



# Ecosystem Forum

SIGGRAPH, August 2018

Neil Trevett, Khronos President

# Welcome! And Logistics!

- **WiFi: “DonnellyGroupPubs-Guest”**
  - Sign in as ‘Guest’
- **Snacks and Bar are open through the session**
  - Including beer and wine - use the Bar wisely!
- **We will break at 4-4:30PM**
  - Hot snacks and hotter networking
- **We will finish group discussions at 6PM**
  - But the bar will stay open - need to leave latest 8PM :)

# Agenda

- **glTF State of the Union**
  - Patrick Cozzi, glTF Working Group Chair
- **Review of Discussion Topics**
  - We have some speakers who have volunteered to initiate some topical discussions
  - Any additional suggestions from the group are welcome!
- **Topic Discussions**
  - Bulk of the time today
- **Review and Actions**
- **Beer!**

# Structure for Today's Discussion

- We sincerely appreciate your time and input!
  - Community engagement is one of glTF's greatest strengths
  - This session will be pivotal in steering the evolution of glTF
- Brainstorming rules apply
  - ALL feedback welcome - good and bad
    - You will NOT hurt any feelings!
  - ALL ideas are welcome - open mic!
  - There are *no* 'stupid' questions - ask anything!
- Keep things at a high-level
  - Not get lost in the details with this larger group
- Goals for today
  - High bandwidth discussion on key topics
  - Decide on key next steps and actions - with Designated Champions
- Quick round-the-room Introductions
  - Name and company



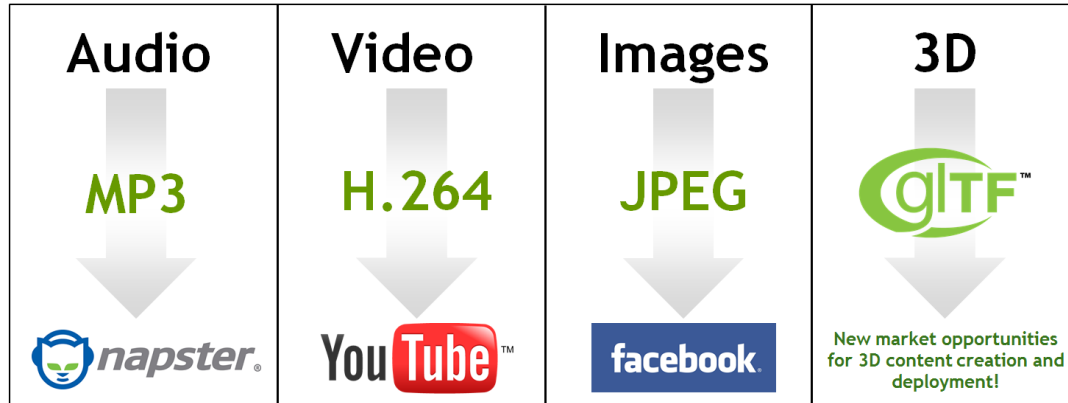
**K H R O N O S**<sup>TM</sup>  
G R O U P

# State of the Union


**SIGGRAPH, August 2018**

**Patrick Cozzi, glTF Chair**

# glTF - Cross-Platform 3D Asset Transmission



glTF spec development  
on open GitHub - get involved!  
<https://github.com/KhronosGroup/glTF>



- Compact to Transmit ✓
- Simple and Fast to Load ✓
- Describes Full Scenes ✓
- Runtime Neutral ✓
- Open and Extensible ✓

Efficient, reliable  
transmission  
Bring 3D assets into 1000s of apps  
and engines - NOT an  
Authoring Interchange Format



glTF 1.0 - December 2015  
Primarily for WebGL  
Uses GLSL for materials



glTF 2.0 - June 2017  
Native AND Web APIs  
Physically Based Rendering  
Metallic-Roughness and Specular-Glossiness

# glTF Ecosystem

Let us know if your logos is missing and you want to add it!

## Creation Tools

- blender™
- SketchUp
- PIXYZ SOFTWARE
- Archilogic
- MARMOSET TOOLBAG
- Adobe Dn
- SUBSTANCE PAINTER
- MINECRAFT
- UNBOUND
- Sony 3D Creator
- Oculus
- Medium
- Paint 3D
- Modo
- glTF-vscode
- SIMPLYGON™
- Assimp Open Asset Import Library
- SAFE SOFTWARE
- Collada2glTF
- FBX2glTF
- glTF-validator
- glTF-asset-generator

- TURBOSQUID
  - Sketchfab
  - Remix 3D
  - Poly poly.google.com
- ## Repositories



- EA
- OGC
- NVIDIA
- Continental
- Bentley
- otoy

## Users

- UNREAL ENGINE
- unity
- Office
- facebook
- three.js
- babylon.JS
- ARCore
- worldviz
- GODOT Game engine
- PLAYCANVAS
- Windows Mixed Reality Home
- A-FRAME
- CESIUM
- AUTODESK FORGE
- UX3D ENGINE
- xeogl
- React VR
- JANUSVR
- 3D Builder Prep for 3D printing
- Mixed Reality Viewer
- instant3Dhub

## Apps and Engines

# Ensuring glTF Ecosystem Robustness

- If you are creating glTF Files
  - Ensure generated files are validator clean
  - <https://github.com/KhronosGroup/glTF-Validator>
- Help the community understand what your exporter supports
  - <https://github.com/KhronosGroup/glTF/issues/1271>
- If you are loading glTF files
  - Ensure loader can correctly load all sample models (integration tests)
  - <https://github.com/KhronosGroup/glTF-Sample-Models>
- Ensure loader can correctly load all asset generator models (unit tests)
  - <https://github.com/bghgary/glTF-Asset-Generator>

**AVOID DIALECTS AT ALL COSTS!**

How are we doing? Need more testing/validation? Where are the issues?



