

# 360°-video authoring pipeline using user-generated 3D models

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We will present a Mixed Reality (MR) authoring and visualisation pipeline that enables non-expert users to create interactive 360° scene-scapes (e.g. photo-spheres or video-spheres that contain movable 3D objects), from digitised real world sources. This pipeline is distinct from others on the market because users can personalise 360 images and videos by inserting their own smartphone captured 3D objects.

3D object authoring is powered by a hybrid service that employs a mobile App to auto-select the most meaningful images from a smartphone's camera-feed and then send them to a remote 3D reconstruction server [3, 7]. As new images arrive at the server, they are progressively added to an evolving 3D model, using Structure from Motion algorithms [9], Multi-View Stereo [6], Meshing [5] and Texturing [8] techniques. During 3D scanning, real-time user feedback is pushed back to the App, informing users about which parts of a scanned object still need attention. Finalised 3D models are then accessible through a user's account using web RESTful APIs [4] for deployment flexibility. Such a client-server architecture produces high-quality 3D models without placing high resource demands on a mobile device. *Visitors to the stand will be encouraged to create their own 3D models from objects lying on a table.*

After 3D object creation, visitors will be encouraged to experiment with GamecastTV [1] to place/render their objects into user selected 360° scenes (coming either from pre-recorded sources or live streamed). Fig. 1 shows how 3D objects have been inserted into an innovative game.

Finally, visitors will be encouraged to utilise the LiveSpaces [2] web-based service to visualise and interact with their authored 360° scene-scapes. Fig. 2 shows how digitalised real-world objects can be used inside 360° photo-spheres.

## Acknowledgements

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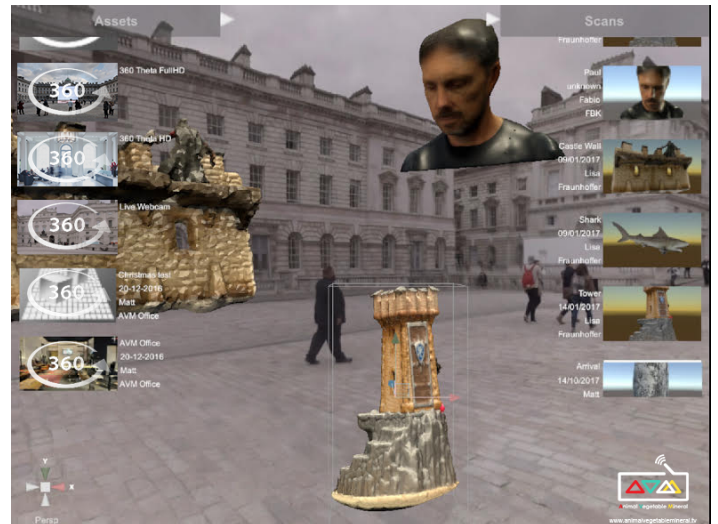


Figure 1: Animal Vegetable Mineral's GamecastTV: authoring pipeline to composite and render in real-time 360° video-spheres (pre-recorded or live streamed) with user-generated 3D models. On the left are 360° scenarios, on the right 3D models that can be imported. The example shows a 360° video-sphere of Somerset House's courtyard with user-generated 3D models.

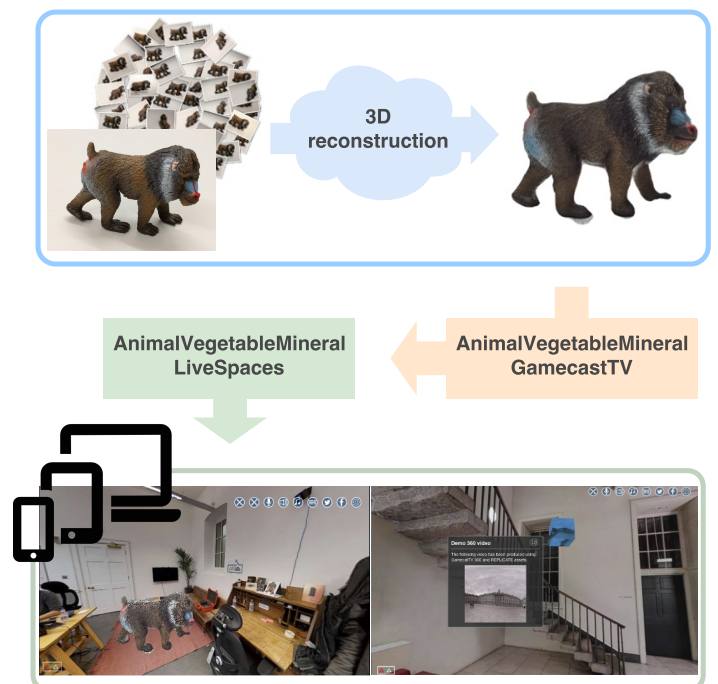


Figure 2: Animal Vegetable Mineral's LiveSpaces: a user can navigate inside a 360° photo-sphere that includes user-generated 3D models of real-world objects. Livespaces can also include interactive hotspots that enable users to connect to different 360° photo-scapes.