glTF Webinar | Spring 2022

How to use the new Khronos glTF Asset Auditor

April 4, 2023

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Today's Presenters

Mike Festa
SuperDNA 3D Lab

Eric Chadwick
Wayfair

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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**

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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

Mike Festa
CEO, Festa Tech LLC
CSO, Super DNA 3D Lab

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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

Eric Chadwick
Staff Technical Artist
Wayfair

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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)

CHAIR:
Shrenik Sadalgi
Wayfair
LinkedIn

Secretary:
Leonard Daly
Independent
LinkedIn

Vice Chair:
Mike Festa
SuperDNA 3D Lab
LinkedIn

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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

Co-Chair:
Eric Chadwick
Wayfair

Co-Chair:
Tyler Lindberg
Snapchat
LinkedIn

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Asset Creation Guidelines

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

https://github.com/KhronosGroup/3DC-Asset-Creation/blob/main/asset-creation-guidelines/RealtimeAssetCreationGuidelines.md

Chapters:

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

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Beau Perschall, TurboSquid
Thomas Huang, Target
Jagdishwar Jaman Jyothi, Target
Eric Chadwick, Wayfair

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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

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Checks Available

Performance

File Size

Triangle Count

Material Count

Node Count

Mesh Count

Primitive Count

UV Layout

0-1 UV Texture Space

Inverted UVs

UV Overlaps

UV Gutter Width

Size and Position

Clean Origin for Root Node

Overall Dimensions - does it fit in the app?

Product Dimensions - does it match the product?

Textures

PBR Safe Colors

Texture Map Resolution Size

Texture Map Resolution is Power of 2

Texture Map Resolution is Quadratic

Texel Density (pixels per meter)

Edges

Beveled Edges (edges > 90°)

Non-Manifold Edges

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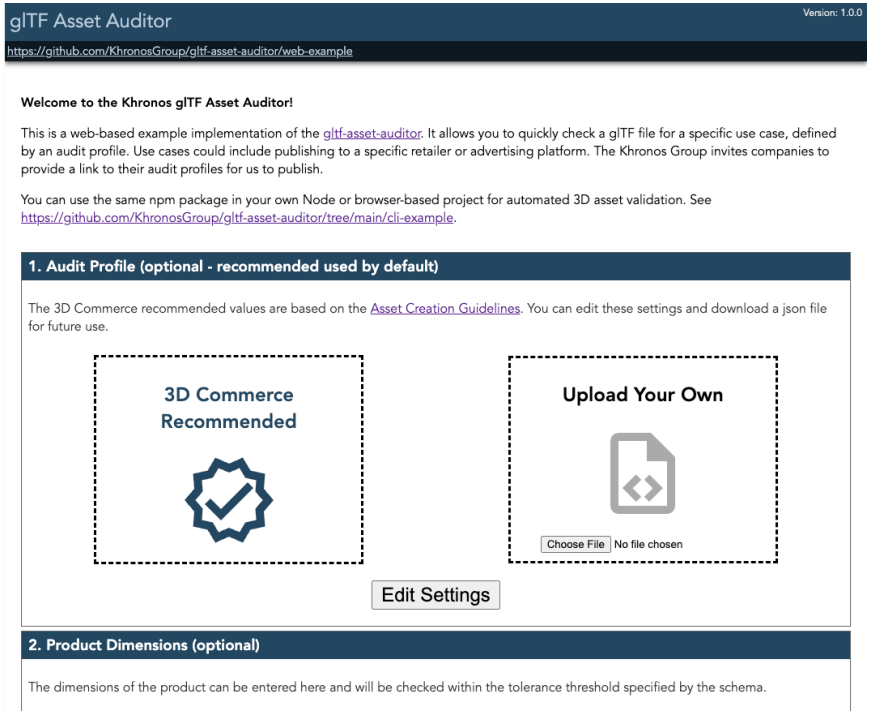
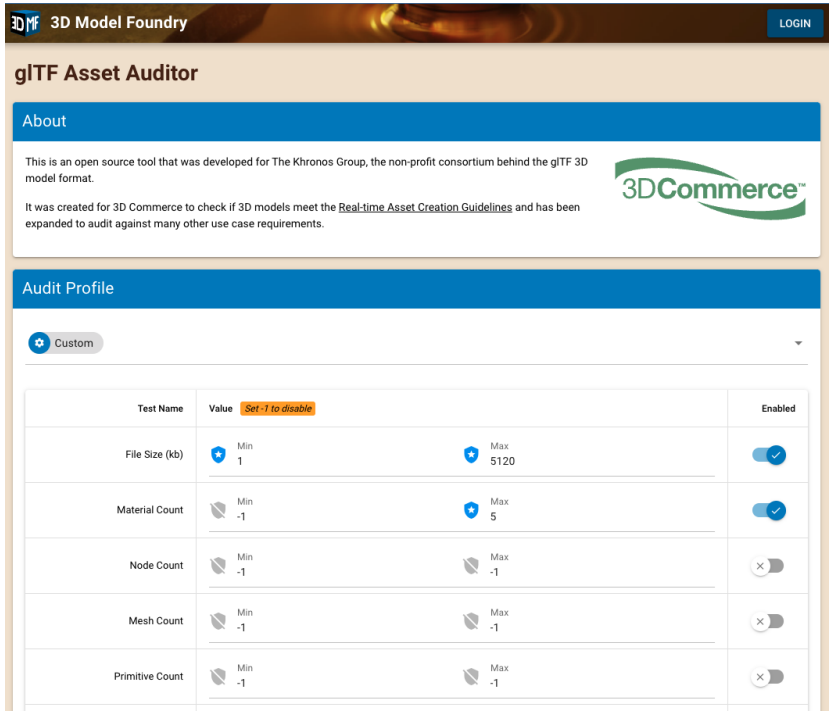
Live Demo

Khronos: https://www.khronos.org/gltf/gltf-asset-auditor/

Alternative Implementation: https://www.3dmf.com/tools/gltf-asset-auditor





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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

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Command Line / Pipeline Integration - Demo

```
-- 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 <= 2048
                      Texture Height >= Min: FAIL       | 256 < 512
                       Texture Width <= Max: PASS       | 256 <= 2048
                       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.
```


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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

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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!

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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

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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

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