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Beyond Flat Files: The Needs of 3D, AR, and VR Assets in DAM Systems

The Challenge: Immersive Files in Traditional DAMs

AR Technology App by Andrey Popov, from Adobe Stock

Rich and complex media such as VR, AR, and 3D models pose unique challenges for preservation, especially in legacy DAM systems. Traditional DAMs were built to manage static file types and often lack the capabilities to convert AR, VR, and 3D file formats for use across various platforms (Walker, 2025).

When attempting to store and preserve these types of files, it is crucial to consider their dependencies on specific software and hardware for proper rendering. As a result, a

holistic approach is required for long-term preservation efforts of these asset types (Lischer-Katz, 2020). While traditional DAM systems are capable of storing and managing multimedia files, they often rely on maintaining links to associated assets, performing automated transcoding to "ensure content displays correctly across different devices and platforms" (Smartium, 2025). With 3D, AR, and VR experiences, this process is interrupted by the need for software-specific viewing, in addition to the numerous embedded assets within each file, resulting in large, complex files.

These limitations create a disconnect between storing immersive file types and being able to preview or output them correctly, which is essential in effective preservation.

The Opportunity: How DAMs Can Better Support Immersive Files

While it is evident that legacy DAM systems are insufficient in VR and AR file storing/distribution efforts, they serve as a good foundation. To improve on archival efforts, DAM systems must be able to convert rich media files to additional file formats or link to external viewing platforms to assist in preserving their original viewing experiences. For example, an efficient VR/AR/3D DAM solution should be able to take a .glb file used for AR and convert it to an .mp4 animation (Walker, 2025).

Tagging these types of assets can also be a challenge, as their complex nature can introduce variances in vocabulary. The use of AI-assisted tagging limits the amount of repetition and confusion when tagging rich media manually, and can better base the tags on the intended use and product type (Walker, 2025). However, even with assistance from AI, it is crucial to develop "metadata schemas and workflows for preservation purposes" (Lischer-Katz, 2020); For archival purposes, metadata should provide researchers the details needed to evaluate an asset's quality or accurately reproduce it (Lischer-Katz, 2020). While still being researched, establishing a proper metadata schema for AR/VR/3D assets is crucial in developing a DAM system for these file types.

Preserving Digital Worlds

The Reno Street Art Project

The University of Nevada developed the Reno Street Art (RSA) project to archive the lively street art scene in the city, as well as provide an exhibit and VR experience (Hunsaker & Rocker, 2019). This project required immense planning and coordination with various stakeholders. Establishing a sufficient way of archiving the art visually and technically, with all relevant information attached, was a large aspect of its development. To accomplish this, the project manager and art historian involved gathered all visual assets and used metadata fields such as "artist's name", "mural title", "medium/media used", "commissioner", "location", and "description" to preserve the history associated with each mural (Hunsaker & Rocker, 2019).

While Hunsaker and Rocker (2019) discuss how the 2D assets were stored in the Reno Libraries and Digital Media Technology Department's DAM system, they make no mention of how the VR experience was stored outside of the VR lab where the experience was hosted. Granted the success of the VR experience and archive of the RSA project, proper storage of the VR assets associated with the project is of high importance to its stakeholders and requires a DAM system sufficient to handle the rich media files linked to the project.

[Street Art VR Experience Gameplay](#)
Preview of the Reno Street Art Virtual Reality Experience. To view the VR experience yourself, click [here](#)

IKEA & Immersive Shopping

With e-commerce being more readily available than ever before, many companies are using AR/VR technology and 3D models to create interactive consumer experiences and drive sales (Walker, 2025). IKEA has been an innovator in this area since 2017 with the launch of its IKEA Place app, a program that allows users to place furniture virtually in their homes before buying (IKEA, 2017). While IKEA Place is no longer available, the same AR experience is accessible through the IKEA Kreativ feature in their current app.

As a global retailer of furniture, IKEA requires a DAM system capable of hosting its thousands of VR and 3D assets to enhance workflow efficiencies. Seeing as IKEA has

built its own VR experiences to aid in its marketing tactics, its goals in storing these assets must also include storing the software used to view them.

[Designing, now easier than imagining | IKEA Kreativ](#)
IKEA Kreativ Trailer. To learn more about IKEA Kreativ, click [here](#)

The Future of AR, VR, and 3D Media in Digital Asset Management Systems

The development of DAM systems capable of handling rich media files is still in progress, largely because 3D, AR, and VR formats themselves are continuously evolving. This presents a significant opportunity for DAM vendors to innovate and adopt whole-system approaches to storing complex media and the software needed to view/support them.

As with all areas of Digital Asset Management, continuous growth and learning are crucial. Learning from existing real-world applications, such as IKEA Kreativ and the University of Nevada's RSA Virtual Experience, current DAM systems can better adapt to the unique needs of 3D, AR, and VR assets. Strengthening this sector could lead to great advancements in the archival efforts of video games and virtual art exhibits, while offering retailers the opportunity to build unique shopping experiences for consumers.

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