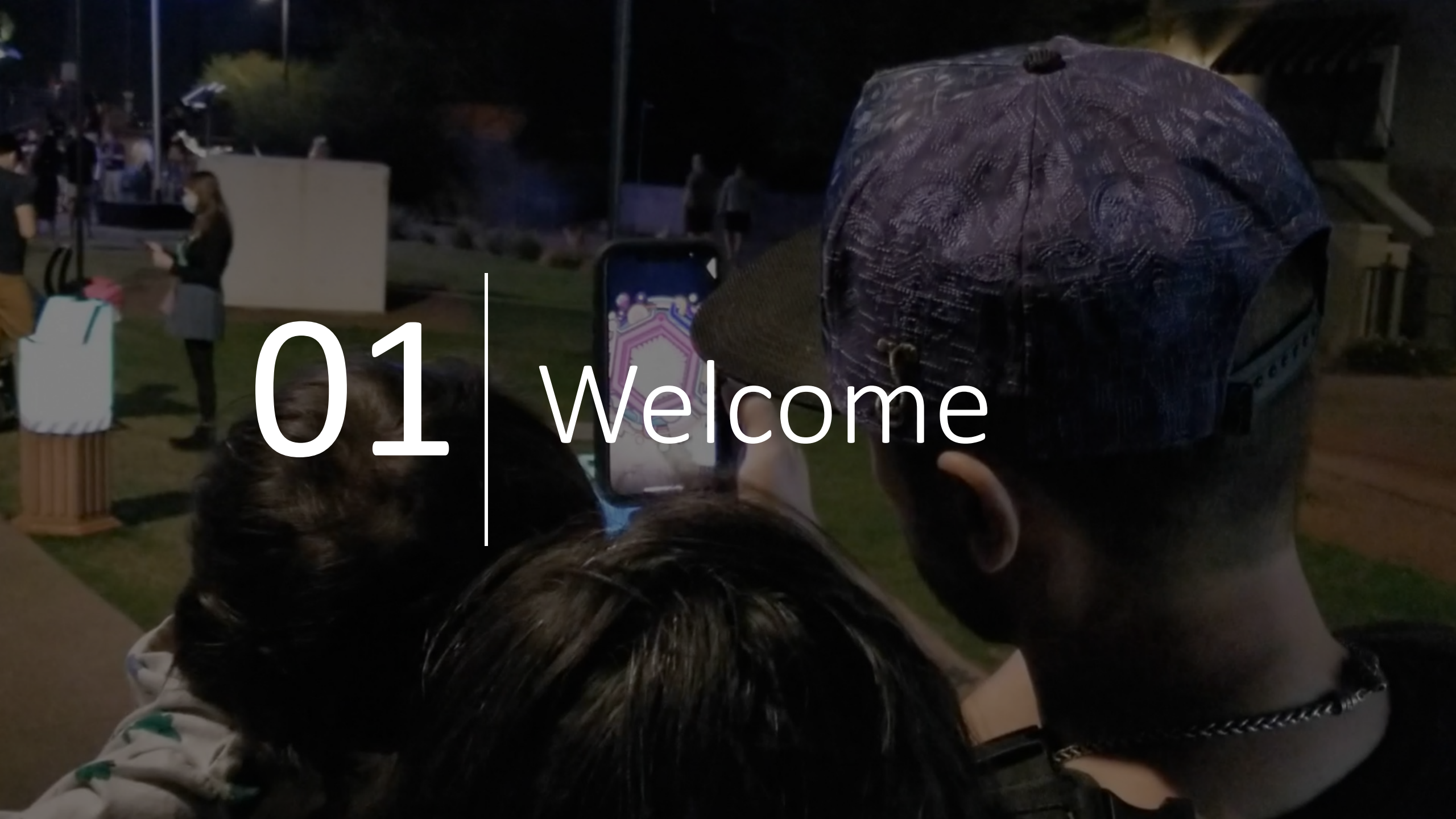
Thu, July 21, 2022
2:00 PM– 4:00 PM PST

AR CONTENT CREATION WORKSHOP

DOWNTOWN CENTER BID

NOW ART

hoverlay



01 | Welcome

Today’s agenda

2:00 **Welcome**

2:15 Hoverlay – General publishing workflow

Creating with green screen, 360

3:15 Break

3:20 Advanced topics

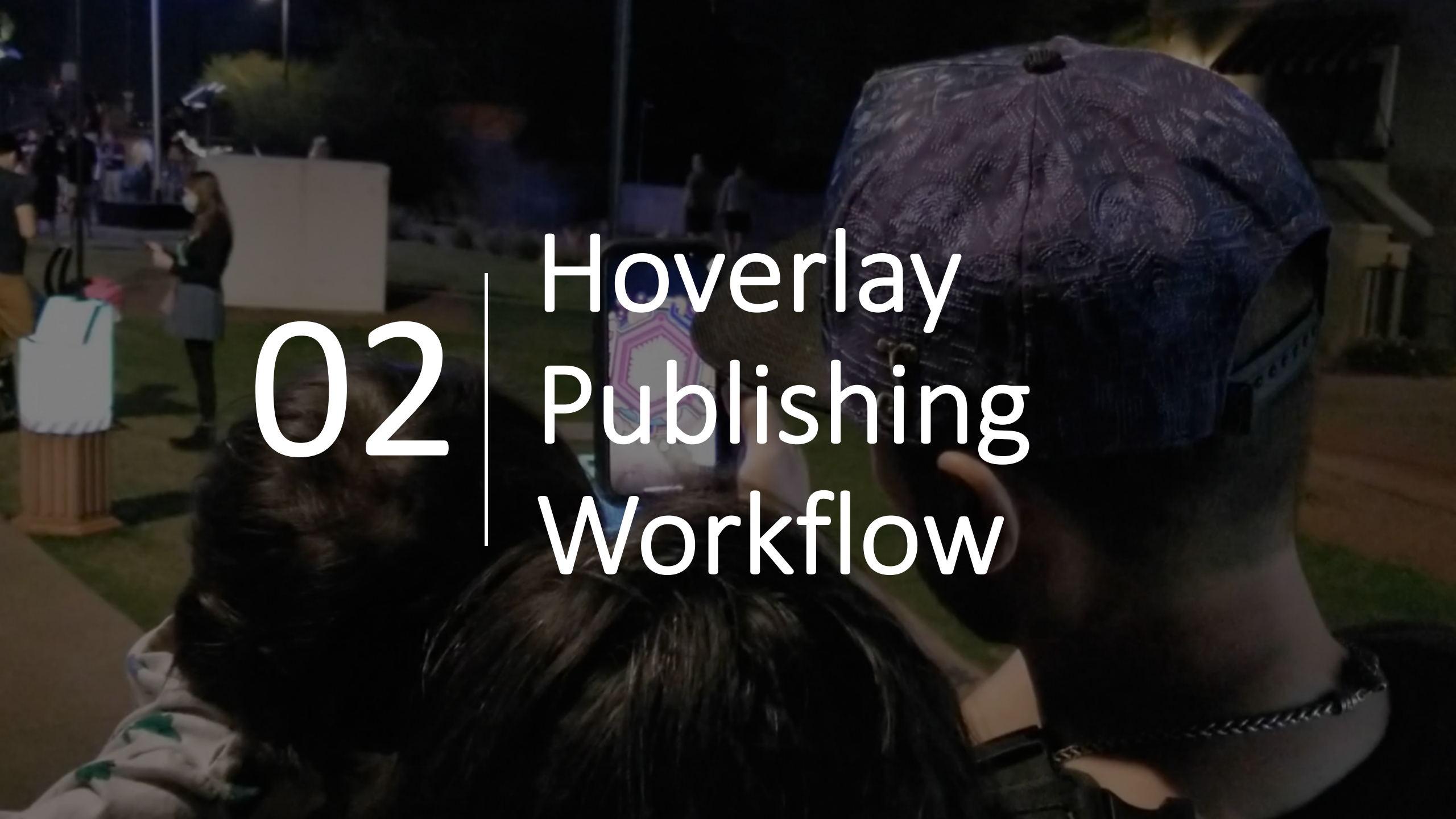
Creating reference images

3D models and Unity

Sequencing

Environment Probe, Occlusion, Adaptive lights

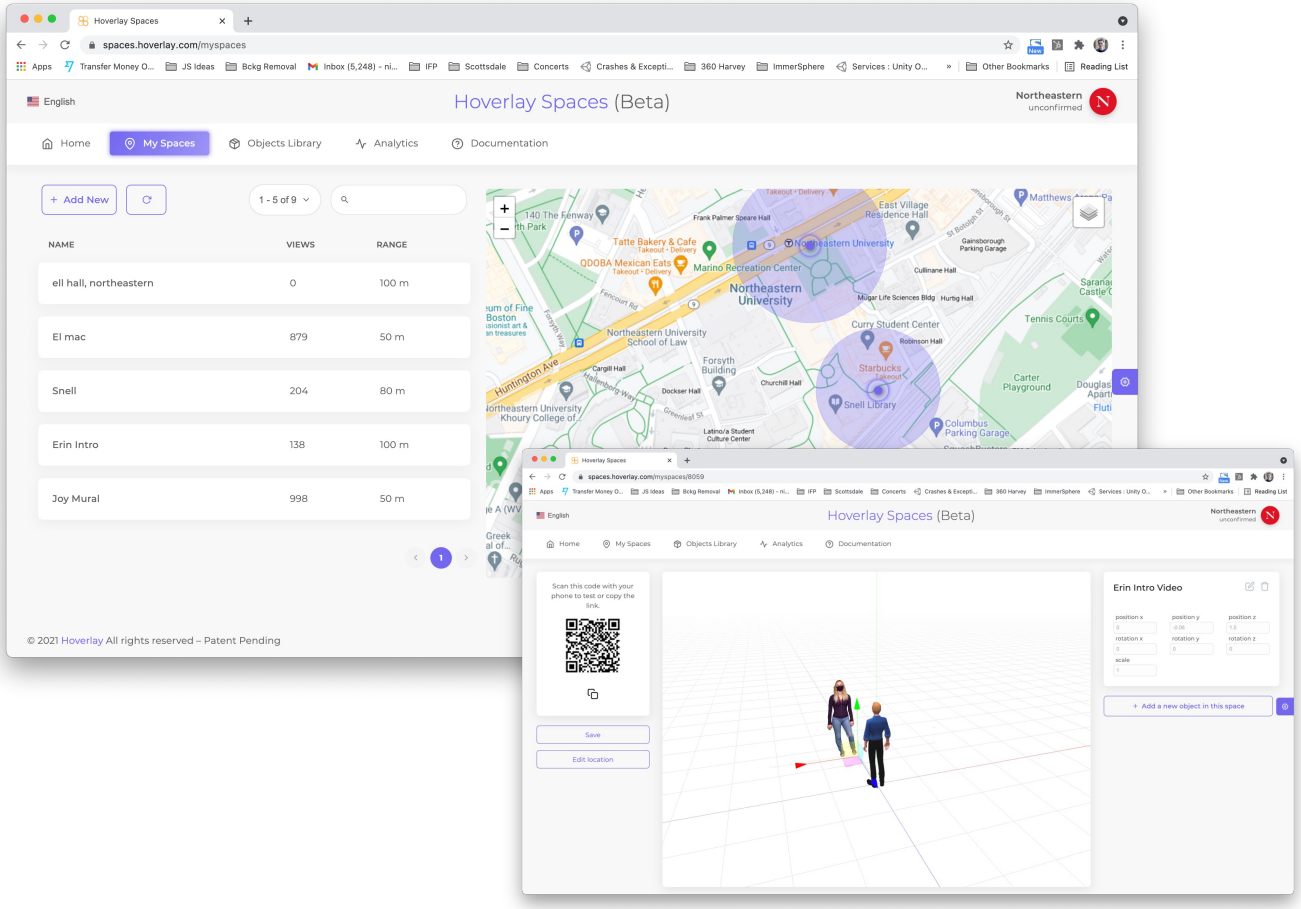
4:00



02 Hoverlay Publishing Workflow

Hoverlay Spaces

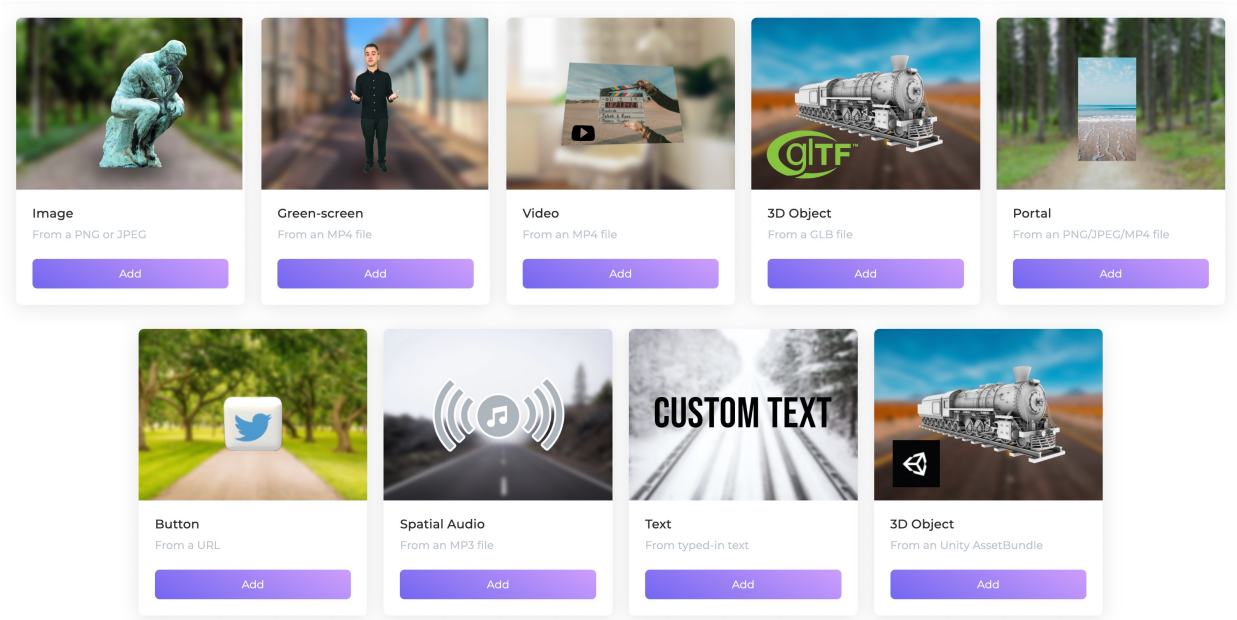
https://spaces.hoverlay.com



Hoverlay Spaces is a web-based environment to compose and publish experiences on an **AR channel.**

