gltf Webinar | Spring 2022
How to use the new Khronos glTF Asset Auditor
April 4, 2023
Today’s Presenters

Mike Festa
SuperDNA 3D Lab

Eric Chadwick
Wayfair
Webinar Agenda

- Origins
  - 3D Commerce at Khronos
  - Asset Creation Task Sub-Group
  - Asset Creation Guidelines - Best Practices
- Initial Requirements
- Checks Available
- glTF Asset Auditor in Action - Demo
- Under the hood - Code Overview
- Command Line for Pipeline Integration - Demo
- Future Development and Feature Requests
- Call to Action - Submit your Audit Profiles
- Q&A
Mike Festa - About me:
  ○ Software Developer / Entrepreneur
  ○ Founded Wayfair Next in 2015
  ○ Founded 3XR in 2019
  ○ 3D Commerce Vice Chair
  ○ Latest projects:
    ■ 3D Model Foundry - 3dmf.com
    ■ Paint Fiesta - AR/VR game
Eric Chadwick - About me:

- Real-time 3D and rendering pipelines
- 20 years experience in game development
- Regular contributor in glTF working groups
  - 3D Commerce
  - Asset Creation - Co-Chair
  - 3D Formats - glTF
  - PBR - materials
  - Tooling - tutorials, tools
3D Commerce Working Group

Coalition of

**Retailers and Tech Companies**

using glTF for

**Product Visualization**

We meet every **Thursday**
11am-12pm ET (8-9am Pacific)
Asset Creation Task Sub-Group (TSG)

Build Once - Use Anywhere

Streamlining content creation, bringing consistency to 3d representations of real-world products

Developed the Asset Creation Guidelines in 2020

Wanted an automated tool to check asset properties against requirements by use case
Asset Creation Guidelines

Best practices for creating Real-time 3D models of Products


Chapters:

- File Formats and Asset Structure
- Coordinate Systems and Scale
- Geometry
- UV Coordinates
- Materials
- Textures
- Rendering & Lighting
- Levels of Detail
- Publishing Targets
- glTF & USDZ

Authors

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Beau Perschall, TurboSquid
Thomas Huang, Target
Jagdishwar Jaman Jyothi, Target
Eric Chadwick, Wayfair
glTF Asset Auditor Requirements

Stand-alone Webpage and Command Line Interface

Runs the glTF Validator first

Calculate additional model properties that are not available in the glTF JSON info

Uses an Audit Profile to select which tests are run and the values that PASS or FAIL
<table>
<thead>
<tr>
<th>Checks Available</th>
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<tbody>
<tr>
<td><strong>Performance</strong></td>
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<tr>
<td>File Size</td>
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<tr>
<td>Triangle Count</td>
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<td>Material Count</td>
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<tr>
<td>Node Count</td>
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<tr>
<td>Mesh Count</td>
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<tr>
<td>Primitive Count</td>
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<tr>
<td><strong>Size and Position</strong></td>
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<tr>
<td>Clean Origin for Root Node</td>
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<td>Overall Dimensions - does it fit in the app?</td>
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<tr>
<td>Product Dimensions - does it match the product?</td>
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<tr>
<td><strong>Textures</strong></td>
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<tr>
<td>PBR Safe Colors</td>
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<tr>
<td>Texture Map Resolution Size</td>
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<tr>
<td>Texture Map Resolution is Power of 2</td>
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<tr>
<td>Texture Map Resolution is Quadratic</td>
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<tr>
<td>Texel Density (pixels per meter)</td>
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<td><strong>UV Layout</strong></td>
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<tr>
<td>0-1 UV Texture Space</td>
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<tr>
<td>Inverted UVs</td>
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<td>UV Overlaps</td>
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<td>UV Gutter Width</td>
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<tr>
<td><strong>Edges</strong></td>
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<tr>
<td>Beveled Edges (edges &gt; 90°)</td>
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<tr>
<td>Non-Manifold Edges</td>
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</tbody>
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Live Demo

Khronos: [https://www.khronos.org/gltf/gltf-asset-auditor/](https://www.khronos.org/gltf/gltf-asset-auditor/)

Alternative Implementation: [https://www.3dmf.com/tools/gltf-asset-auditor](https://www.3dmf.com/tools/gltf-asset-auditor)

Welcome to the Khronos glTF Asset Auditor!

This is a web-based example implementation of the gltf-audit-gl. It allows you to quickly check a gltf file for a specific use case, defined by an audit profile. Use cases could include publishing to a specific retailer or advertising platform. The Khronos Group invites companies to provide a link to their audit profiles for us to publish.

