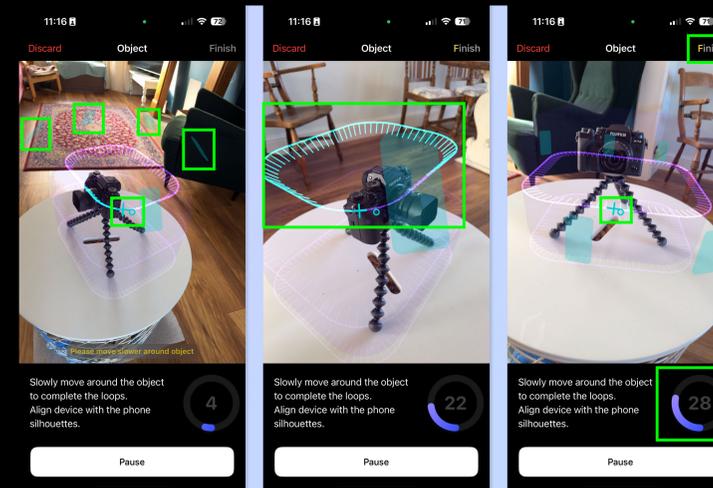




Polycam Advantages:
Lidar scanner
Assistive GUI
Suitable for large scenes (200 m2 in 15 minutes)



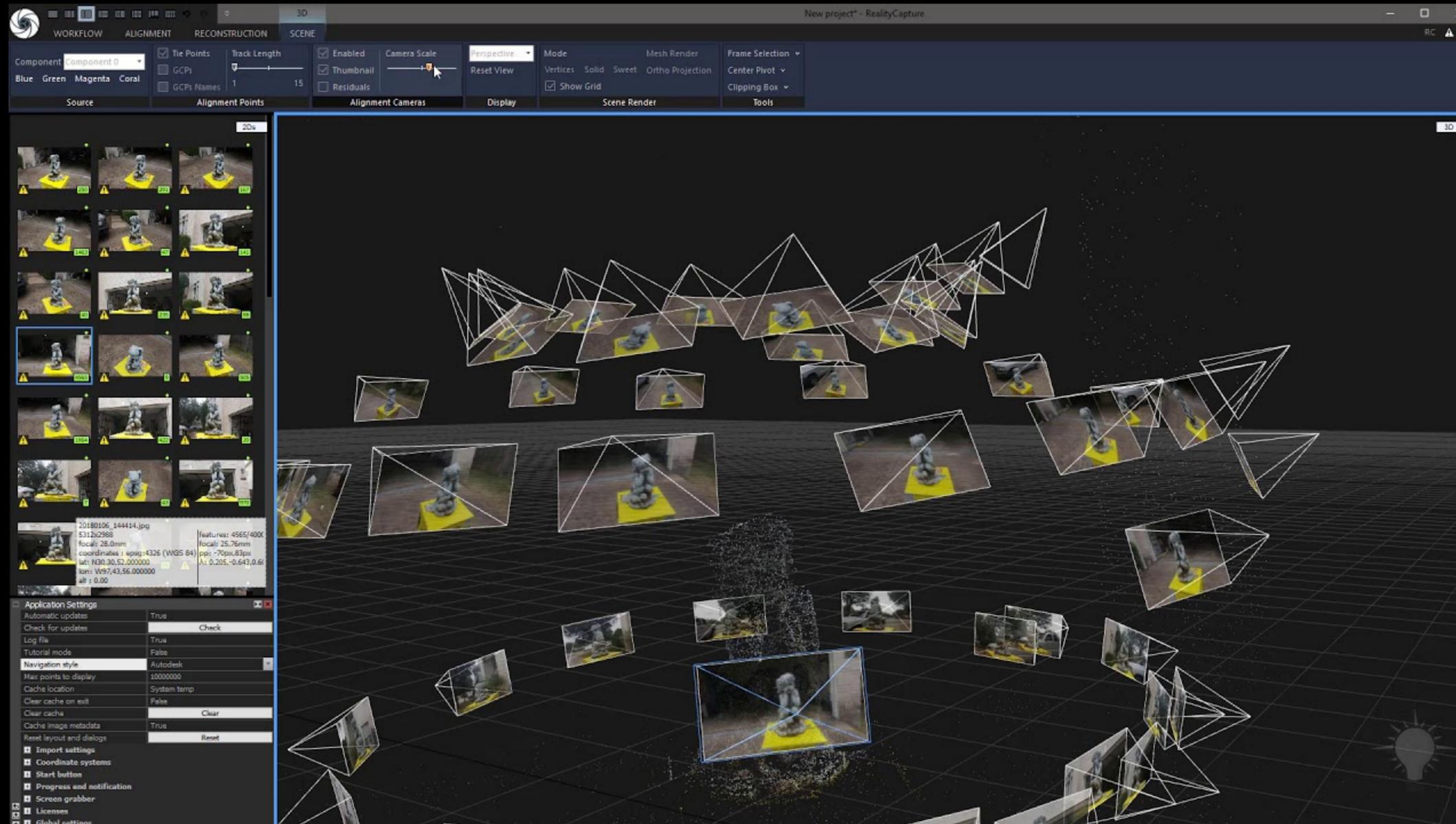
Phone Advantages:
Assistive GUI →
Camera Position Metadata
Cloud Services for processing