What content can you use to create AR experiences?

1. Photos (png or jpeg)
2. Audio files (mp3)
3. Videos (mp4)
4. Green screen videos (mp4)
5. 360s (jpeg/png/mp4)
6. 3d Models (gltf, glb, Unity)
7. Buttons and links (any https link)
8. Text



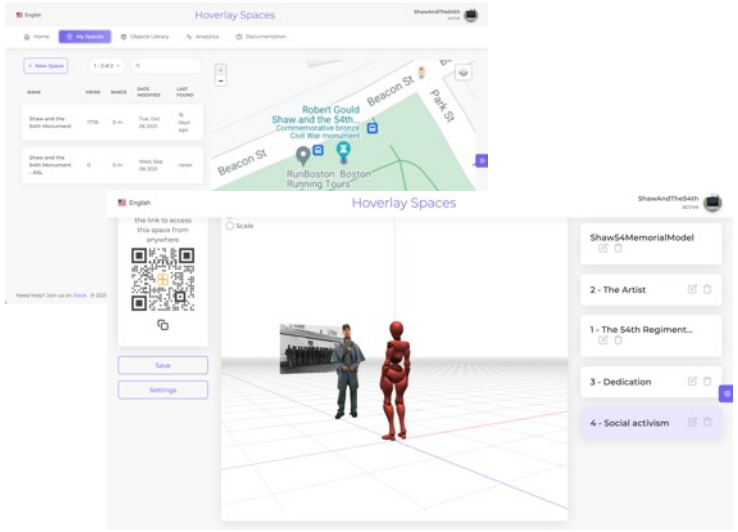
Hoverlay AR Channels: A New Workflow for Publishing Spatial Content

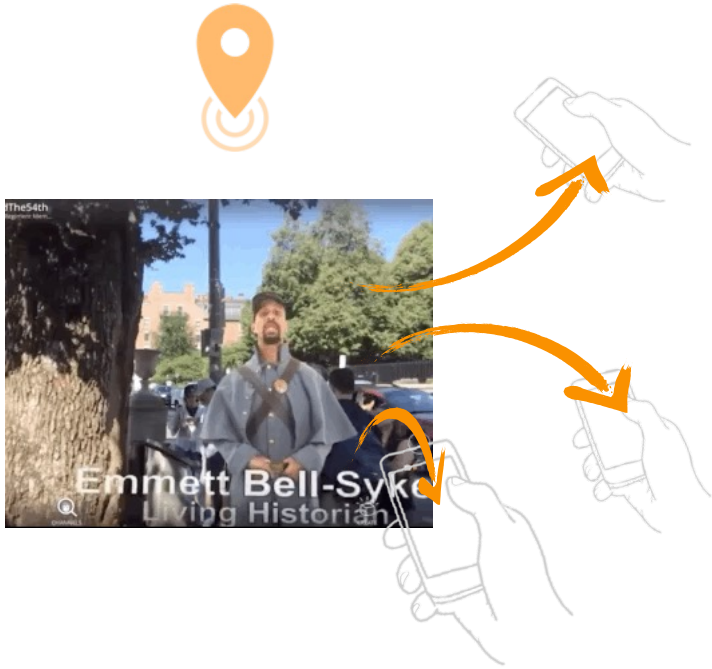
Photos

Video
(green screen)

3d
Scans/Models

Links

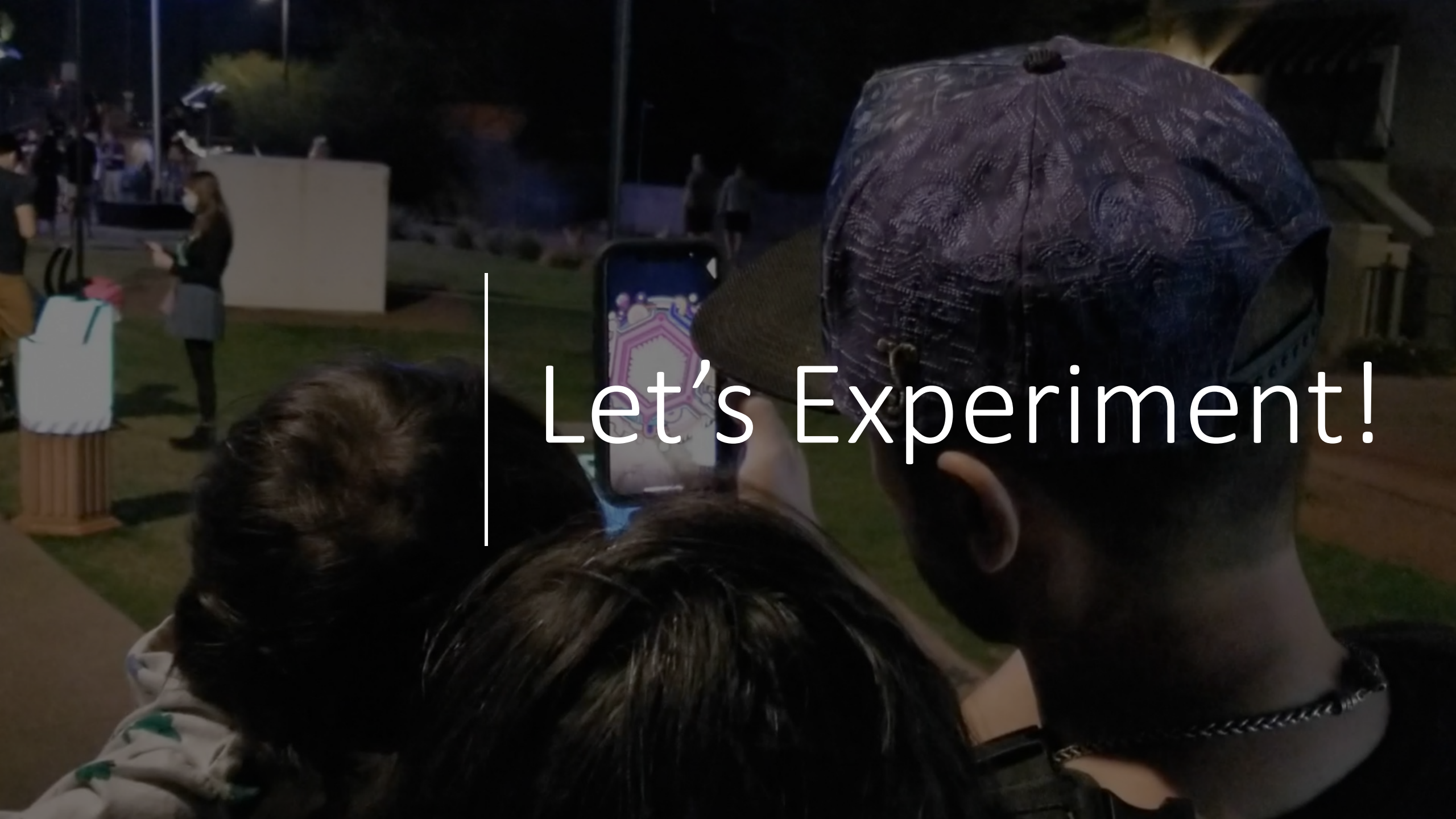




Create stories using audio, photos, videos, and 3d models

Publish content on your channel, at a specific location or through a universal link/QRCode using Hoverlay spaces

