with ideas prepared and voted on which direction we would go, decided on DAMs and set off to learn more about them for our next meeting
3	Jan 28	Met over zoom to discuss the initial ER and system architecture diagrams and made appropriate changes. Developed an in-depth understanding of DAM Systems and divided work for the rest of the report
4	Jan 29	Met in class to get a status update from everyone and see if anyone needed assistance with their parts
5	Feb 2	Met over zoom to discuss sales pitch presentation and created an outline for how to proceed, and delegated parts for the slideshow and presentation
6	Feb 4	Met over zoom to get an update on how everyone was doing and see if anyone needed any help to complete their parts. Also made sure everything fit well together, and discussed improvements to the architecture diagram based on integrations with other groups.
7	Feb 5	Met over zoom to run through and practice our presentation, make sure we were within time, and make sure that everything flowed well