DSLR Advantages:
High Resolution
More focal length options

Data Types:
Image (jpg etc.)
Video (mp4 etc.)
Camera Position Meta data (.json, .xml)
Lidar data (.laz)

Rules of Thumb:
>100 photos or frames
High Resolution
No Digital Zoom
80% overlap
360 degree capture



Data Types:

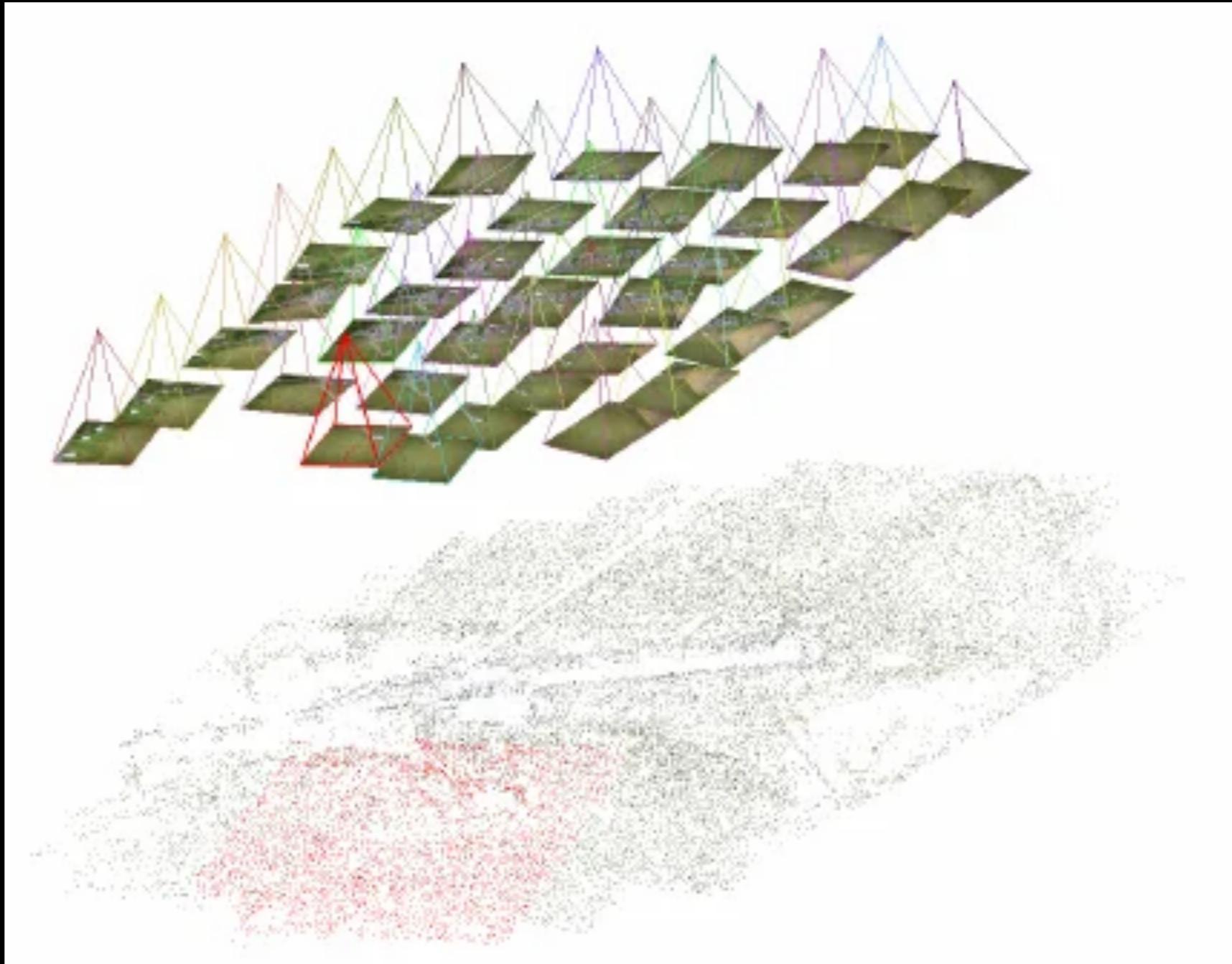
Camera Positions (.json, .xml, .bin)
Image (.bin, .jpg)