Users tune into into channel to in Hoverlay free app, experience story and interact

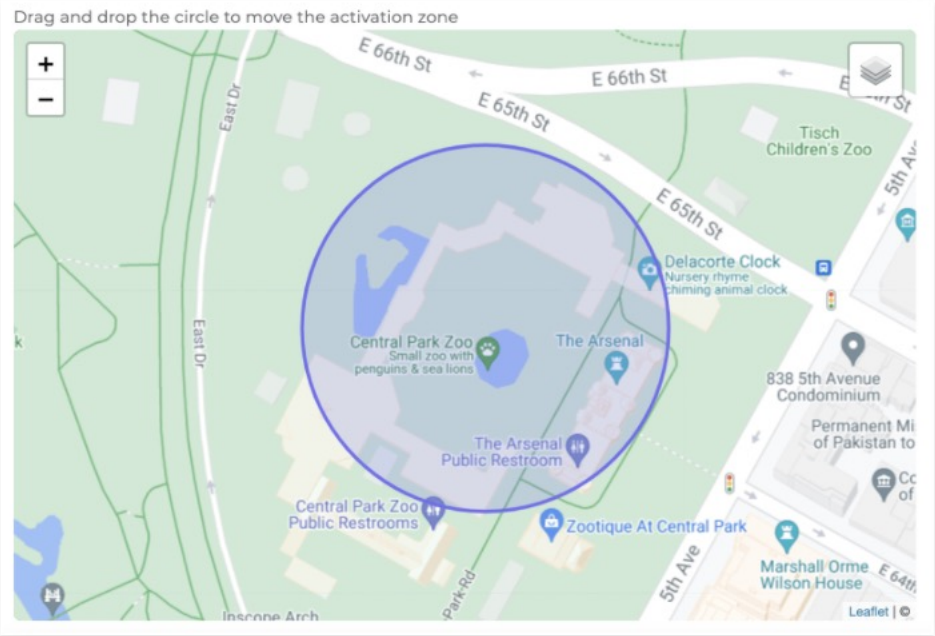


Let’s Experiment!

A "Space" contains your experience and defines where/when users can access it.

1 - An activation area

optional location, access range, start and end date, defining where and when your content is available to users



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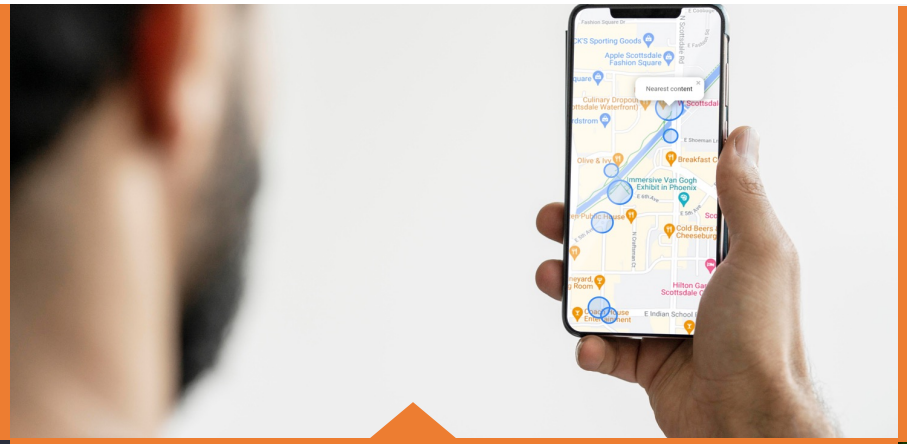
2 - One or more objects

making up your experience, organize spatially around one or more physical anchors

Users Can Enter a Space in Several Ways

SCAN QR CODE

DTLA channel and each experience has its own QR Code to use on signage or posters

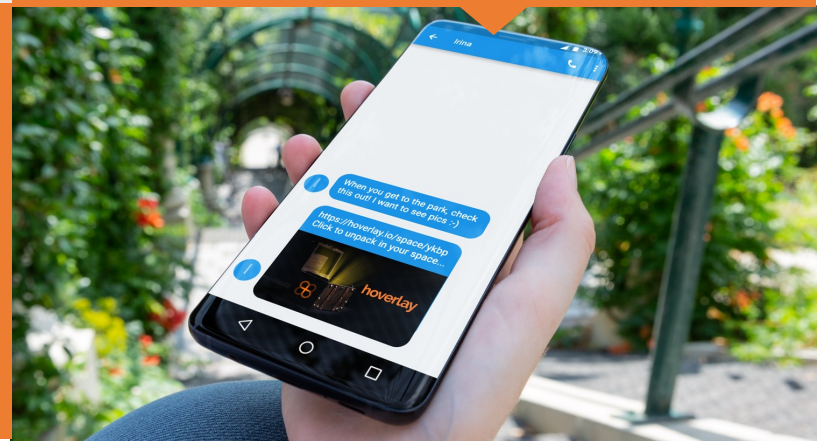


FOLLOW THE MAP

Users access the DTLA channel and find nearby experiences using the built-in wayfinding map.

CLICK A LINK

DTLA channel and experiences can be shared and triggered via URL link on web/ social/email



- Hoverlay QRCodes/links will take users to the app install page if needed
- Links can be opened on desktop, and will display a QRCode

hoverlay

What can you attach content to?

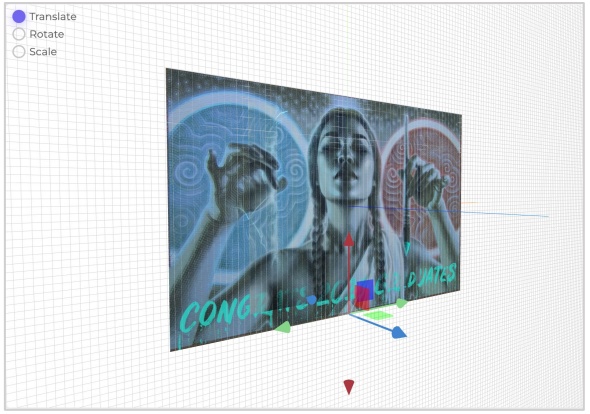
Globally

An (optional) activation zone
(city, block, park, building)

+

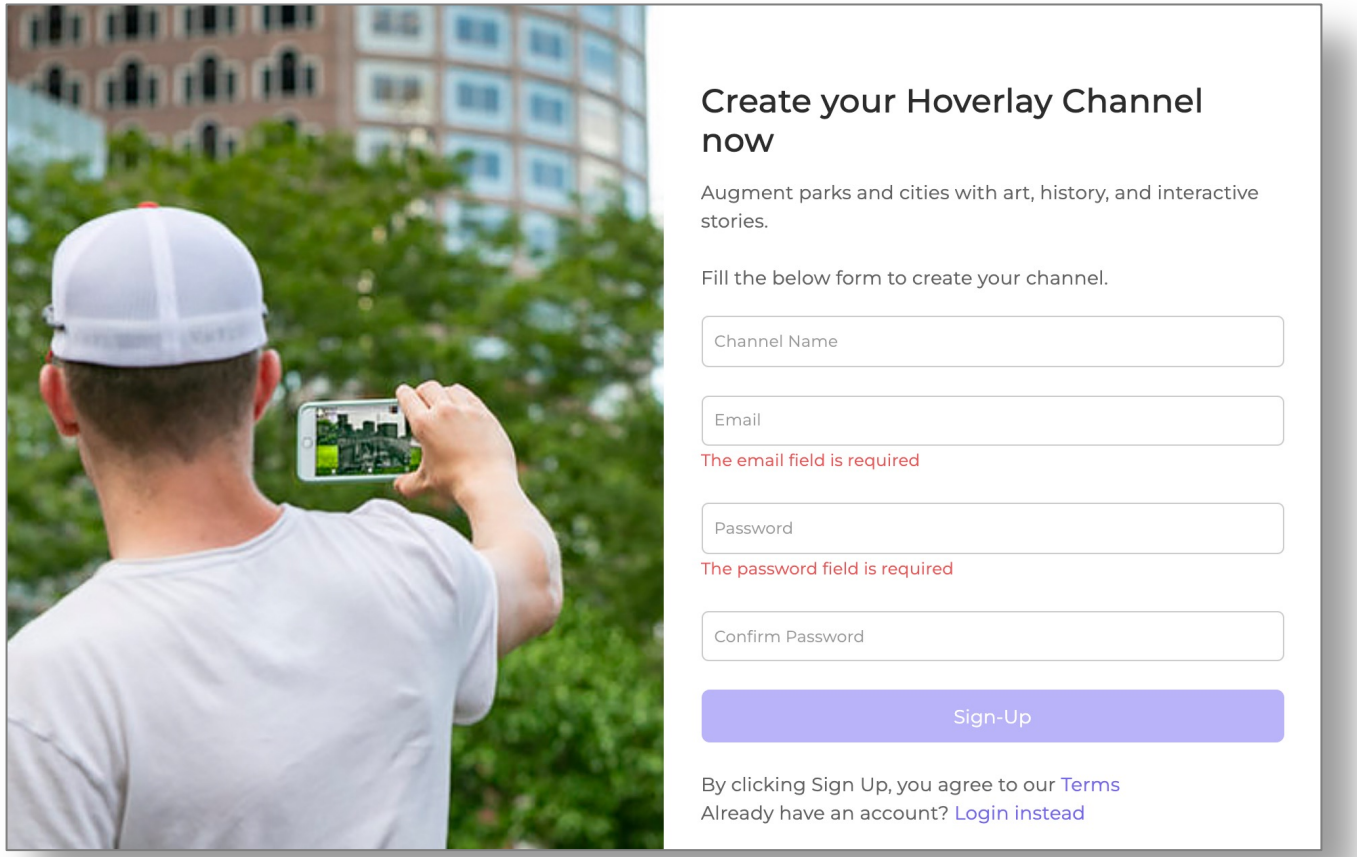
Locally

The user
(SLAM)



