

Augmented Reality Content-Technical Write Up

Overview

When creating the Augmented Reality (AR) content for this project there were several limitations to keep in mind that had to be relayed to the studio without compromising the initial idea for the project. These were:

- **File sizes** - Due to using a web-based system (myWebAR) the files had to be small enough (10Mb) to be hosted on the server. It also had to be small so it could be loaded adequately on mobile networks if the signal was low.
- **Separate audio and video files** - When uploading videos with audio, I found that there would often be a stutter at the beginning that would result in the audio and video becoming desynced by a few seconds. A workaround was to either lower the file size of the video - potentially compromising the quality - or to isolate the video and audio to separate assets. The system wasn't entirely intuitive but did allow for customisation in terms of how content would be viewed, such as making each asset automatically play and loop so they would become synced.
- **Links and interactivity** - Each of the AR projects can be interactive to a viewer. This can be in a physical sense such as in how the QR code is implemented - on a poster, in a specific area, or even if the AR content overlays on a physical place (an old photo of a location overlaid on the location as it appears now). Another facet is how the user can interact with the content in a digital form, actions can occur upon the user clicking/touching on the AR content - starting or stopping the video, rotation of the content, hiding specific or all content, even redirecting the viewer to a webpage.
- **Duration of content** - The content should be short and to the point, so that the viewer can understand it at their leisure. In terms of video content, it can be an arduous task to hold a phone to a QR code for multiple minutes to view location-based video, especially with diminishing attention spans in digital media. This is somewhat exempt with 3D applications in which the viewer can orient themselves to perhaps see different angles of the model, or hidden sections, creating a dynamic interactivity. The duration of the content also plays into the previous file size issues so both points can affect each other.

As well as the above limitations, the software itself only allowed for 5 individual projects to be created without a subscription-based cost. However, this proved sufficient for the tour. An account for MyWebAR was made for the project itself (For studio FV) to keep it in-house after my contract completion.

Projects:

Each project was based around a specific location on the Renfrewshire Witch Hunt (RWH) Tour in Paisley, and consisted of a video element tied with an audio recording telling the storied history of each location:

1. The Well
2. Bargarran
3. The Jail
4. Thread Industry (Legacy)
5. Paisley Abbey

The AR content was to act as a sort of interactive poster/teaser for a longer video that was to be hosted on the RWH YouTube, with clicking on the AR asset redirecting the user to the longer YouTube video.

The video consisted of stylised footage filmed on location, with a grainy filter and glitchy visuals to create more tension. This was paired with a voiceover from the tour guide to complete the condensed tour experience. To show people that the content was interactive, there was a line of text that was underneath the video that read "Tap the image".

Technical Details:

Video:

After multiple varied tests, it became obvious that file size and format became integral to how the final project would be displayed, particularly in the potential glitches and errors that come with using the software as was stated in the overview.

The video file consisted of 20 - 40 seconds of footage encoded as Mp.4 format, with a file size of 10000 Kb - 10 Mb. This was achieved by lowering the resolution and bitrate of the file, as well as altering the variable bitrate (VBR pass 1 to VBR pass 2) encoding of premiere pro to create less memory dense files without a loss of quality.

The audio file was the same length as the video file and in the mp3 format. Although separating the video and audio files isn't necessary after lowering the file size, it does lead to less glitches in a low signal area. It also further helps to lessen the file size as when combined it can bulk up the mp4 format excessively. When both files are set to auto play and loop upon the start, they become synced irrespective of separation.