Software:

Agisoft Metashape (Mac, Win, Linux)
COLMAP (Mac, Win, Linux)
Meshroom (Mac, Win, Linux)
RealityCapture (Win)
CloudCompare (Mac, Win, Linux)

Rules of Thumb:

Delete any poor photos!



Process > Point Cloud Generation (Sparse)

Data Types:

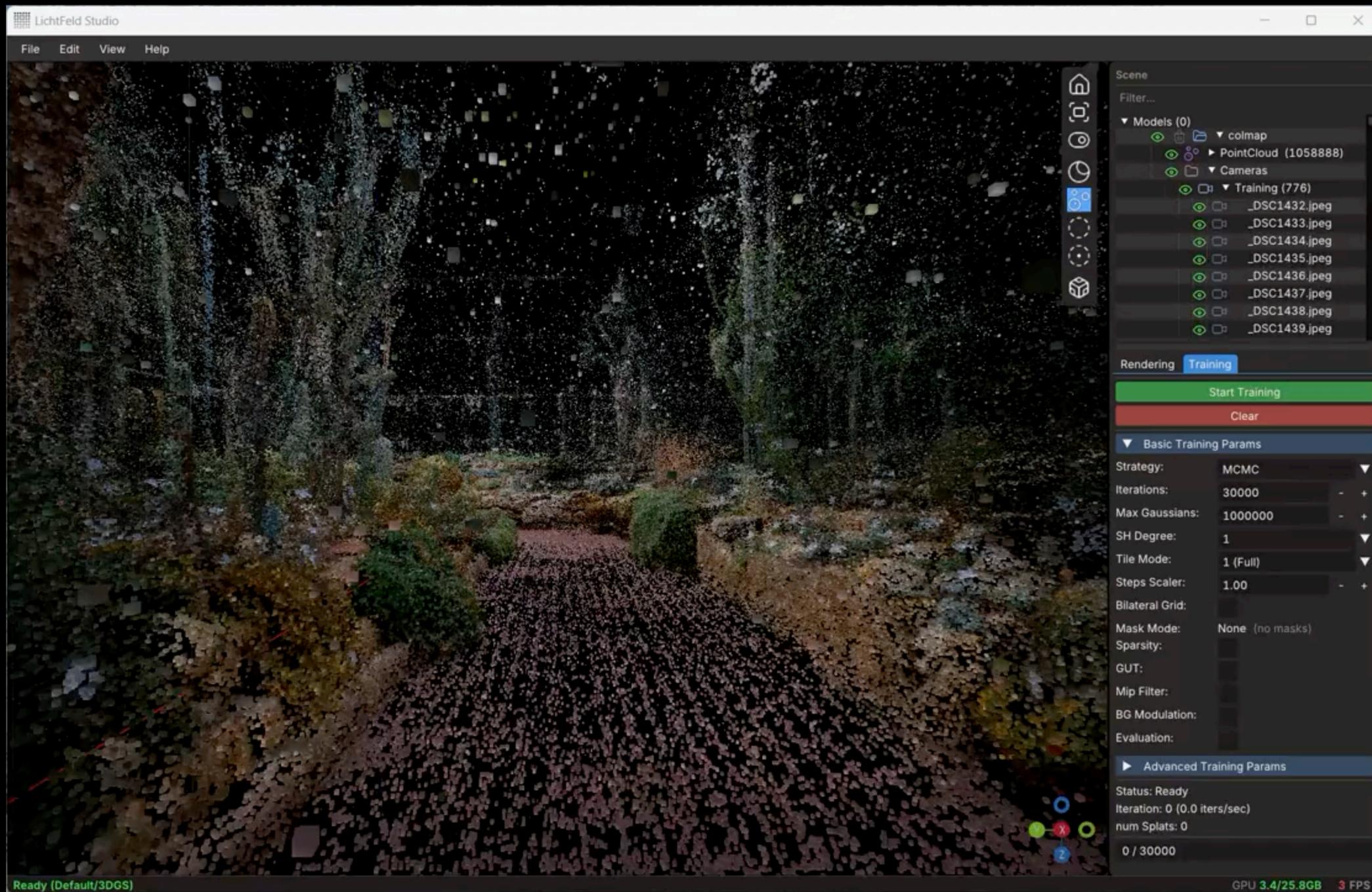
Camera Positions (.json, .xml, .bin)
Image (.bin, .jpg)
Point cloud (.ply, .npz, .pth, .ckpt)