One or more Reference
Images

Create your own channel: https://spaces.hoverlay.com/



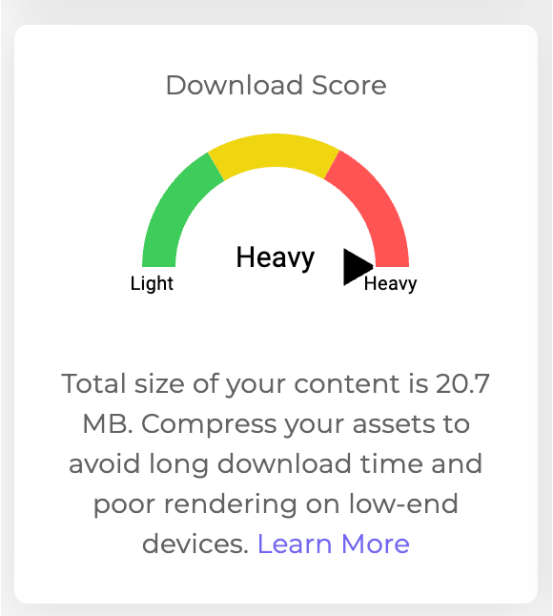
hoverlay

Web		Spatial Web
User is an observer	→	User is a participant
Experience flow is pre-defined	→	Experience flow is user-driven
Content is on screen (browser)	→	Content feels “real” (camera)
Strong for delivering information	→	Strong for triggering emotions

Recommended Formats and Sizes

	Images		Video		3D Model	Audio
Supported Format	.PNG	.JPEG	.MP4	.MP4	.GLB	MP3
Typical Use	Adding a character or static elements	Flat artwork or historical photos	floating virtual video screen	self-created hologram of a person	3D model or scan of a product or art piece	Sound track or voice recording
Max Size Target	**1MB**	**1MB**	**8MB**	**8MB**	**20MB, 50K polygons**	**1MB**

User Experience: pay attention to the total content size

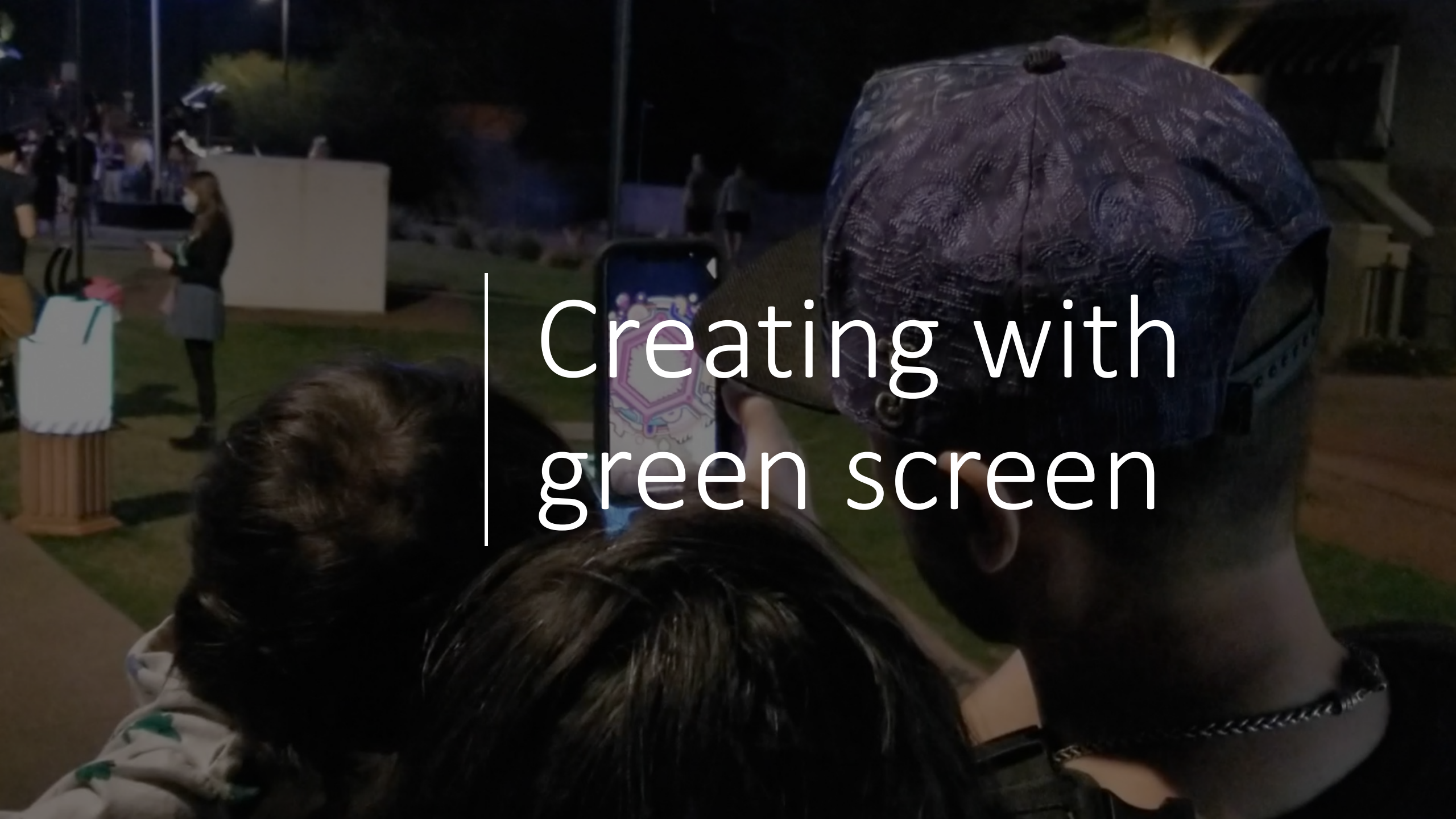


Note: Hoverlay will automatically cache files on phone after first download

How long will it take viewers to load this Space?

Wifi download time : 2 seconds - 4G download time : 10 seconds - 3G download time : 1 minute, 8 seconds

