glTF 2.0 Export in InstantUV
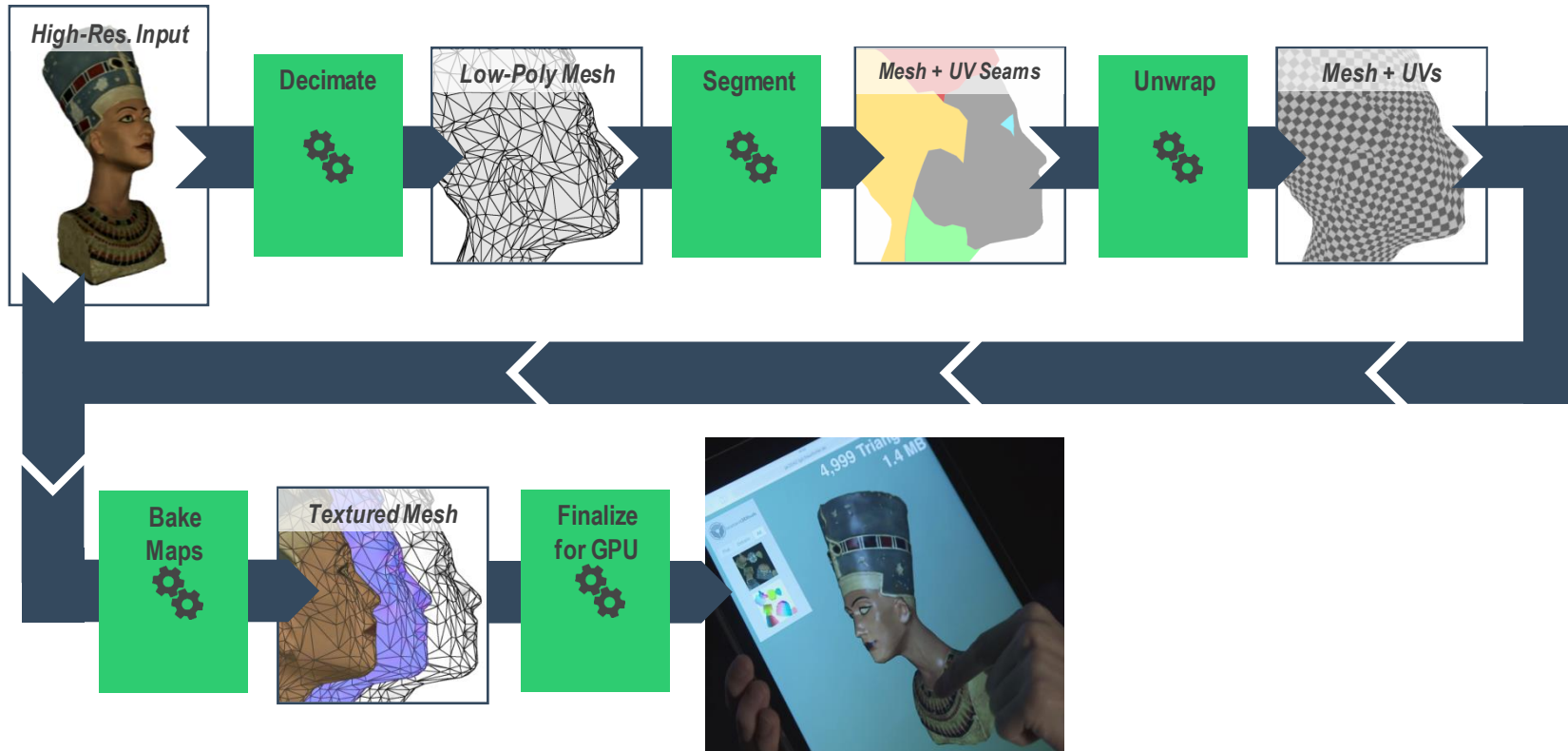
Max Limper | Fraunhofer IGD