Software:

Agisoft Metashape (Mac, Win, Linux)
COLMAP (Mac, Win, Linux)
Meshroom (Mac, Win, Linux)
RealityCapture (Win)
CloudCompare (Mac, Win, Linux)

Rules of Thumb:

Remove points landing outside of scene
Small object / tabletop: 20k – 200k points
Room / indoor scene: 50k – 500k
Building / small outdoor scene: 100k – 1M



Data Types:
Guassian Scene (.ply, .splat, .ksplat, .bin)

Software:
LichtFeld Studio (Linux, Win)
gsplat (Linux, Mac, Win)
Nerfstudio (Linux, Mac, Win)
OpenSplat (Linux, Mac, Win)

Rules of Thumb:
1–3 hours on RTX 4000

1Ds

- Images 115 images
- Control points empty
- Component 0 (1) 115/115 cams, 4 models
- Camera poses 115 registered
- original 2.4M tris, singleton
- Model parts singleton, enabled
- Model Textures 1 x (4096x4096)
- Color Layer 32-bit BGRA, 1 x (4096x4096)

3D

Selected model(s)

Name	original
Triangle count	2.4M (2356686)
Vertex count	1.2M (1178345)
Part count	1

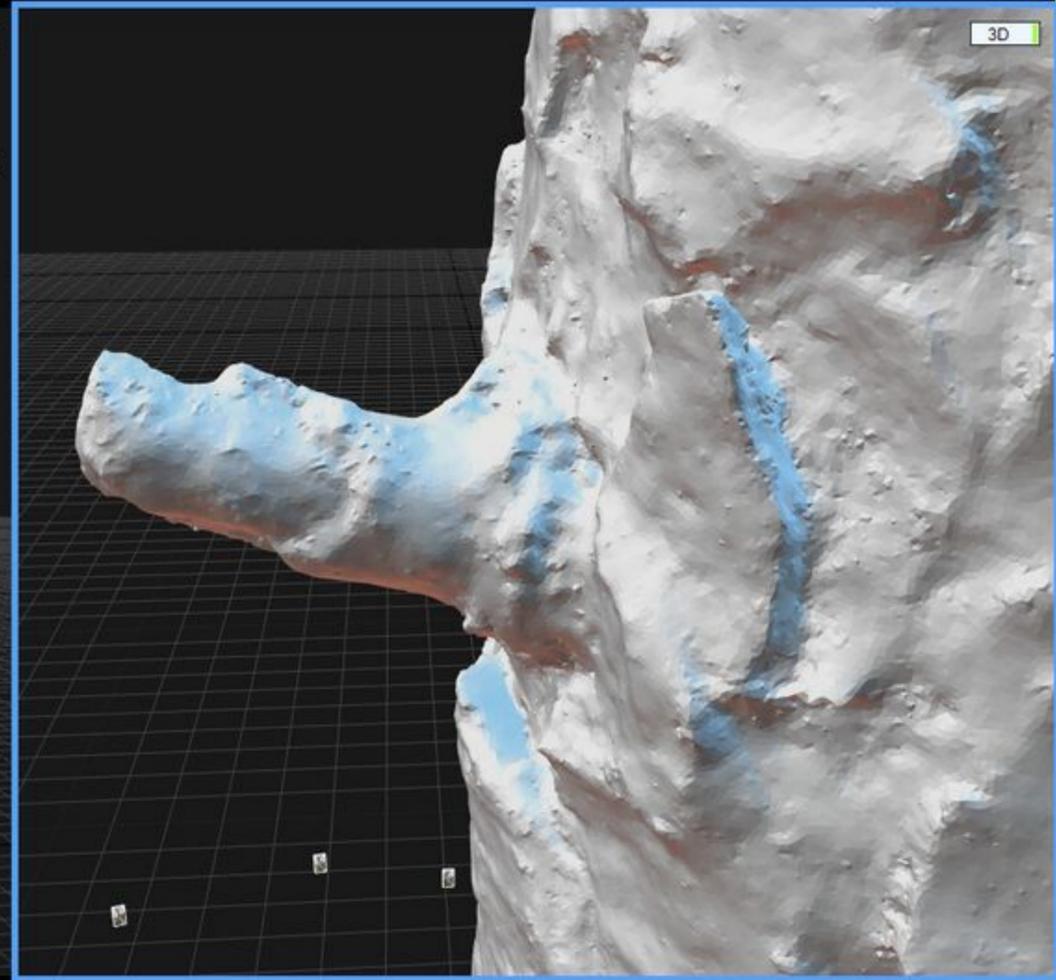
Texturing

Coloring style	Texturing-based
Unwrapping style	Maximal texture count
Count of textures	1
Texture resolution	4096 x 4096
Chart gutter size	2 texels
Texture utilization (with gutter)	88%
Optimal texel size	0.005832 units per texel
Texture quality	100%
Texel size	0.005810 units per texel

Report

Settings

Quality level	Normal
Image downscale factor for depth maps	2



Data Types:

Mesh Model (.stl, .obj)

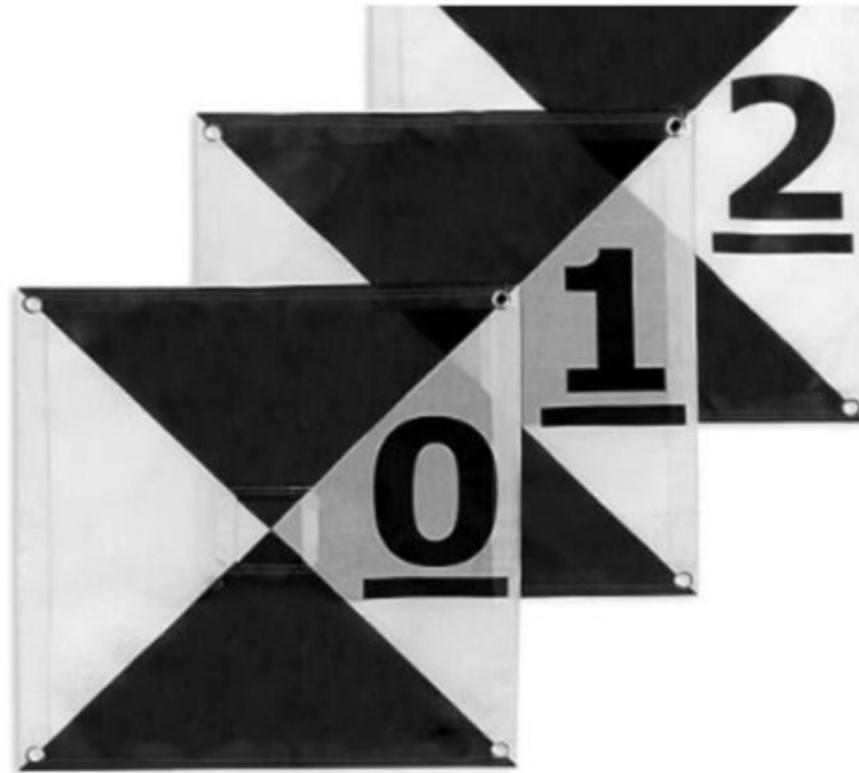
Rules of Thumb:

Repair meshes to be “watertight”



Software
Blender
SuperSplat (web)
Three.js (web)
Unity
Unreal Engine

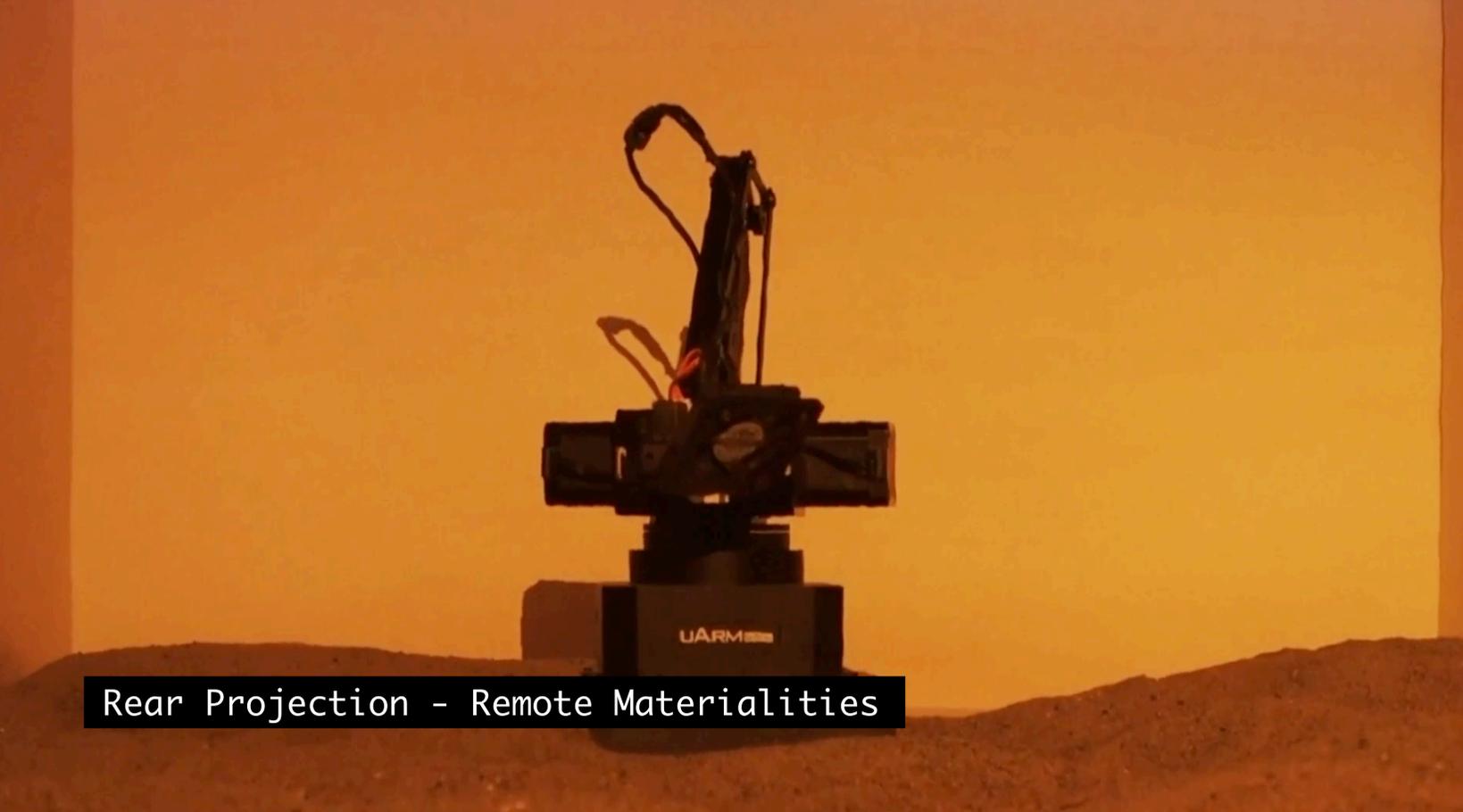
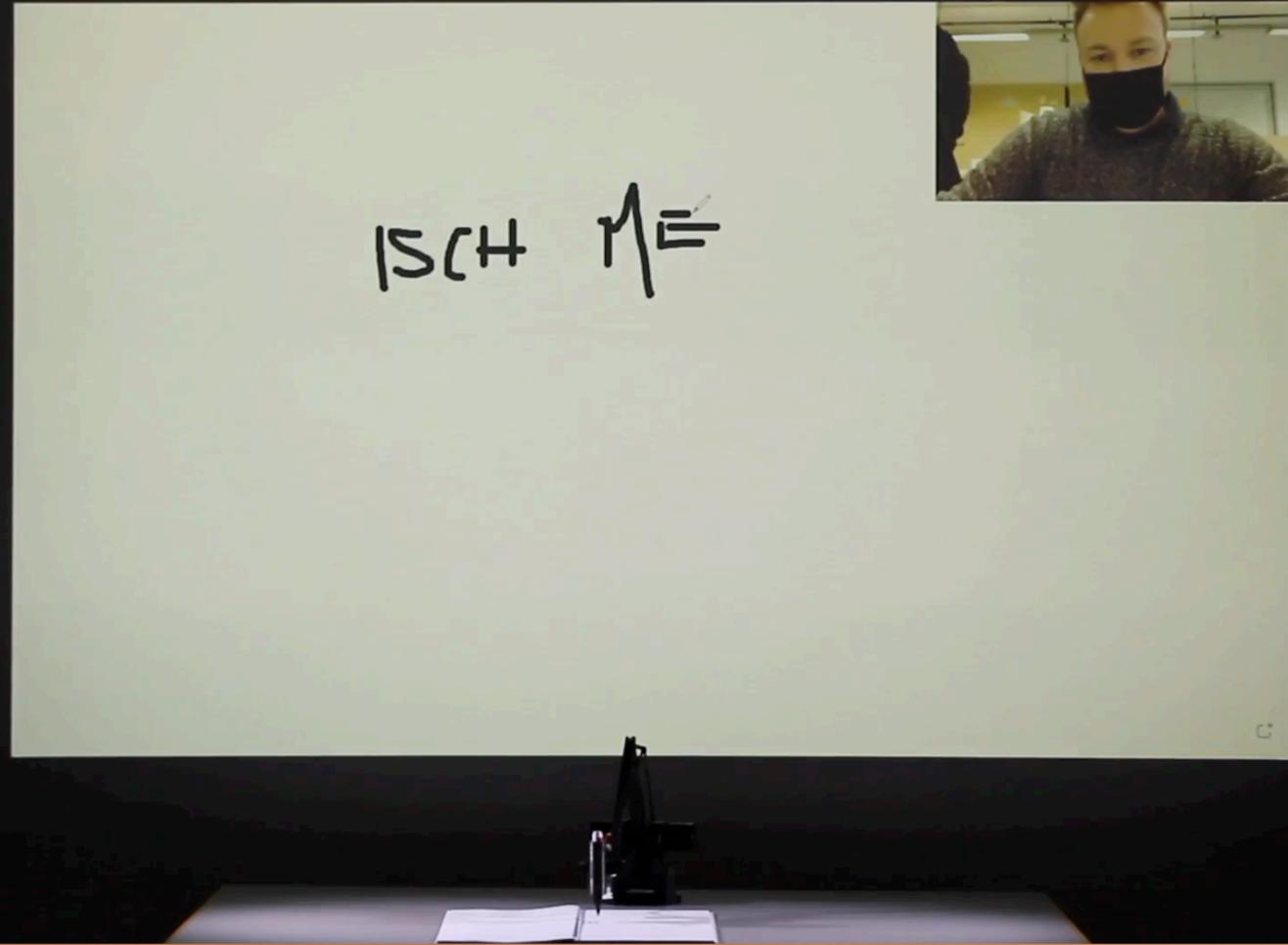
File Types:
.splat
.ksplat (web)



Markers and Ground Control Points (GCPs)



Challenges:
Turbidity
Lighting
Waterproofing / limited device choice
Waves and Tide



Rear Projection - Remote Materialities