Best practice: keep total content size below 20MB for outdoor experiences



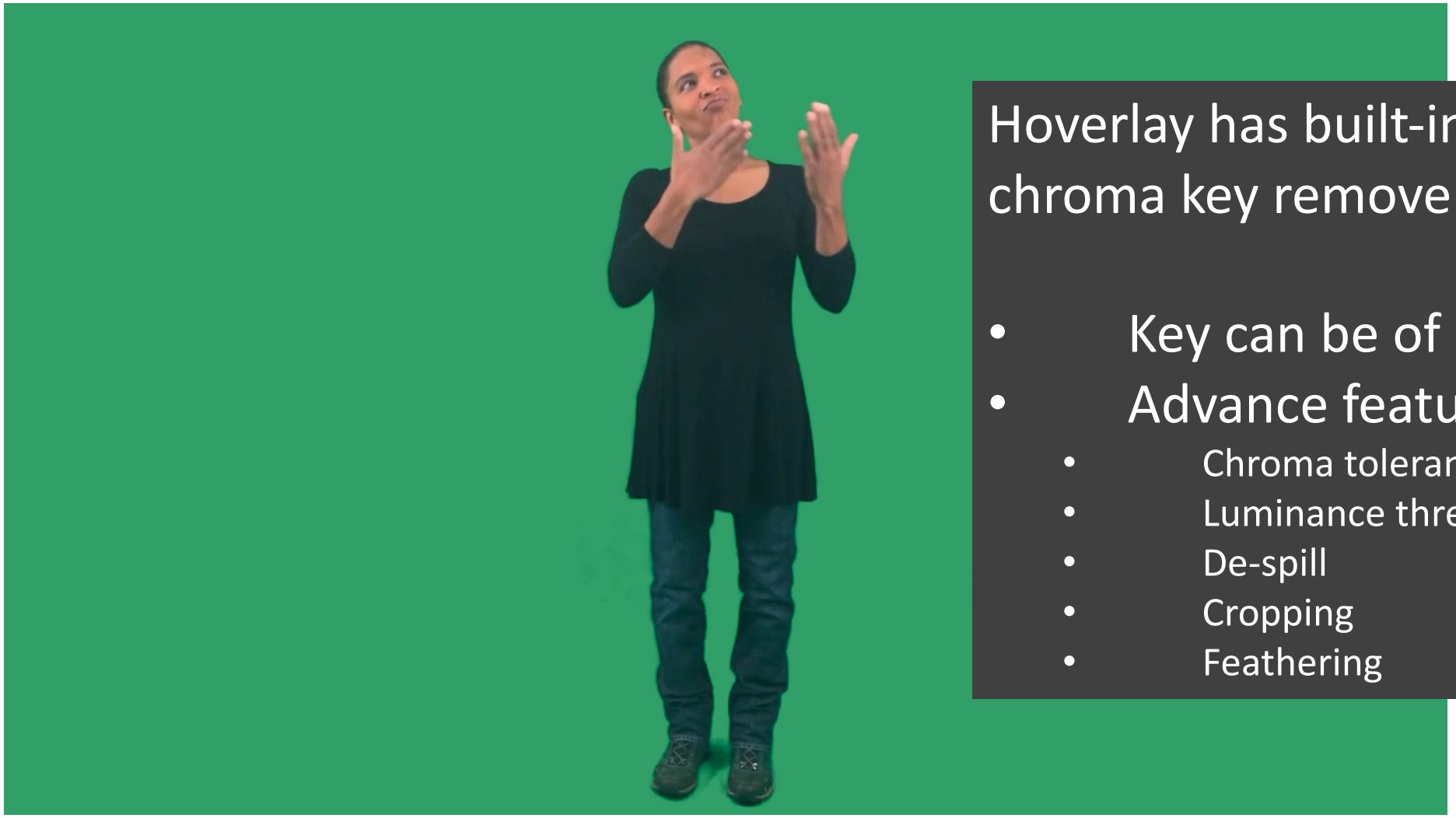
Creating with green screen

Hoverlay removes chroma key in real time

- No need to remove the background
- Key color can be of any color

Recording Tips

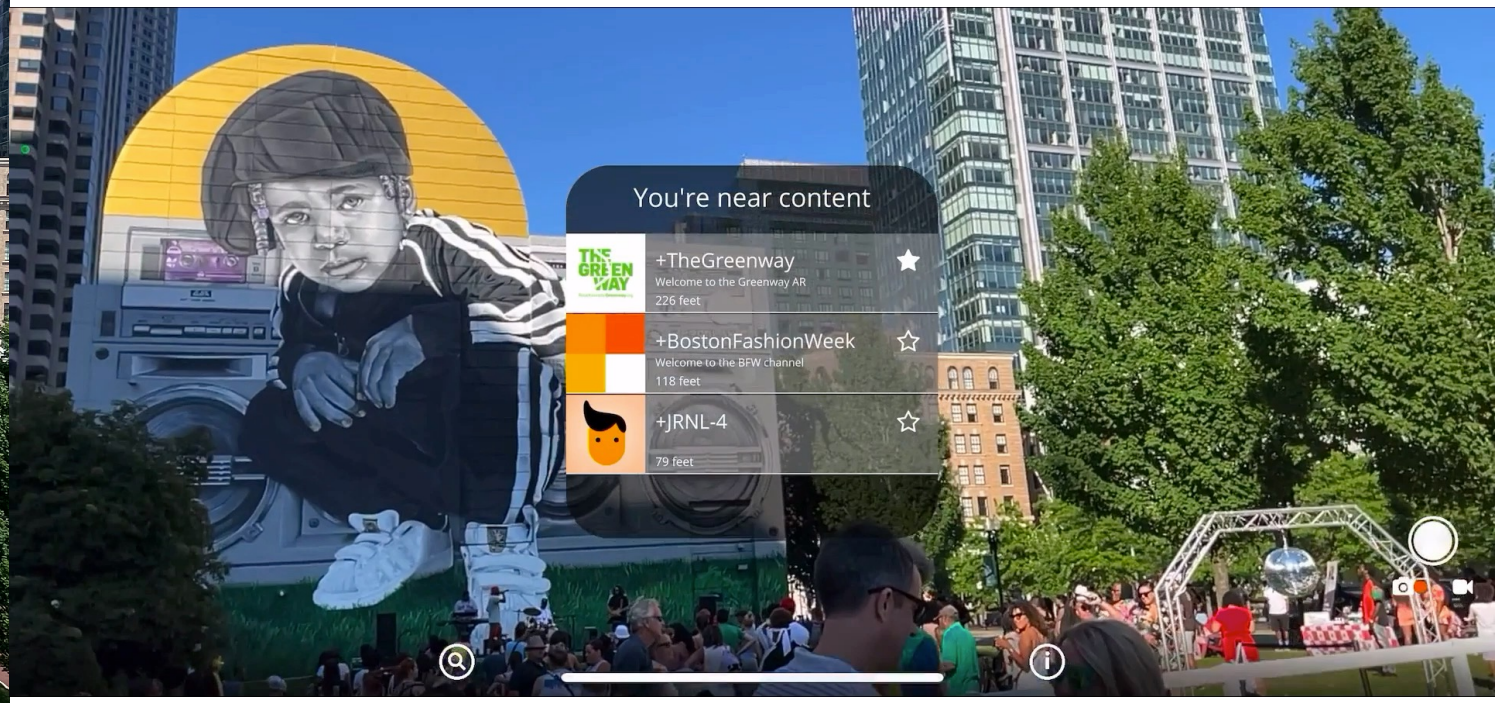
- Include the feet!
- Use tripod
- Use mic for best audio
- Don’t wear green



Hoverlay has built-in real-time chroma key removers

- Key can be of any color
- Advance features:
  - Chroma tolerance
  - Luminance thresholds
  - De-spill
  - Cropping
  - Feathering

Other user of green screen videos



Workflow – Preparing Videos

Simple

Your Video Files

Handbreak

transcoding, cropping, adjust audio, compression

iMovie

Final Cut

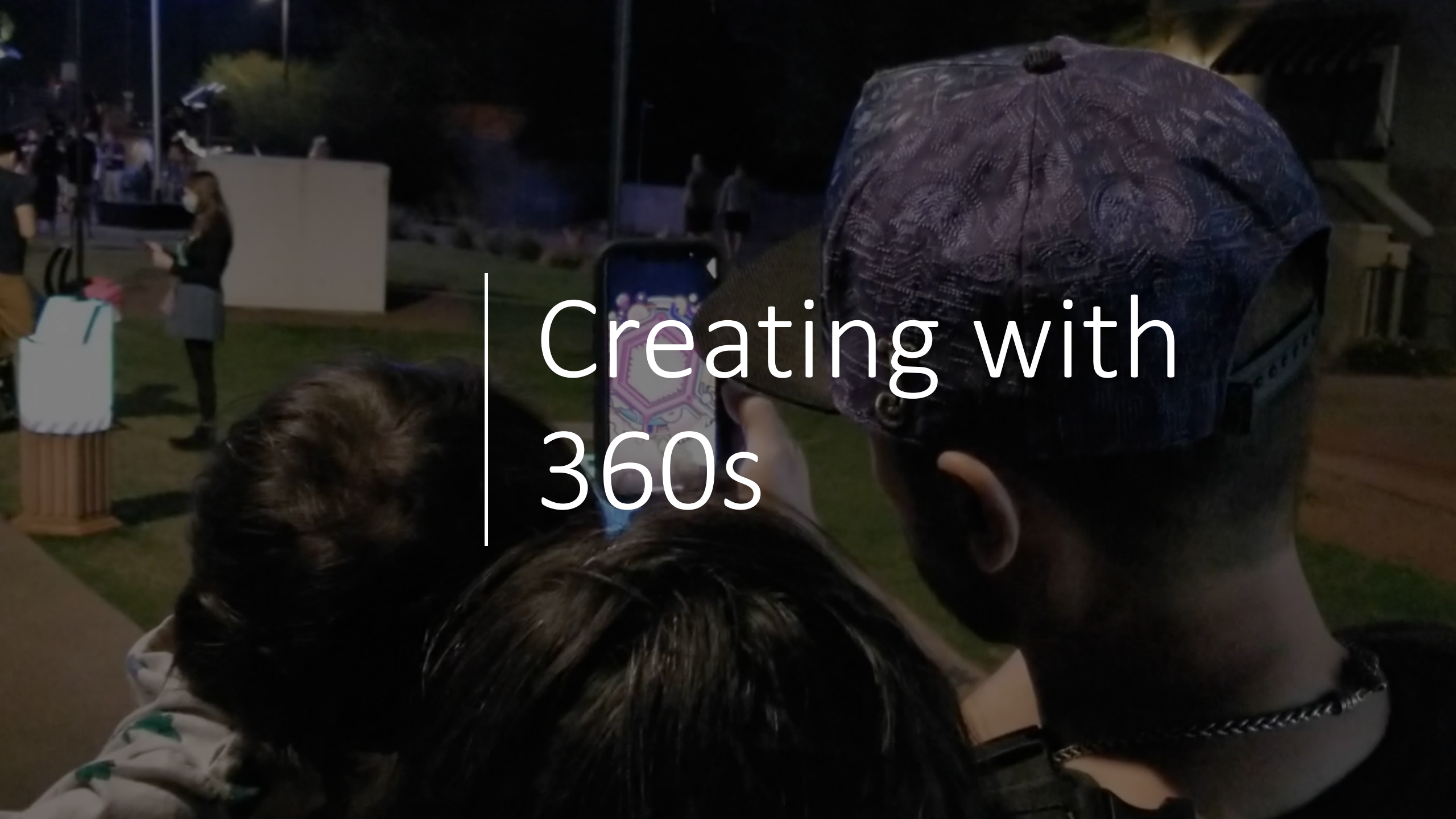
Premiere

After Effect

Advanced

Recommended format

720p
mp4



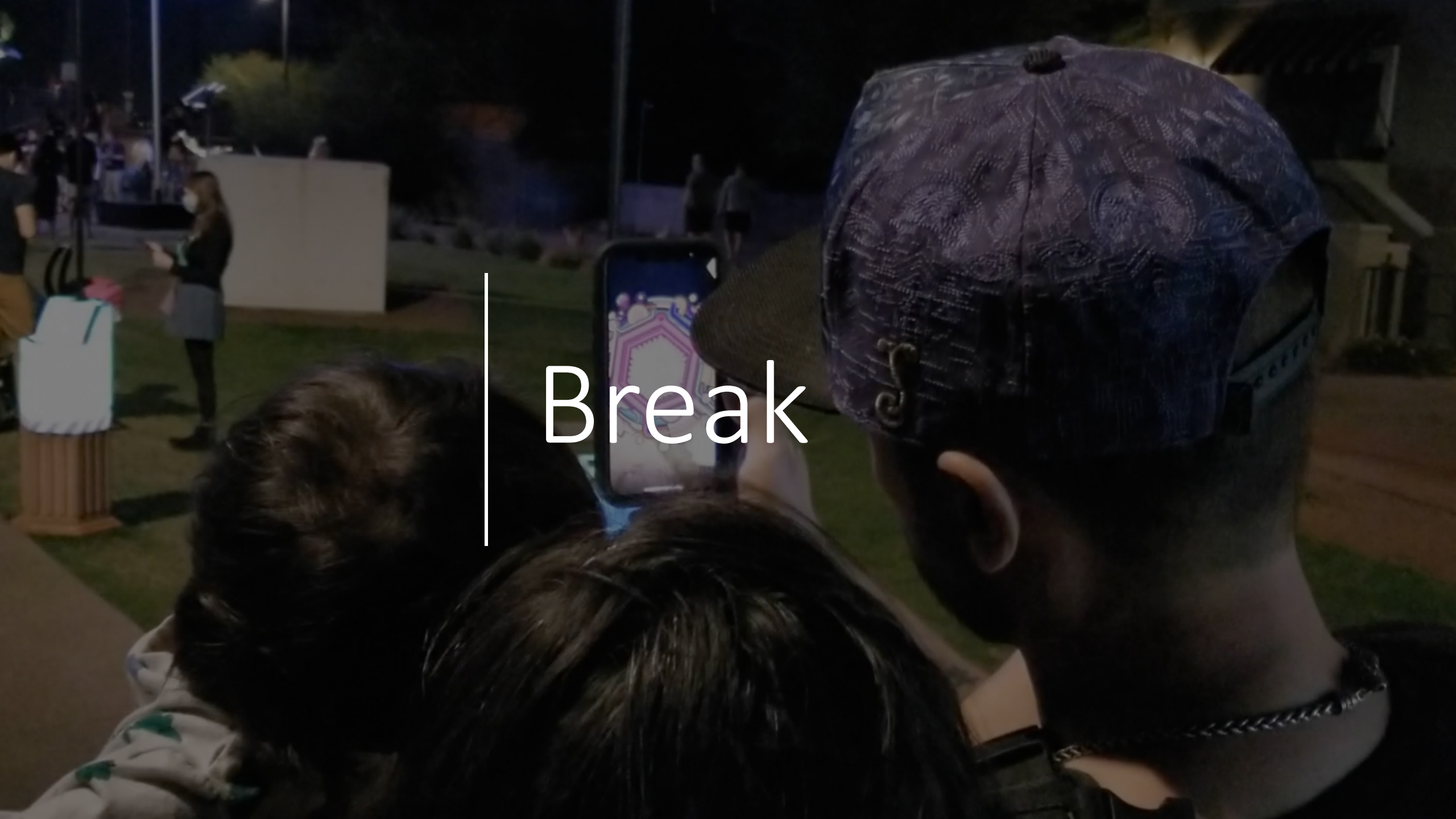
Creating with 360s

360 Portals

- Automatically created from your 360 image or video, including switching in and out of 360 based on user entering exiting
- Gives users the illusion of entering a parallel space

