

BUNDLAR

Asset Guidelines

Technical Specs Version 4

Guidelines and Best Practices when creating Assets to put in Bundles. These specs & best practices are current as of December 15, 2020.

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1. Bundle Project

Description

A Bundle Project is the collection of Augmented Experiences, each of which is itself a collection of Assets. For example, a Bundle Project may be an issue of an enhanced magazine, or it could be an AR Tour of a college campus.

Bundle Size affects user experience in two primary ways. First, it determines the initial time a Bundle takes to download to a BUNDLAR app before the user can interact with the Augmented Experiences. Second, once this initial download has been completed, it requires storage space on the user's device in order to be accessed in the future.

Assets that go into the bundle can be of varying size, but the total Bundle Size should always be kept in mind when compiling your assets.

Recommendations

The technical limit for a Bundle far exceeds anything we recommend. However, with network speed and coverage in mind, we recommend:

- ~50mb if deployment relies on cellular data networks
- ~100mb when reliable WiFi is available to the user

General Tips

- Avoid spaces in filenames. For all assets, use dashes or underscores to separate words in filenames.

2. Trigger Type: Image Markers

Description

Image Markers are used in recognition-based AR technology. BUNDLAR uses Natural Feature Tracking (NFT) to convert an image into a series of data points. Once the system recognizes these data points through the camera, it tracks them in real-time.

Because image tracking is visual, the quality of the tracking is reliant on the quality of the Image Marker. The more distinct features the marker image has, the better it tracks.

- A photograph of a busy scene or a person is an example of a good Image Marker
- Small text or simple 2D shapes/gradients are poor Image Markers

Note that Android requires more features in the image than iOS. For the technically minded, Google offers this tool for evaluating Image Markers: <https://developers.google.com/ar/develop/c/augmented-images/arcoreimg>

Make sure your Image Markers are distinct from each other. Image Markers that share multiple features may cause the wrong Augmented Experience to trigger.

Image Markers with visual interference on the surface should be avoided, as reflective surfaces and shadows can negatively affect accuracy. Image Markers are converted to grayscale so colors cannot be counted on to differentiate the features.

Requirements

- At least 100 pixels in each dimension.
- At most 800 on the longest side. While it needs to be bigger than the minimum size, it also can't be too big.
- JPEG file (Other image assets can be PNG, but Image Markers must be JPEG.)

Tips

- Rectangular images are fine most of the time, but very occasionally switching to a square image worked better, so try that if an image marker fails to work.

3. Other Image Assets

Description

Bundle Projects may require a multitude of other image assets. These image assets include small logos, medium size thumbnails, and large backdrops intended to fill the entire screen. There is a specific Image component for displaying images as planes in 3D space, but image assets may also be used on a variety of other component types.

Textures on 3D models are discussed in the section on 3D Model Assets.

Requirements

The only hard requirements are on file format:

- Images with transparency must be PNG (so .png file extension) while images without transparency may be either PNG or JPEG (.jpg file extension).

Recommendations

When exporting your images please keep to the following:

- A variety of sizes may be called for, so try to match how much of the screen the image will fill. Small logos may be 100x100 pixels, while full-screen backgrounds are around 1000 pixels.
- Be especially careful of size when using the Image component. Your raw originals are often very high resolution (eg. digital photos) but you should shrink it down a lot before using it in AR, because too many high-resolution images visible at once will bog down the app.

4. Video Assets

Description

Video Assets are either displayed on a video player in 3D space, or presented in fullscreen mode. Either way, the same compression and encoding requirements apply, and are primarily dictated by the video capabilities of the user's device.

As with image assets, the resolution you should target depends on how much of the screen the video will occupy. If your video is primarily viewable as a fullscreen, you will benefit from a 480p or 720p (around 1-3 Mbps) video and will present in a 16:9 aspect ratio only. If the video is in 3D space then 240p or 360p (around 200-1000 Kbps) will probably be sufficient.

Our AR video player is optimized for chroma key (green screen), as well. Any color value can be used by our system for keying out, but chroma key green works best.

Our AR video player does not have the ability to play Closed Caption files. The video producer must render any captioning directly into the video.

Requirements

- MP4 container (.mp4 file extension)
- H.264 codec
- Fullscreen videos must be a 16:9 aspect ratio
- Don't exceed cumulative 64MB for all videos in a bundle

Recommendations

We recommend under 30 seconds both to retain user engagement in Augmented Experiences and to keep file size manageable.

5. Audio Assets

Description

Audio Assets are audio clips played during an Augmented Experience, both from an audio player located in the 3D space or in a fullscreen audio player. We recommend using these types of assets for relaying information about places or objects like on a tour.

Audio compression can be done in multiple ways and our requirements are less stringent than with video.

Requirements

- MP3 format (.mp3 file extension)

We recommend limiting audio to 30 seconds clips for user experience but support as much time as the total Bundle Size will facilitate.

6. 3D Model Assets

Description

3D Models are standard Mesh files that are loaded into 3D space. They must be Mesh-based models and are limited by Triangle Count, Texture Size, and Material Count.

As we support a wide array of mobile hardware we try to keep the limits on models fairly low. Models labeled as “low poly” are best suited for use in AR. The polygon/triangle count of a model affects both the file size and processor usage on the device.

Models containing animation are supported, but only certain animation types will function. In particular, skeletal animation works, but blend shapes/morphing does not.

Requirements

- FBX or glTF format (.fbx or .glb file extension)
- Any textures must be embedded (rather than externally referenced)

Recommendations

- On-Screen Limit of 500k Triangles
 - If you have 5 models on screen at once limit to 100k per model
 - Single model on screen can have up to 500k
- There are multiple ways of coloring 3D models, but textures work best.
 - 2048x2048 max
 - Multiple standard formats are supported (eg. PNG, JPEG or TGA)

Tools & Tips

While any FBX model should work in theory, in practice we occasionally encounter scaling and positioning issues. In those cases, a fast fix that usually works is to import the model in Blender, select all Objects, and then use the menu Object > Apply > All Transforms.

We can aid and advise you in creation and sourcing on your 3D content, but if you would like to purchase models quickly and easily for your Bundle Project then the following sites provide models in formats that work in our content pipeline:

<https://sketchfab.com>

<https://www.cgtrader.com/>

<https://www.turbosquid.com/>

<https://www.renderosity.com/>

<https://3docean.net/>

<https://www.highend3d.com/>

<https://3dexport.com/>

When purchasing models please make sure they are of a correct Triangle Count, in the correct format, and licensed correctly for usage in the app. Please ask us if you are unsure.