You can use the same npm package in your own Node or browser-based project for automated 3D asset validation. See [https://github.com/KhronosGroup/gltf-asset-auditor/tree/main/gl-t-example](https://github.com/KhronosGroup/gltf-asset-auditor/tree/main/gl-t-example).

1. Audit Profile (optional - recommended used by default)

The 3D Commerce recommended values are based on the [Asset Creation Guidelines](https://www.khronos.org/gltf/gltf-asset-auditor/). You can edit these settings and download a json file for future use.

2. Product Dimensions (optional)

The dimensions of the product can be entered here and will be checked within the tolerance threshold specified by the schema.
Code on GitHub and NPM

https://github.com/KhronosGroup/gltf-asset-auditor
https://www.npmjs.com/package/@khronosgroup/gltf-asset-auditor

- cli-example
  - Node.js command line application
- src
  - Typescript code, the glTF-Asset-Auditor internals
- tests
  - Unit tests to check all of the individual features
- web-example
  - Javascript single-page-application, as seen in the demo
# Command Line / Pipeline Integration - Demo

```bash
-- glTF Asset Auditor --
* Version: 1.0.2
==== Audit Report ====
glTF Validator: PASS | Errors: 0, Warnings: 0, Hints: 4, Info: 0
   File Size: PASS | 8kb <= 5,120kb
   Triangle Count: PASS | 12 <= 100,000
   Material Count: PASS | 1 <= 5
   Node Count: PASS | 1 <= 5
   Mesh Count: PASS | 1 <= 5
   Primitive Count: PASS | 1 <= 5
   Root Node has Clean Transform: PASS
   Require Beveled Edges: NOT TESTED | Not Computed (slow)
   Require Manifold Edges: NOT TESTED | Not Computed (slow)
   Overall Dimensions: PASS | (L:2.00 x W:2.00 x H:2.00)
   Dimensions Match Product: NOT TESTED | No Product Info Loaded
   Maximum HSV color value for PBR safe colors: PASS | 240 <= 240
   Minimum HSV color value for PBR safe colors: PASS | 30 >= 30
   Texture Height <= Max: PASS | 256 <= 256
   Texture Height >= Min: FAIL | 256 < 512
   Texture Width <= Max: PASS | 256 <= 256
   Texture Width >= Min: FAIL | 256 < 512
   Texture Dimensions are Powers of 2: PASS
   Texture Dimensions are Square (width=height): NOT TESTED | true
   Maximum Pixels per Meter: PASS | 1,024 <= 100,000
   Minimum Pixels per Meter: NOT TESTED | 1,024
   UVs in 0 to 1 Range: PASS | u: 0.13 to 0.88, v: 0.00 to 1.00
   Inverted UVs: PASS | 0
   Overlapping UVs: PASS | 0
   UV Gutter Wide Enough: NOT TESTED |
```

Total Time: 0.092 seconds.
```
Future Development and Feature Requests

Version 2 planned for this summer

Known Issues - support for draco compression

Requested Features
  - Additional file types
  - UV issue visualization

Share your ideas! - Open an Issue or Submit an Audit Profile at
  https://github.com/KhronosGroup/gltf-asset-auditor/issues
Call to Action

We are collecting Audit Profiles for various use cases. Retailers, solution providers, game developers, ad-tech agencies, and anyone else using glTF models should create a Custom Audit Profile that meets their standards.

Content Creators can use these Audit Profiles to ensure their deliverables will meet all of the needs so that a model can be Built Once and Used Anywhere.

HOW TO: https://github.com/KhronosGroup/gltf-asset-auditor/issues/1

We want YOU to Send us your Audit Profiles!
Resources

➔ Asset Auditor Tool: https://www.khronos.org/gltf/gltf-asset-auditor/
➔ Asset Auditor Blog: https://khr.io/zv
➔ glTF homepage: https://www.khronos.org/gltf
➔ glTF on GitHub: https://github.com/KhronosGroup/glTF
➔ Stack Overflow: https://stackoverflow.com/questions/tagged/gltf
➔ Khronos Discord: https://www.khr.io/khrdiscord
Upcoming Khronos Group Events
www.khronosgroup.org/events

➔ Khronos at AWE – May 31 – June 2nd
➔ Join our next glTF Meetup!
  ◆ If you are interested in presenting at the April glTF meetup, please contact events@khronosgroup.org
A recording of this presentation and the slides will be available shortly on the Khronos Group website at

www.khronos.org/events/gltf-meetup4

For more information on glTF and links to online resources, please visit

www.khronos.org/gltf