General guidelines

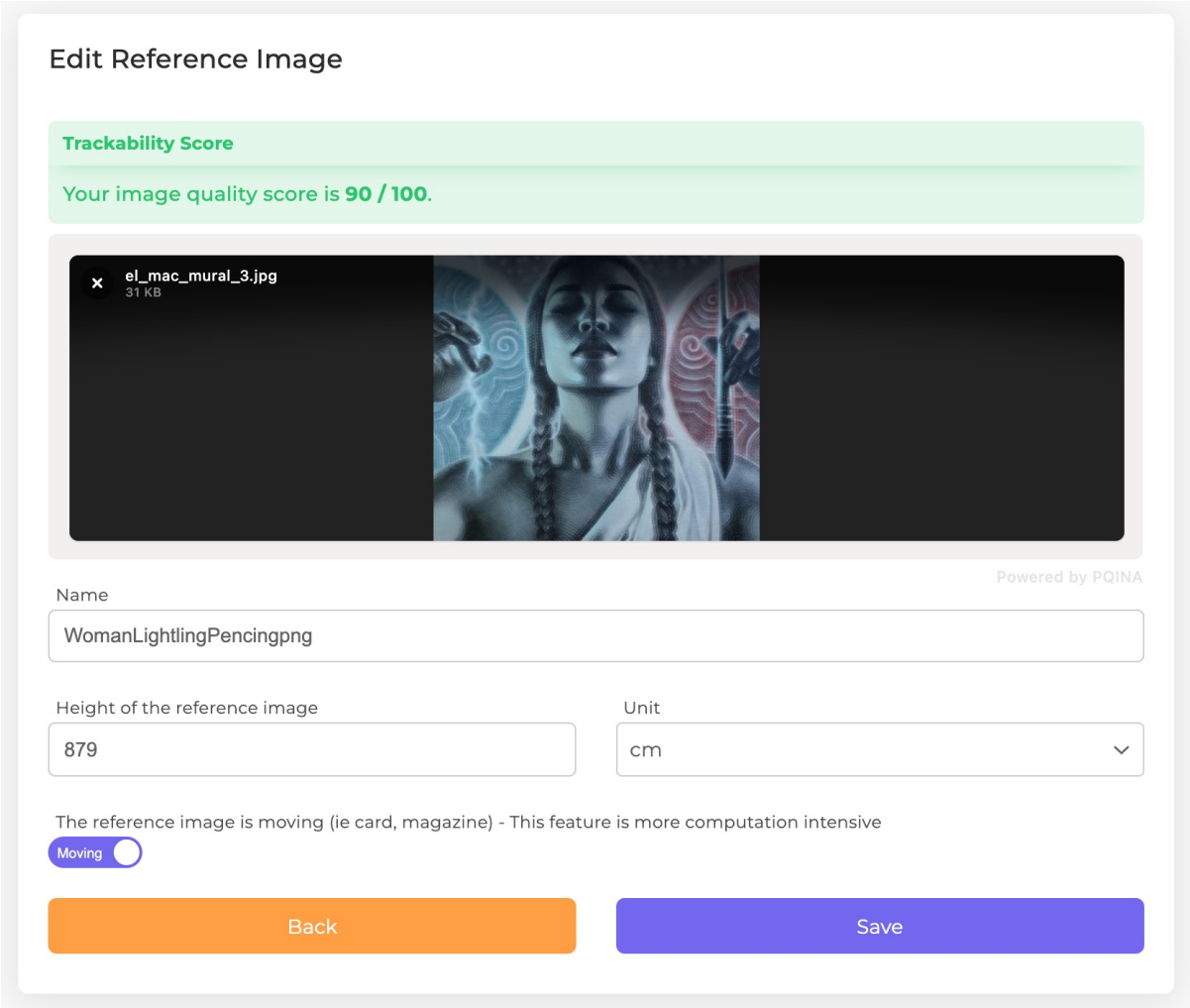
- ✓ “Equirectangular” (2:1 aspect ratio)
- ✓ JPEG or MP4 files with minimum resolution of 6000 x 3000 pixels
- ✓ Align camera height with users eye level
- ✓ Optionally, record audio ambient noises (per-concert/intermission chatters, birds if outside, etc.)



Break

Using reference images

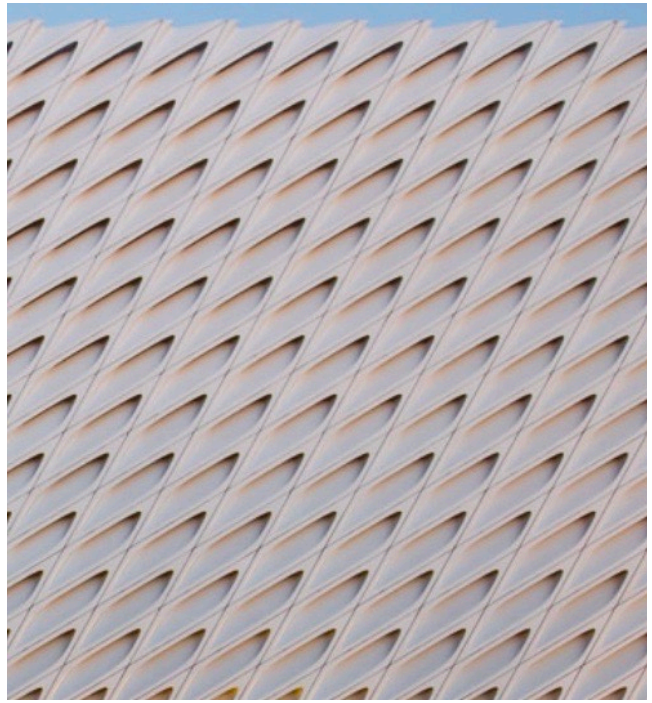
What makes a good reference image?



- Flat
- Fills at least 1/5th of the user camera view (for initial detection only)
- Feature rich and stable over time
- Asymmetrical (needs non ambiguous left/right/up/down)
- Avoid repeating patterns and reflections

Typical file size: 512x512, jpeg or png (high res does not impact performance)

- Non flat
- Changes over time (people, reflection)



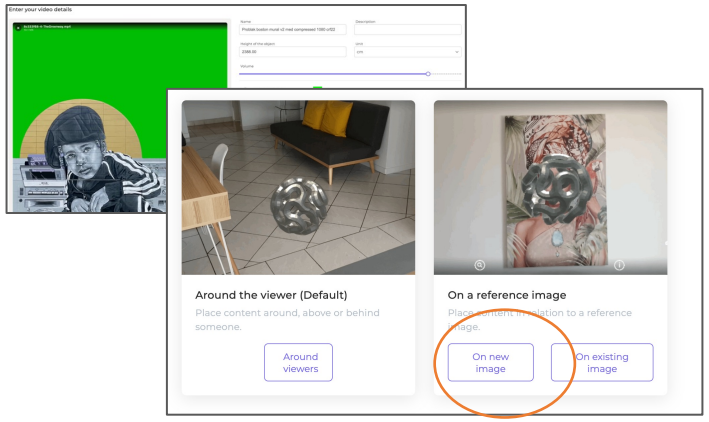
- Repeating pattern

- Flat and feature rich
- Non-symmetrical

1- Use a front facing image (not angled). Crop to extract reference image

6.78m

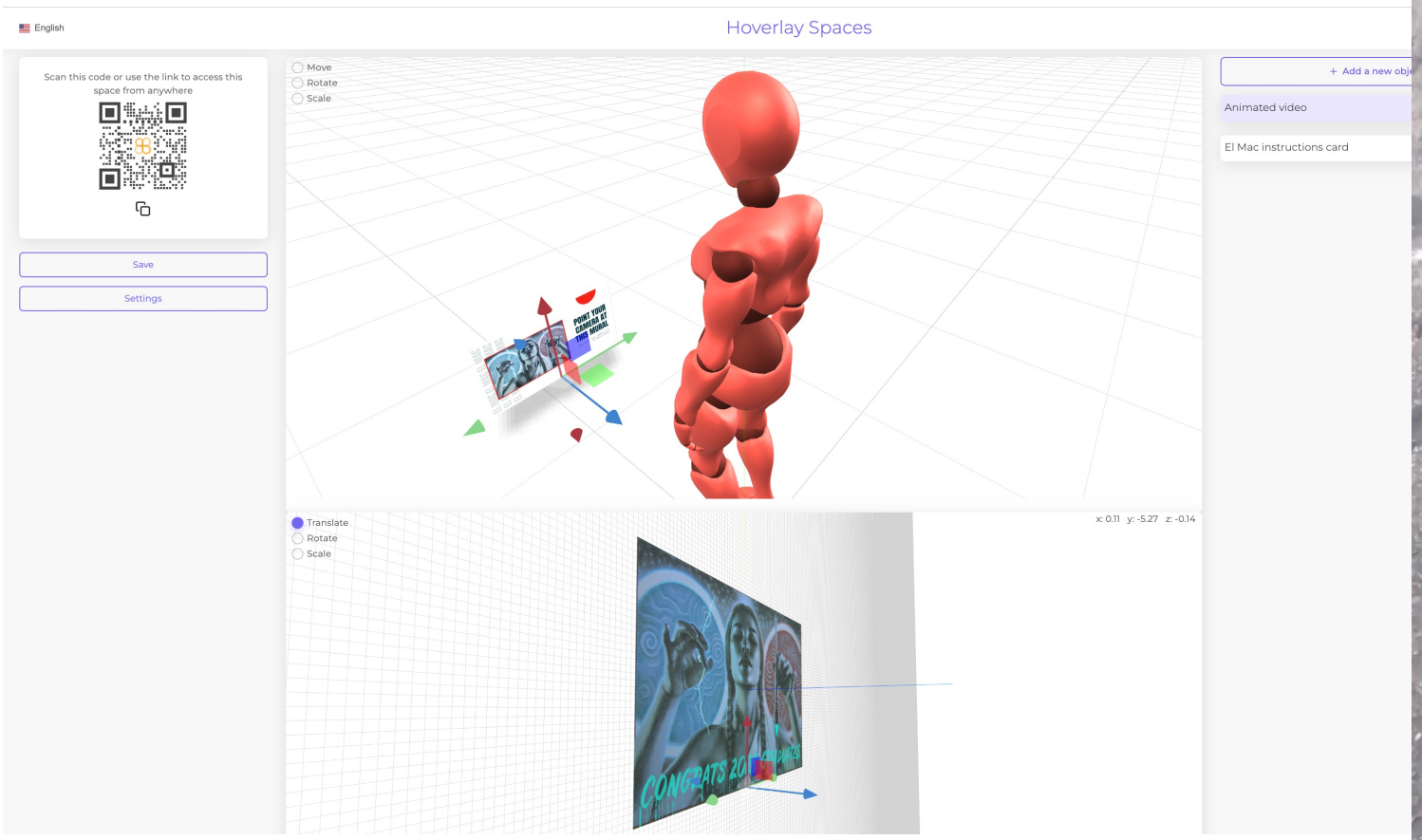
2- Calculate the real height of what is on your reference image

