

Cyclops DLC Asset Guidelines

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Introduction

Cyclops now features an “in-app” Mesh Import feature. This feature will allow users to import simple OBJ or FBX files into Cyclops and use them as placeable assets. While this feature works well for simple meshes it has limitations and does not handle big or complicated or animated files. This does not work well for entire scenes or shots with multiple models and animation.

For more complicated assets or scenes/shots, you will need to send us the files and we'll use our proprietary tools to create a Cyclops DLC file that can be loaded into Cyclops. We charge by the hour for this work. The amount of time that it takes us greatly depends on the quality, size, and set-up of the assets that you send us.

The purpose of this doc is to communicate the best practices for delivering assets to us for Cyclops. You can choose to follow all, some, or none of these guidelines. We can work with almost anything that you send us. However, if the assets are problematic we'll need to spend additional time cleaning up, optimizing, converting, etc. The more of these guidelines you can match before sending us the assets the easier, faster, and ultimately cheaper it'll be to create the Cyclops DLC file.

Need someone to create the assets or animate your scenes? The Third Floor is the world's leading visualization studio. We work on films & episodics, themepark rides, and video games. We can model, texture, and animate any asset you might need. We can build environments, animate out blocking, or fully animated scenes. We can also process your photogrammetry. Please contact us about any creative services needs.

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Overview

In general, our process has 3 steps; prep, cook, & delivery. The prep process starts in Maya, we make sure the asset is set up properly and perform any polygon or texture adjustments that are necessary. We then export the asset as an FBX file and bring it into Unreal. In Unreal we perform some additional set-up. Then we “cook” the asset(s) which is our tool for creating the DLC files. After we have the DLC file created we can deliver it to you in a number of ways.

In this document we'll talk specifically about using Maya for asset preparation, however, you should be able to follow these general guidelines in any other 3D package that can export as FBX or OBJ. We also have a section if you'd like to send us assets exported from Unreal.

Asset Types

In Cyclops, we break assets into 2 different categories:

1. **Placeable assets** These are any assets that you want to “place” into the world/scene/shot in Cyclops and then move them around freely. This can include characters, creatures, vehicles, props, set-dec, and even buildings. Placeable assets show up in the Asset pull-down menu in Cyclops and are added to the world with the Place Asset tool. You can add as many Placeable assets as you like to the world.
2. **Shot assets** Cyclops shots are usually an entire scene or shot with multiple models and animation. Shots are also used when you want to do set top-ups or set extensions or bluescreen replacements. You can only have 1 shot loaded at a time. Shots show up in the Shot pull-down and are loaded with the Load Shot tool. In general, Shot assets are more complicated than Placeable assets and take longer to prep for Cyclops.



Cyclops DLC can include a mixture of Placeable and Shot assets. However, we recommend not having a single monolithic DLC and instead of breaking them up by scene or asset type to make delivery & management easier.

General Specifications

These apply to all deliverables to TTF

- Files delivered as Maya Ascii 2019 or FBX or OBJ.
- Real-world scale. 1cm = 1cm.
- Y-up world space
- Each Placeable asset or shot should be in a separate file.

Asset Quality on iOS

As a general rule iOS can not display 3D assets as nicely as they look on a PC or Mac. This is due to the GPU and shading language on iOS devices. This means that assets will often not look as good as they looked on your PC or Mac. While iPad Pro now has the M1 processor you can still not get the same quality of look that you can get on the Mac.

Additionally, iOS devices have a lot less RAM memory than a PC or Mac. Different devices have different processors and amounts of RAM memory, so it's often hard to know how “heavy” of an asset can be loaded in Cyclops. In general, you want to make sure your assets are as optimized as possible. Maxing out the RAM in iOS will crash Cyclops.

Placeable Assets

Placeable assets can include things like characters, creatures, vehicles, props, set-dec, and even buildings. Placeable assets can be static or animated. If you want multiple poses for your assets please send each pose as a separate file.

Set-up

- Each placeable should be in its own file.
- Prefer FBX files
- The file should be named the way you'd like it to appear in the asset menu.
- The asset should be combined into a single mesh
- The asset should be at the origin
- The asset's "feet" or the spot that touches the ground should be 0 height
- The asset's pivot should be at 0,0,0.
- The asset should be facing in the negative Z direction
- If there is no animation then please remove any joints.

Geometry

- Recommended triangle count, less than 20k
- Max triangle count, less than 100k
- Recommend that you avoid two-sided geometry. If you need to use 2-sided geo, please let us know.
- Tris or Quads only, no N-gons, please.
- Avoid co-planar geometry

Textures

- Recommended 1 texture per asset
- Max number of textures, 5 per asset
- Textures in JPG or PNG format only
- Textures MUST be a power of 2 dimensions.
- No higher than 2k per texture file.
- Simple Lambert, Blinn, or Phong materials only
- A single diffuse texture only. (no spec, metallic, roughness, bump, normal, etc)
- sRGB color space
- No UDIMs
- No overlapping UVs

Extra guidelines for animated assets

Placeable assets can only have a single animation on them. When the asset is placed in the scene the animation will immediately start playing and will loop continuously. If you wish to have multiple animations please send each animated asset as a separate file.

- The animation should start at frame 0

- The animation should be baked down to a single contiguous FK joint chain.
- Max joints per asset, 100.
- Geometry should be skinned directly to the joints.
- No IK handles, constraints, set-driven keys, expressions, etc.
- No blendshapes, clusters, lattices, wraps, or other types of deformers.

We do support Alembic cache animation. Please contact us about the guidelines for Alembics.

Shot Assets

Shots by their very nature are more powerful and more complex than Placeable assets. You use Shot assets when you want to have an entire scene or environment in Cyclops. This can include multiple animated objects, creatures, characters, etc. This means it's harder to give guidelines that will work in all instances.

