# Splatscapes: Reimagining Space Through 360° Imagery and Gaussian Rendering

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In the evolving landscape of immersive media and digital documentation, Gaussian. Splatting has emerged as a powerful method for visualizing realistic 3D environments. Unlike mesh-based modeling, Gaussian Splats use ellipsoidal point representations with color, opacity, and spatial data-creating rich, real-time renderings of spaces.

This article outlines a streamlined workflow that transforms 360° video footage into a Gaussian Splatrendered 3D scene using Reality Capture and Post Shot. The approach is ideal for spatial documentation in architecture, interior design, and heritage conservation

## Workflow Overview

#### 1. 360° Video Capture and Frame Extraction

The process begins with capturing a 360° video using a panoramic camera (e.g., Insta360 One X3). The walkthrough is recorded slowly to minimize motion blur and ensure spatial consistency. The recorded video is then divided into individual frames, usually extracting one frame per second for a balance between detail and manageability.



## 2. Conversion to Cubemap Format

Each 360° frame is converted into a cubemap projection, resulting in six flat images:front, back, left, right, top, and bottom. This step transitions spherical imagery into a perspective-based format more compatible with photogrammetric software.



3.Photogrammetric Processing in Reality Capture

The cube map images are imported into Reality Capture, where they are aligned to generate a colored point cloud of the scene. The emphasis is on accurate alignment rather than mesh generation.

This point cloud serves as the spatial backbone for the Gaussian Splat rendering.





## 4. Gaussian Splat Rendering in PostShot

The point cloud is then imported into PostShot, where it is processed into Gaussian Splats. PostShot renders the environment using small 3D splats that preserve depth, parallax, and visual detail. The final scene can be navigated interactively and exported for real-time applications like VR walkthroughs or digital storytelling.



#### Advantages

- Realism with Speed: No need for time-consuming mesh cleanup or texture baking.
- Ideal for Interiors: Works well in tight or ornate environments like heritage buildings.
- Low Hardware Requirement: Only a 360° camera and basic processing tools are needed.

#### Applications

- This workflow is especially useful for:
- Design education helping students visualize and interact with spatial environments.
- Heritage documentation offering non-invasive digital preservation.
- Client presentations enabling realistic previews of interior spaces.

#### Conclusion

Combining 360° capture with photogrammetry and Gaussian Splat rendering offers a fast, efficient, and visually compelling method to document and present spatial environments. This hybrid workflow opens new opportunities for immersive storytelling and digital spatial experiences.

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