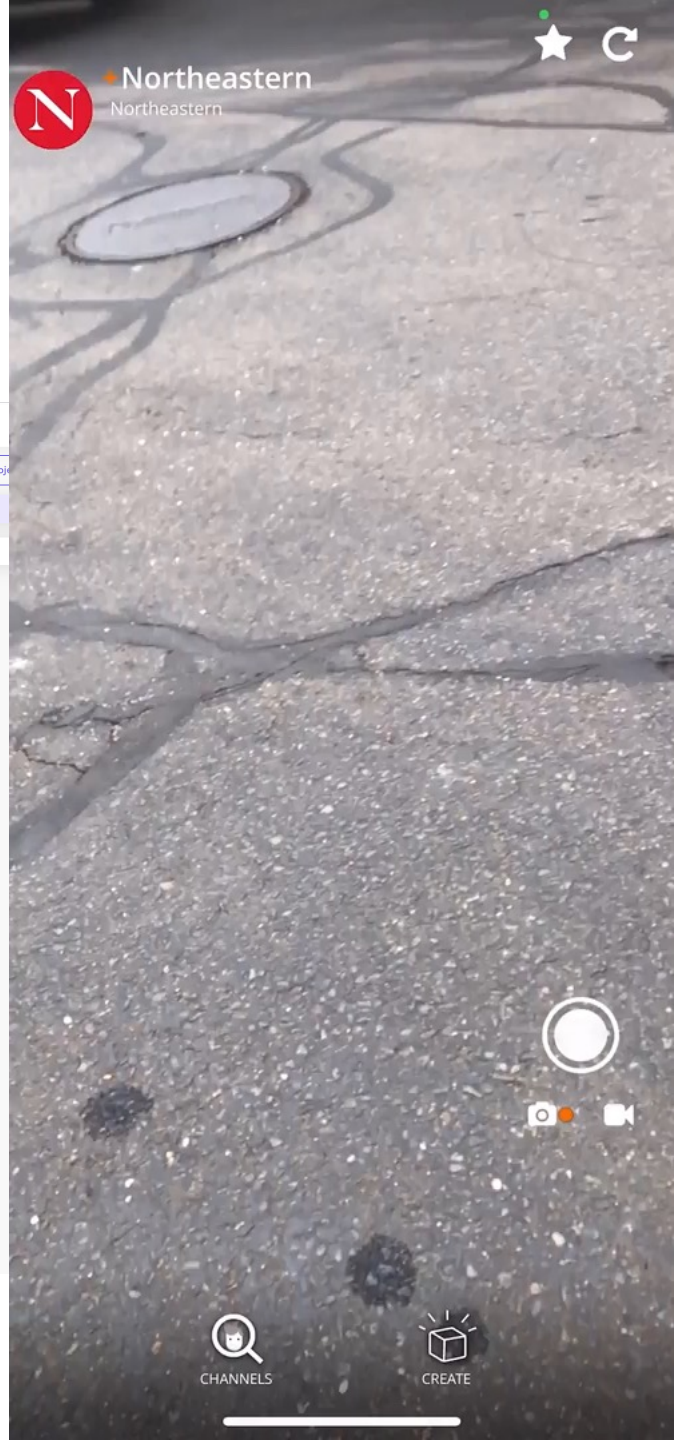


3- Add an object to a Hoverlay Space and choose On new image

4- Place object in relation to ref image

A Space can use multiple anchors





You can use multiple reference images in a Space

Creating with 3D models

Workflow - 3D models

Simple

sketchfab

monstermash

Paint 3D

Babylonjs Sandbox

Vectary

Blender

Advanced

GLB

1. PBR materials
2. Animations (including skins and blendshapes)
3. Support draco mesh compression

3D Models - Performance targets

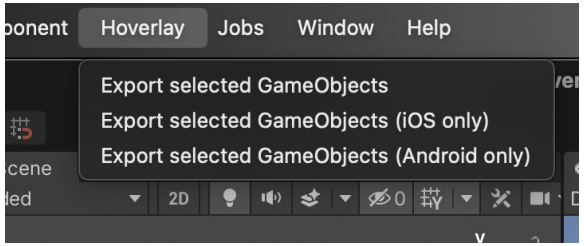
Hoverlay renders your content on a mobile device and loads your content on the user phone over a mobile network or wifi. When designing your content, you should aim at optimizing the size of your content to load and render well while remaining performant.

Below are some conservative targets to aim for when creating 3D content for a range of hardware. When in doubt, target models to the Mid-Range profile for a balance of fidelity and performance.

	Low End	Mid-Range	High End
Device	iPhone8, Galaxy S8	iPhoneX, Galaxy S10	iPhone 13, Galaxy S12
Polygon Count Maximum	25k	50k	150k
Texture Count Maximum	5	9	12
Main Texture (albedo/diffuse) Resolution Maximum	1024x1024	2048x2048	2048x2048
Secondary Texture Resolution Average	512x512	1024x1024	1024x1024

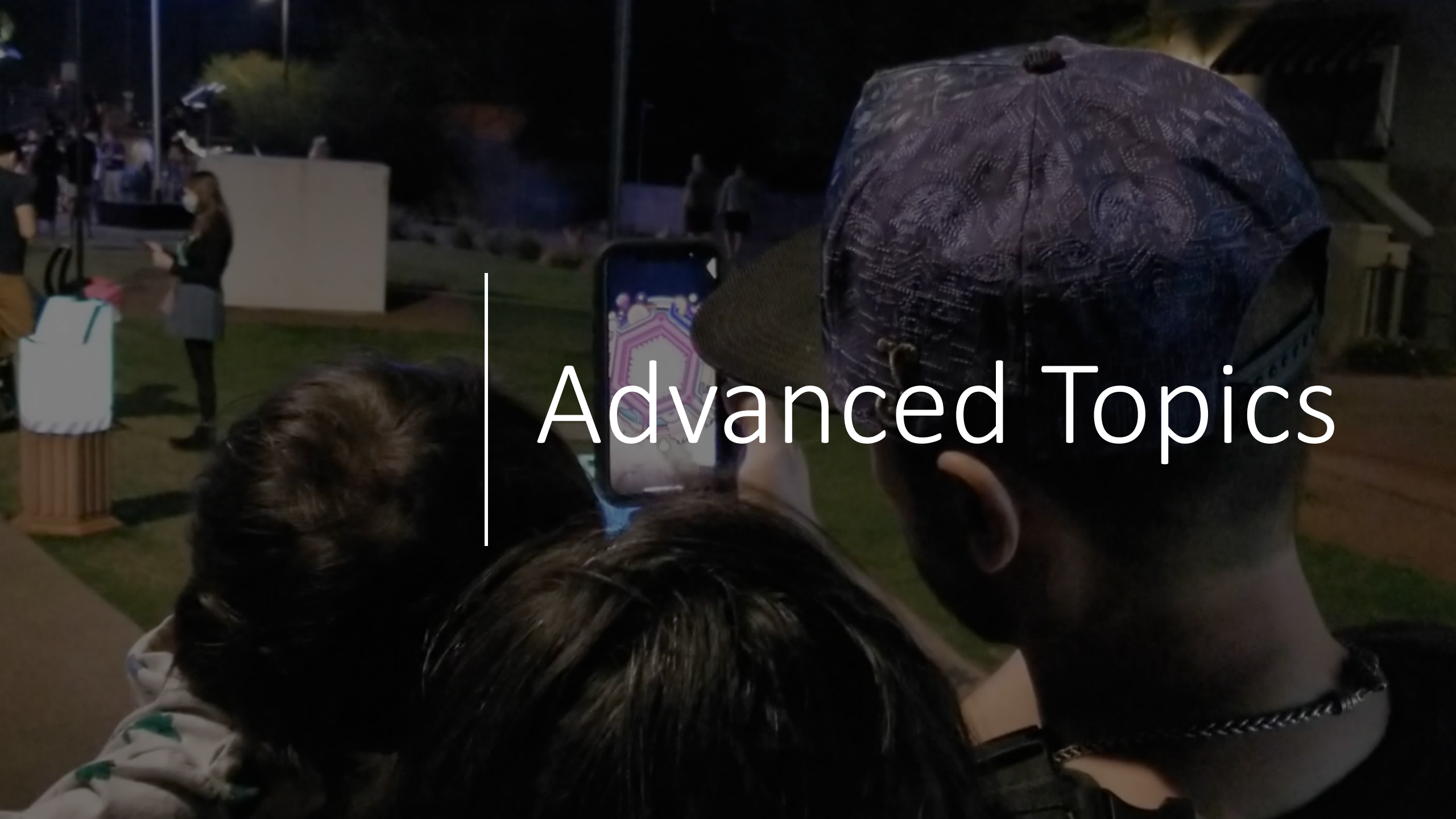
Importing Assets from Unity

- Hoverlay exporter package for:
  - 2020.3.34 LTS
  - Universal Rendering Pipeline required



- Supports
  - Shuriken Particle system (incl flipbooks, additive blendmode…)
  - Shadergraph (vertex displacement and animation)
  - Animations
  - Lights