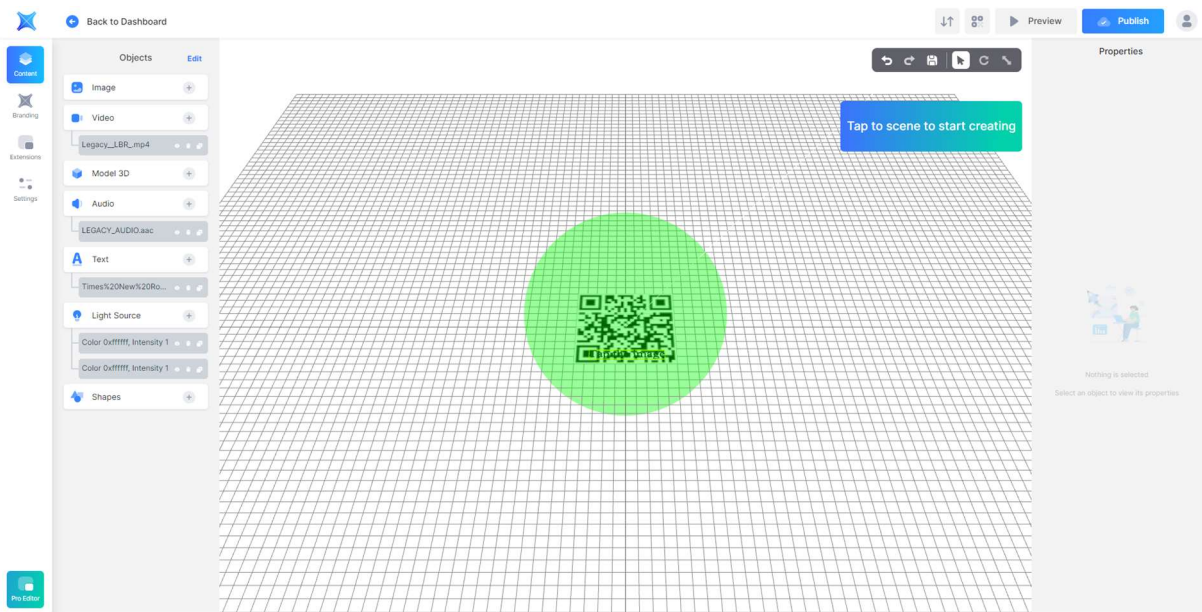
Software:

Software use:

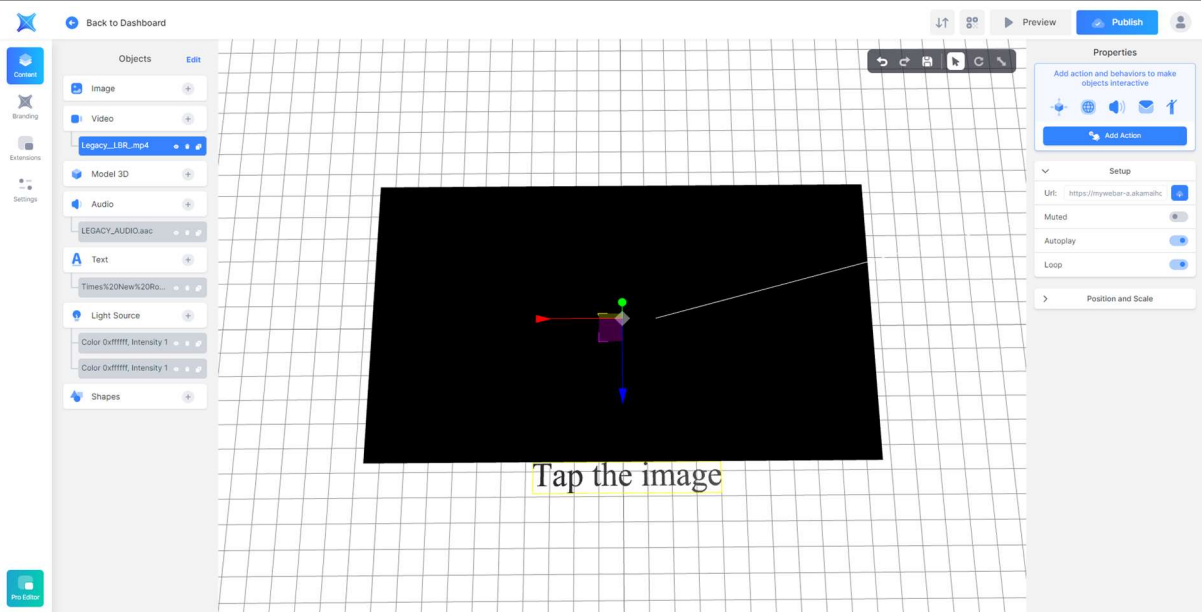
- The software itself is web based so projects can be created if you have a web browser and an account.
- It is a very similar arrangement to using 3D software in that you're creating a scene with the content being arranged in a 3D space, therefore its more suited to viewer interactivity or 3D implementation.
- Being web-based means that it doesn't require proprietary software to view so is perfect for the use of mobile phones.
- The software is being built upon and developed over time, meaning there is a lot of other potential uses other than just using QR codes if ever expanded upon.

