Getting CGI content ready for real-time with glTF

- Getting CGI content ready for real-time with glTF
  - Step 1: Creating a glTF with PBR Materials
  - Step 2: Translating to an optimized glTF

- Max Limper - About me:
  - Main focus: Automating 3D asset workflows, at scale
  - Co-Chair @ 3D Commerce Asset Creation TSG
  - Co-founder & CEO @ DGG, makers of RapidCompact

https://rapidcompact.com/
Many Publishing Targets

Cp. Khronos 3D Commerce Asset Creation Guidelines v1.0 (section: Publishing Targets)
## Constraints of Real-Time Apps

<table>
<thead>
<tr>
<th>Publishing Target</th>
<th>Max. Target File Size</th>
<th>Max. Target Triangle Count</th>
<th>Target (Max) Number of Draw Calls</th>
<th>Max. Target Bitmap resolution, to meet bandwidth requirements (JPG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Item Mobile AR or 3D Web Catalogue View</td>
<td>3MB</td>
<td>150,000</td>
<td>&lt;20 (500)</td>
<td>2K</td>
</tr>
<tr>
<td>Banner Ad View</td>
<td>500KB</td>
<td>30,000</td>
<td>&lt;5 (100)</td>
<td>512</td>
</tr>
<tr>
<td>Web-based Planning Tool (recommendations for one out of multiple items)</td>
<td>1MB</td>
<td>40,000</td>
<td>&lt;5 (50)</td>
<td>1K</td>
</tr>
<tr>
<td>Single-Item Desktop 3D Web View</td>
<td>3MB</td>
<td>250,000</td>
<td>&lt;100 (800)</td>
<td>2K</td>
</tr>
<tr>
<td>Offline Rendering</td>
<td>No Limit</td>
<td>No Limit</td>
<td>No Limit</td>
<td>No Limit</td>
</tr>
</tbody>
</table>

Hands-On Example: eCommerce glTF Asset

- Official glTF sample model, 3D asset for eCommerce
- Created by Teresa González Viegas, using Blender and Gestaltor
- glTF extensions for advanced effects: KHR_materials_transmission and KHR_lights_punctual

Download High-Res Version
Hands-On Example: Automating Publishing

- Using RapidCompact free account (rapidcompact.com) to
  - Convert high-res glTF asset for Web usage
  - Convert to USDZ as well as other formats, if needed
  - Prepare asset for different platforms / tools (floor planner / game engine / ...)

- Example: Using the “Banner Ad” preset
  Mesh & Texture Optimizations + glTF compression with Draco & KTX2 (add. extensions)
glTF is “the JPEG for 3D”, supported almost everywhere
Getting CGI Content Ready for Real-Time: Summary

- **Challenges**
  - Step 1: Creating a high-resolution glTF file
  - Step 2: Optimizing glTF data for publishing

- **Solutions**
  - Definition of publishing targets (Asset Creation Guidelines)
  - Definition of fallback mechanisms & 3D viewer conformance
  - Automated pipelines for 3D data processing & optimization
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