@mlimper_cg

Context: InstantUV 3D Scan Optimization

Original 3D Scan

High-Res. Input

Decimate

Low-Poly Mesh

Segment

Mesh + UV Seams

Unwrap

Mesh + UVs

Bake Maps

Textured Mesh

Finalize for GPU

4,999 Triangles 1.4 MB

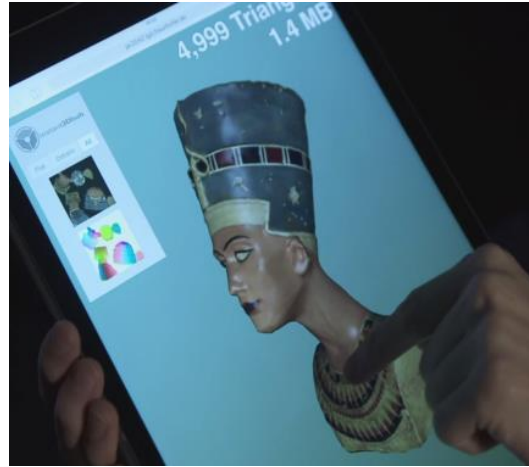Web-ready 3D Model

Export Format?

- **Must support different texture maps**
  - Albedo
  - Normals
  - Occlusion
  - Metallic
  - Roughness

- **Must be compact & fast to load (min. processing)**

- **Must align well with Web technologies**

- **Must be open (well-specified, no proprietary SDK)**

Web-ready 3D Model
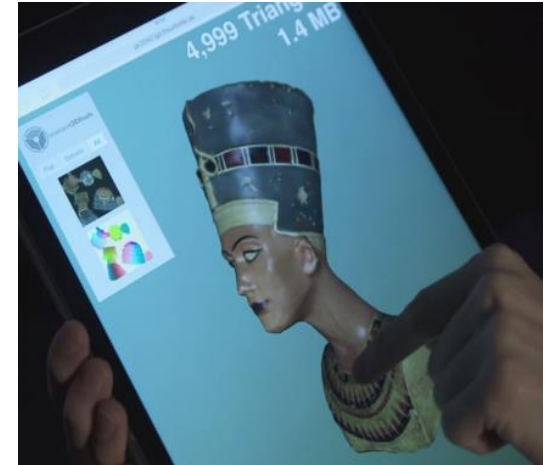
glTF 2.0 – Choose Your Renderer

Web-ready 3D Model
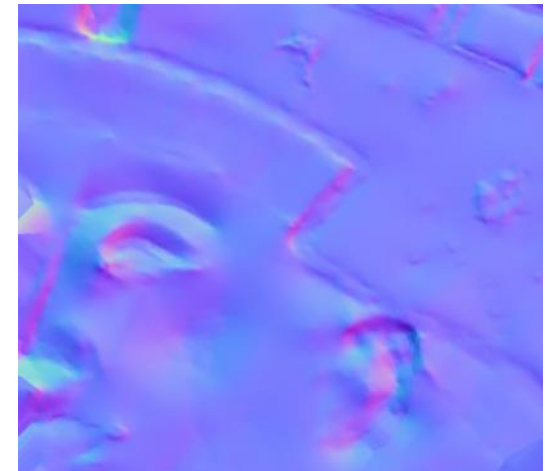
The Devil is in the Details

- **"Ready to Render"** = Everything must be well-defined

- **Example: Tangent Space Normal Maps**
  - UV Origin?
  - Tangent Spaces?
  - Handedness?
  - Possible Flipping of Components from Texture?

- **glTF specifies <u>everything</u> (in constrast to OBJ)!**

Web-ready 3D Model

Example: Tangent Space Normal Maps

InstantUV Export to Sketchfab, Default Parameters, MatCap Rendering

**OBJ Version
(Y Flipped)**

glTF Version

Takeaways

- **glTF 2.0 is our choice for ready-to-render 3D export**

- **Great progress and massive adaption with glTF 2.0**

- **Enabled us to serve different renderers without much effort**