One of the powerful features in Cyclops is the ability to line up a CG env to real-world objects, i.e. buildings, sets, etc. This is very useful for animated scenes where action should be taking place in a specific location in the real world as well as doing CG top-ups or extensions. For this type of scene, we usually have "proxy" geo that represents real-world objects. This proxy geo is often built from lidar or photogrammetry.

Set-up

- Each shot or env should be in its own file.
- Prefer Maya 2019 Ascii files
- The file should be named the way you'd like it to appear in the shot menu.
- Everything should be fully assembled in a single file. i.e. no file referencing
- If possible, please also send us character/creature "t-pose" files
- You can include a sky dome geo/texture or we can use a standard Unreal Sky
- It is a best practice to make sure the scene origin is in the main part of the environment. By default when you load the shot in Cyclops you will be at the origin.

Geometry

- The total triangle count for any single creature/character should be less than 100k
- The total triangle count for any single env asset should be less than 700k
- The total triangle count for all assets in a shot should be less than 5 million
- Recommend that you avoid two-sided geometry. If you need to use 2-sided geo, please let us know.
- Tris or Quads only, no N-gons, please.
- Avoid co-planar geometry

Textures

- Textures for the creature/characters/env are ideal but not required. If there are no textures then the char/creature/env will just be simply shaded in a single color.
- Recommended 1 texture per mesh
- Max number of textures, 5 per mesh
- Textures in JPG or PNG format only
- Textures MUST be a power of 2 dimensions.
- No higher than 2k per texture file.
- Simple Lambert, Blinn, or Phong materials only
- A single diffuse texture only. (no spec, metallic, roughness, bump, normal, etc)
- sRGB color space
- No UDIMs
- No overlapping UVs

Animation

- The animation should be baked down to a single contiguous FK joint chain per character, creature, etc.
- Max joints per asset, 500.
- Geometry should be skinned directly to the joints.
- No IK handles, constraints, set-driven keys, expressions, etc.
- No blendshapes, clusters, lattices, wraps, or other types of deformers.
- Alembics are supported. Please let us know if you need to use Alembics.

Lighting

Unfortunately lighting on iOS is very limited. Unreal has specific light limits for mobile. This means that lighting generally becomes generic and diffuse.

Exterior lighting:

- Please limit to a single directional light
- We will place a UE skylight in the scene

Interior lighting:

- Max 4 spot lights
- Max 4 point lights

More info can be found here: <https://docs.unrealengine.com/4.27/en-US/SharingAndReleasing/Mobile/Lighting/>

Note for Vcam scenes:

For shots/scenes that you are only planning to use Cyclops as a Vcam device, i.e. not integrating the device camera, then you can use baked lighting. Please contact us for additional information about using Cyclops as a Vcam device.

Lidar/Photogrammetry geo

- Please name all lidar geo in the scene with the prefix "LIDAR_"
- The total triangle count for the entire Lidar geo should be less than 5 million.

- The lidar geo should ideally be broken up into 4-8 individual pieces.
 - All pieces should be arranged correctly in the same file.
 - Each piece should be less than 700k triangles
- Ideally, holes should be filled
- Textures are not used
- UVs are not needed

Display Layers

Cyclops support Display Layers. In general, we put the Lidar/Holdout geo into its own Display Layer and the Sky into its own layer. We will also put each character/creature into its own display layer. If you want additional display layer set-up the best procedure is to set those up as Visibility Layers in Maya.

Moveable Objects

By default objects in the shot are not moveable in Cyclops. However, if you'd like an object(s) to be moveable please suffix the name of the object with “_MOVEABLE”

Bookmarks

Cyclops can have multiple bookmarks in a shot. Bookmarks allow the user to quickly jump to the Bookmark location in the environment/scene. You can set bookmarks manually in Cyclops or you can have us put them in when we create the DLC.

You can specify bookmarks in the scene file(s) that you send to us by placing a simple cone primitive on its side in the scene where you want to have a bookmark. Please angle the “pointy” part of the cone in the direction you want the user to face when they use the bookmark in Cyclops. You can use a different object besides a cone, but cones are nice as they can convey directionality whereas something like a sphere or cube can not.

Please name the object “BOOKMARK_NAME”. The NAME part should be whatever you want the bookmark to be named in Cyclops. Bookmark names can be almost anything, but please don't use special characters. (e.g. !@#\$%^&*():"',.<>/?) Underscores and dashes and spaces are fine.

Unreal Guidelines

If you already have your asset in Unreal or are comfortable using Unreal then you can deliver native Unreal assets to us. However in general you should make sure your Unreal assets conform to all the guidelines listed above. We can use any UE Static Mesh or Skeletal Mesh actor as a Placeable asset in Cyclops. Unreal Levels are used as Shot assets with a level sequence driving all animation.

You should use the Unreal Migrate feature to “migrate” the Unreal assets to an empty Content folder. You can read about the Asset Migrate tool here:

<https://docs.unrealengine.com/4.27/en-US/Basics/AssetsAndPackages/Migrate/>

Also, this is a good video: https://www.youtube.com/watch?v=6krGT_eFyAI

The only difference is that, instead of migrating the assets to another UE project, you want to Migrate them to an empty folder named “content.” Once you have migrated everything you want there, then you can Zip up that folder and send it to us via Dropbox or WeTransfer or something like that.

General Notes:

- We currently support UE 4.27 and earlier.
- Make sure your assets don't require ANY third-party or proprietary plugins.
- Niagara is supported
- Please don't bake any lighting and set all lights to Moveable
- Avoid Blueprint actors with runtime logic