When using MyWebAR, you load in content within a 3D space, with the origin point stemming from the QR code itself. This means that any content placed within the software will show up on the exact same location when viewing it through a browser.

This means that the orientation and physical location of the code itself matters as it will have a direct affect upon the AR content due to the way it's shown, the software gets around this by placing the anchor points on each corner except for the bottom right-hand area (this will be evident on the codes themselves).



A screenshot of the MyWebAr workspace (Top) and of the legacy project (Bottom)



The environment is quite straightforward. The options to add assets (Images, Videos, 3D models, Audio) can be uploaded into the online storage and used across all projects. The difficulty may come in arranging objects around the scene, but by using the QR code as a sort of representation of how the scene will look physically may help.

Each object can be scaled or oriented as required and this can be manipulated to show the content hovering above the code itself. In the case of these projects, I opted for scaling up each image/video so viewer's see it like a digital poster. Another thing to note is that the scale of the QR code itself directly correlates to the scale of the video within the software, it is however an easy fix as the code for each project remains the same after changes are "published".

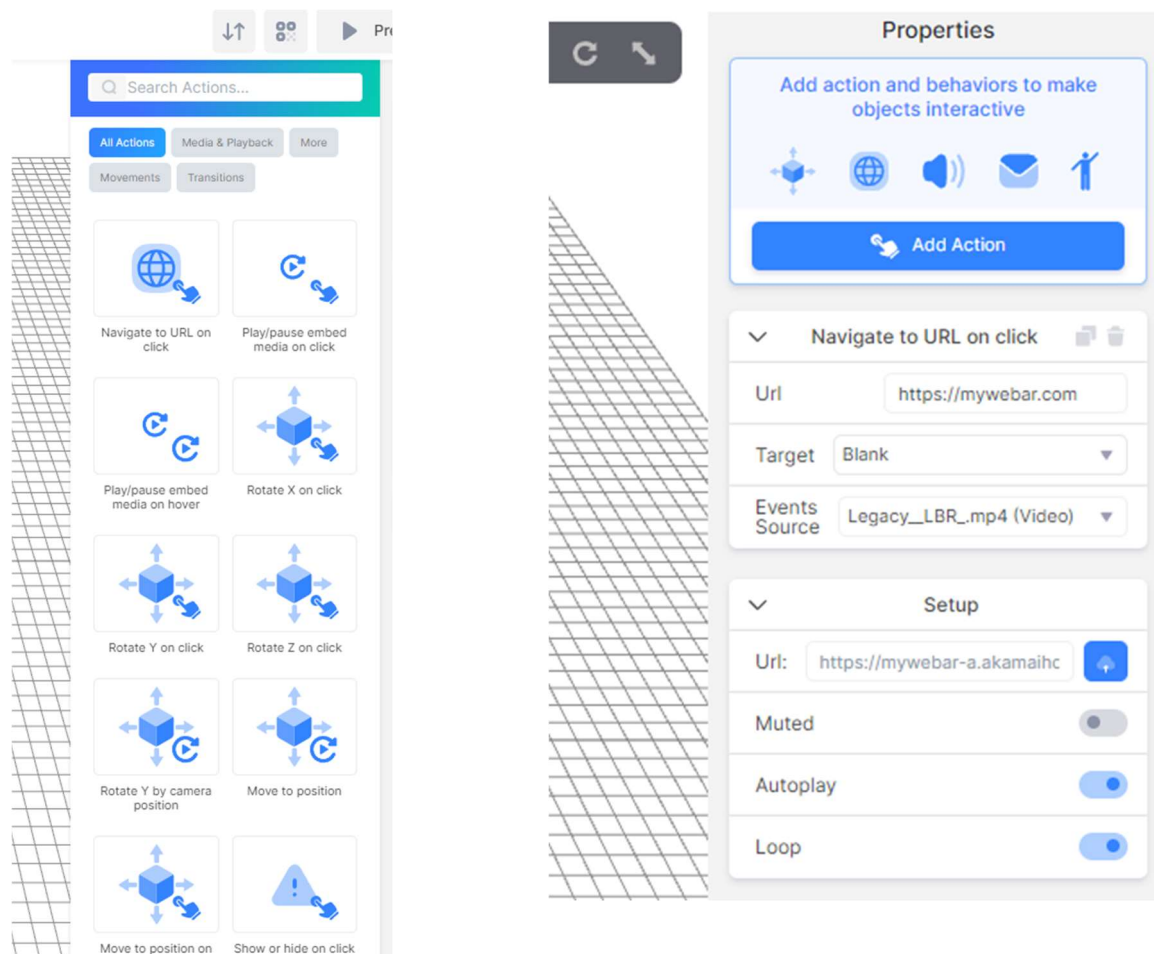
AR Behaviour:

Certain actions or behaviours can be added to the project to make it interactive to the viewer. This can range from:

- Stopping or starting playback on a video
- Rotating different axis of an asset such a 3D model
- Changing the opacity/transparency of an asset
- Moving the object
- Composing an email/text or phoning a number
- Navigating to a URL

These behaviours can be set to act on either a click (or touch in the case of touch sensitive technology like smartphones) or trigger when an event is created within the project (such as when a videos timer ends, it creates an event that then shows a static image - perhaps with details on the video – but also instructs the video element to ‘hide’ itself). These interactions can be somewhat obtuse without explanation, which in this project was done through the text at the bottom.

There are more complex interactions capable within the subscription version but for this project the act of navigating to a URL (to a YouTube video) allowed us to circumvent a lot of the limitations of the software, as well as bringing more traffic to the RWH websites and channels.



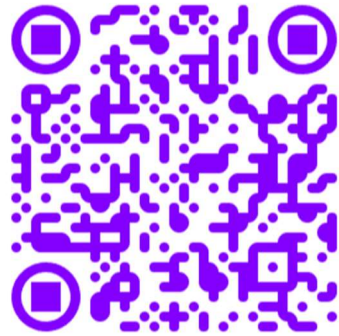
A screenshot of the actions and interactivity menu.

QR Codes:

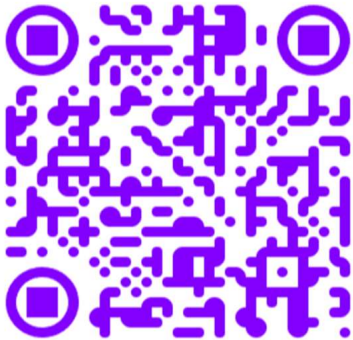


Well Project

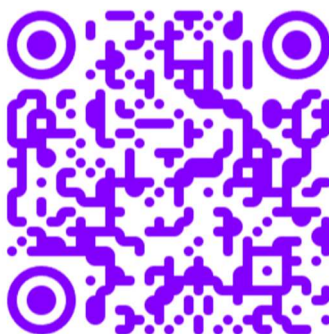
Jail Project

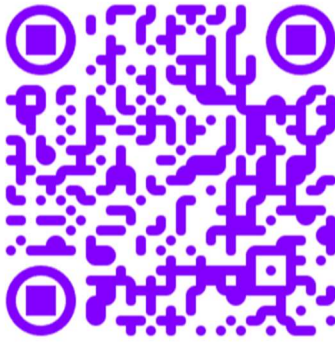


Bargarran Project



Legacy Project





Abbey Project

Conclusion:

Augmented Reality is an emerging technology with multipurpose uses, gaining more traction with the gaining more traction at the height of the Covid-19 pandemic which saw a shift to digital technologies across various sectors. Due to its expansion in modern use, it will become more relevant in time, particularly when tied with new technologies on the rise such as 'smart glasses'.

The use of the AR within this project is a good early representation of its possibilities for both companies and to people who view it. As such, it can go a long way in gaining more attention for both Paisley and the RWH as it embraces new media to showcase culture and history. This method of expanding upon an established method such as the guided tours and incorporating the AR in tandem rather than replacing it, is what I see as the proper use of new media.

Its ability to highlight unseen parts of a narrative rather than simply reiterating or replacing what was already happening is its biggest strength. It also allows it to be inclusive of those who don't have the technological understanding and keeps people in jobs.

There is a lot more potential in augmented reality and how it can be used. Future experiences could be created using 3D aspects, created physically or digitally, and integrated within tours or other areas. I hope this showcase helps to explain and understand augmented reality and its potential uses.

Thank you for the opportunity.

Robert Mackie (Technical and Design Trainer)

Email: robertmackieart@gmail.com