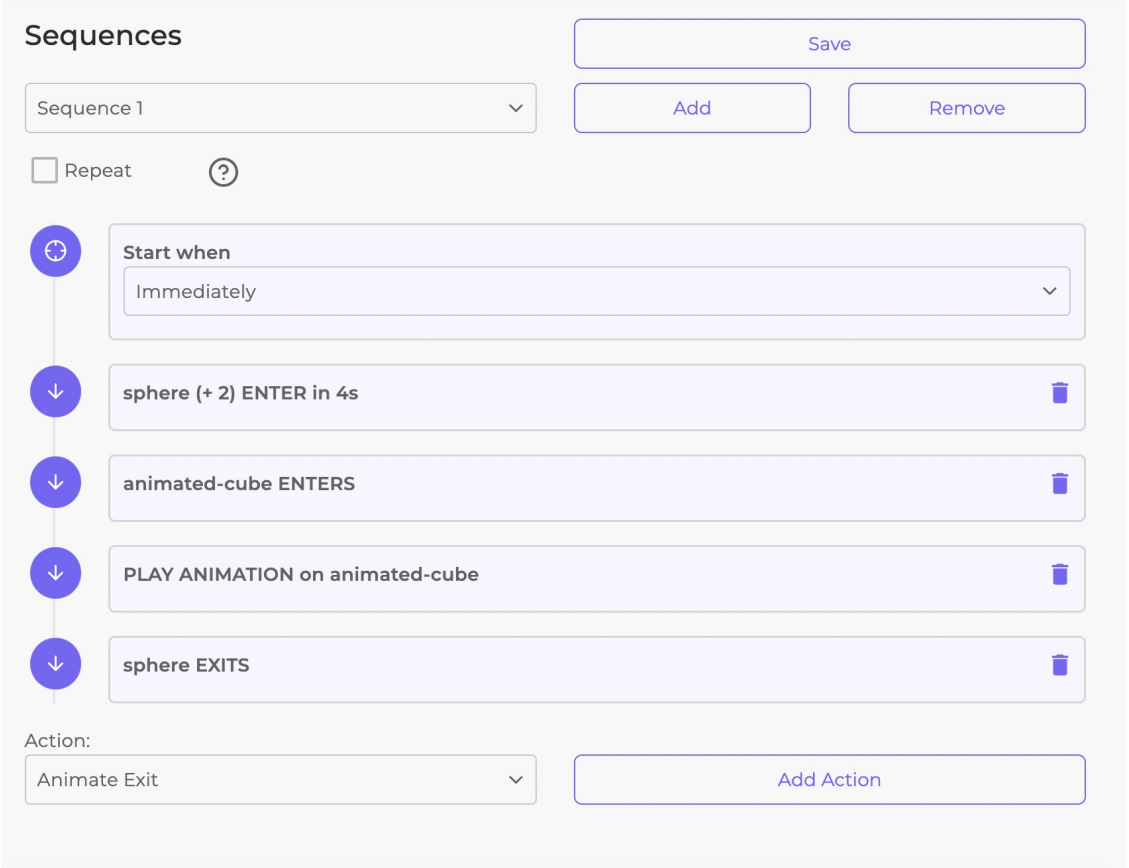
  - Note: no custom script (c#) nor camera can be imported



Advanced Topics

Storylines (beta)

- Enables you to easily sequence tasks
  - When objects **enter/exit**
  - When video or Audio **plays**
  - When 3D **animations start**
  - When to **Change space**
- Tasks run in a sequence
- A task can start after or with previous task
- Each sequence starts either either
  - Immediately
  - When an **image anchor is found**
  - When an **object is tapped**

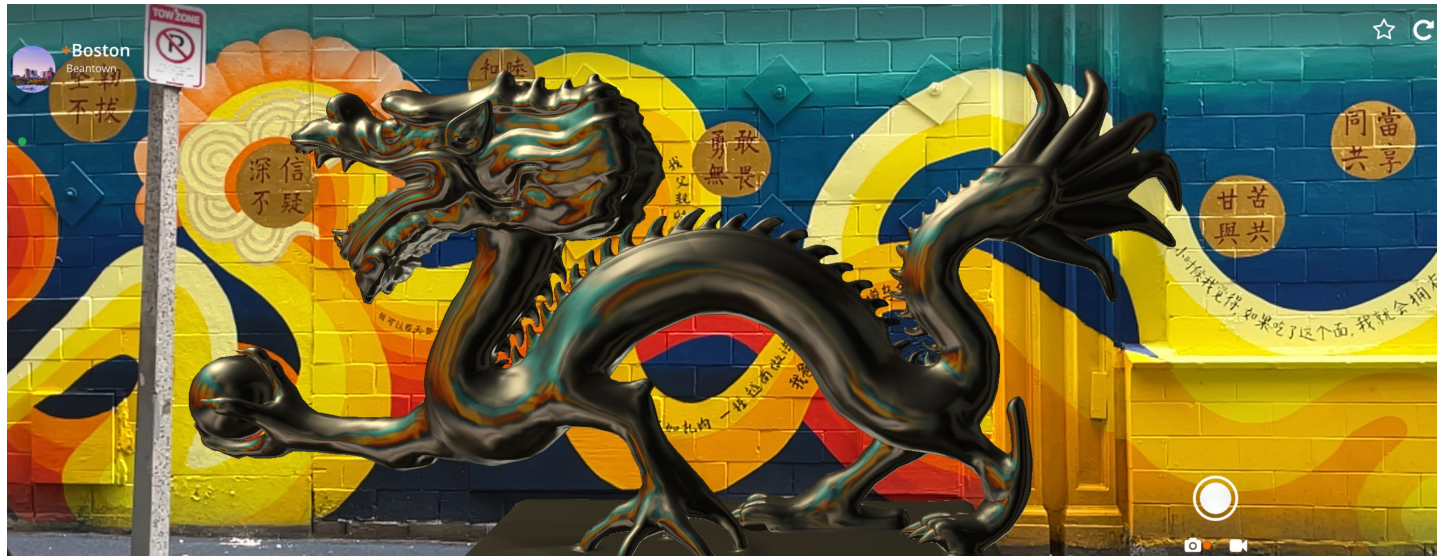


Advanced Built-in Features

- Adaptative Lighting: dynamic (adjusts to real light warmth and intensity)
- Plane detection
- Real-time reflection maps
- Occlusion
- Draco compression
  - compressing points, connectivity information, texture coordinates, color information, normals, and any other generic attributes associated with geometry

Real-time Environment Reflection

- Camera samples space and infers a ”believable” reflection map
- Reflection map is applied to reflective materials
- Automatic



Occlusion

- Optional (Space-> Settings-> Visual Effects)

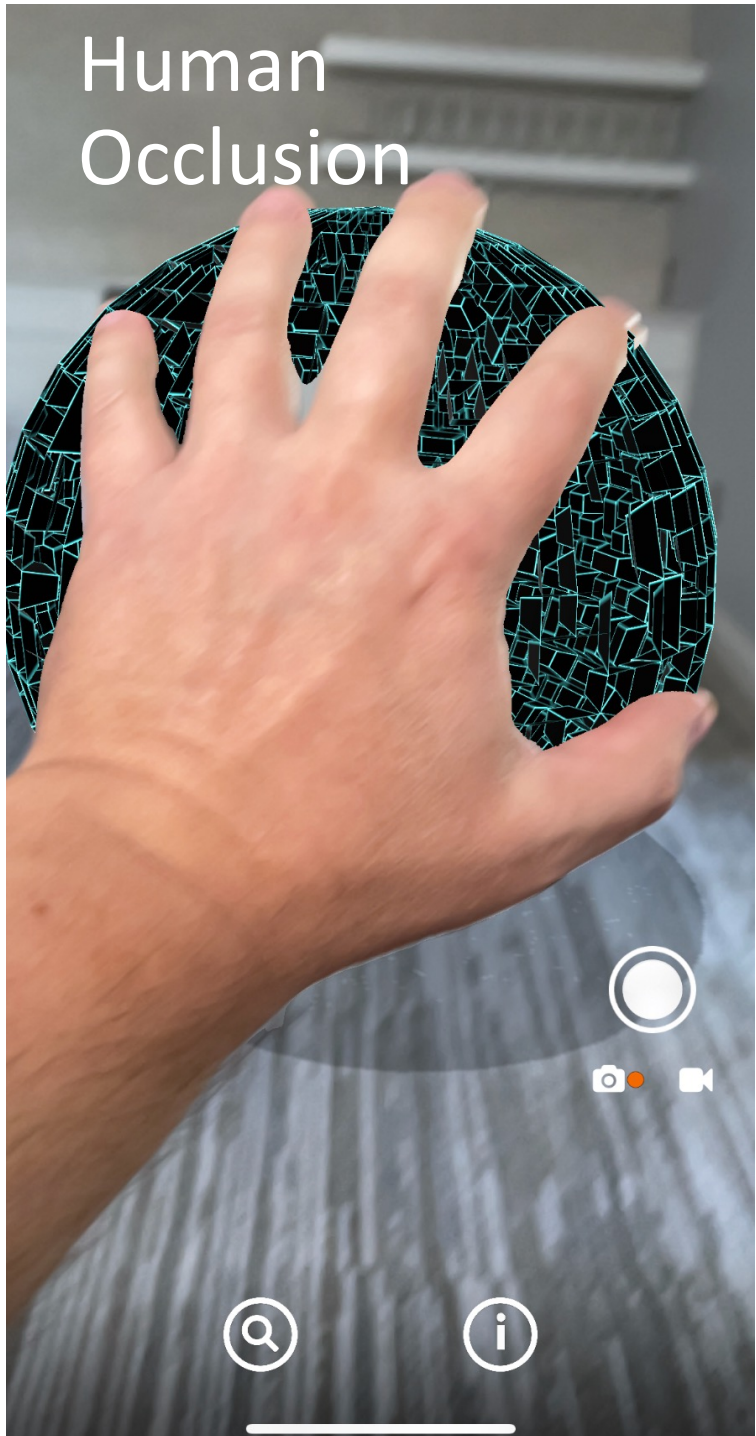
Should things in the environement hide virtual content? (environment occlusion)

On

Should people in the environement hide virtual content? (human occlusion)

On

- Only compatible on devices with the A12, A12x or the A13 bionic chips with iOS 13 and some Android capable phones. Activating this features might impact the general performance of the experience.



Other Considerations

- Keep each narrative short (environment, physical fatigue)
- AR literacy is still low. Provide Tips
- Evaluate cellular coverage at each location
  - Consider content tradeoff if low bandwidth (cut-out images vs 3d models)
  - Compress your photos, videos and audio (same as traditional web content)
  - Favor streaming over downloaded content
- Evaluate ambient conditions:
  - Low visual features (snow, uniform color walls, etc.)
  - noise level
- Users safety
  - Be aware of your AR experience surroundings
- Multi-language support
  - Provide multiple versions of audio content if multiple languages are needed
  - If needed, add a welcome page for users to select language
- Hearing impaired
  - Consider recording holograms using sign language, and use a separate language option