# Tool Ecosystem Updates

- Focus on creating reliable paths in and out of key tools

- **Blender**

- Bringing importer and exporter into single project
- <https://github.com/KhronosGroup/gltf-Blender-IO>

- **3DSMax Exporter**

- Microsoft looking for collaborators
- [http://doc.babylonjs.com/resources/3dsmax\\_to\\_gltf](http://doc.babylonjs.com/resources/3dsmax_to_gltf)

- **Maya2gltf by Wonder Media Productions**

- <https://github.com/WonderMediaProductions/Maya2gltf>

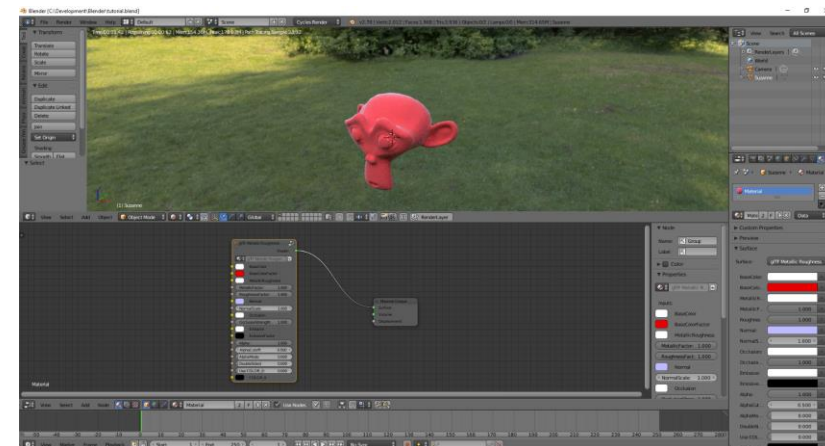
- **Unity Importer & Exporter**

- Microsoft & Unity looking for collaborators
- <https://github.com/KhronosGroup/UnityGLTF>

- **FBX2gltf by Facebook**

- <https://github.com/facebookincubator/FBX2gltf>

How are we doing?  
Where are the  
tooling gaps?

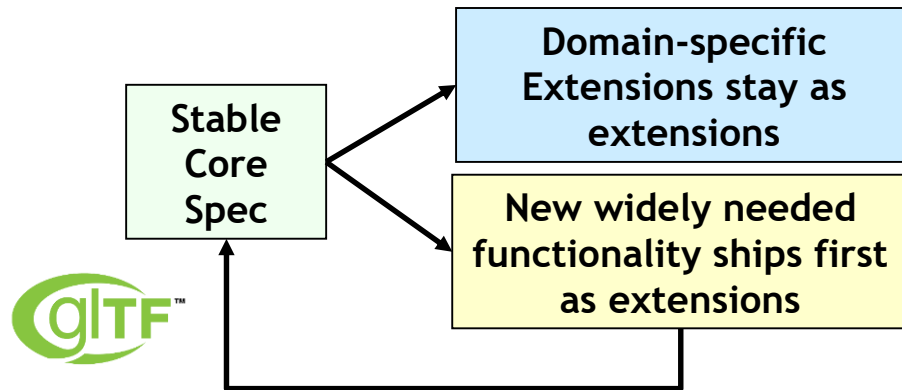


# glTF Roadmap

- glTF manages its roadmap very carefully - complexity is the enemy
  - Mission #1: ensure widespread, consistent, reliable usage
- Rollout new functionality first as extensions
  - Bring into core only when apps and engines are enabled
  - Graceful extension fallback can ease smooth adoption
- New extensions...
  - Texture transform (texture atlases), Unlit Materials have shipped
  - Punctual lights is close

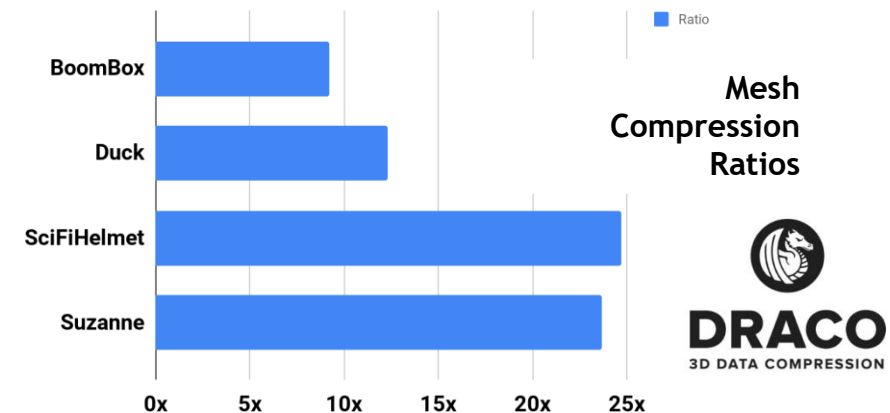
## Draco Mesh Compression Extension Rollout

- Open source encoders and decoders are available
- Extension is now shipping in more and more tools and engines

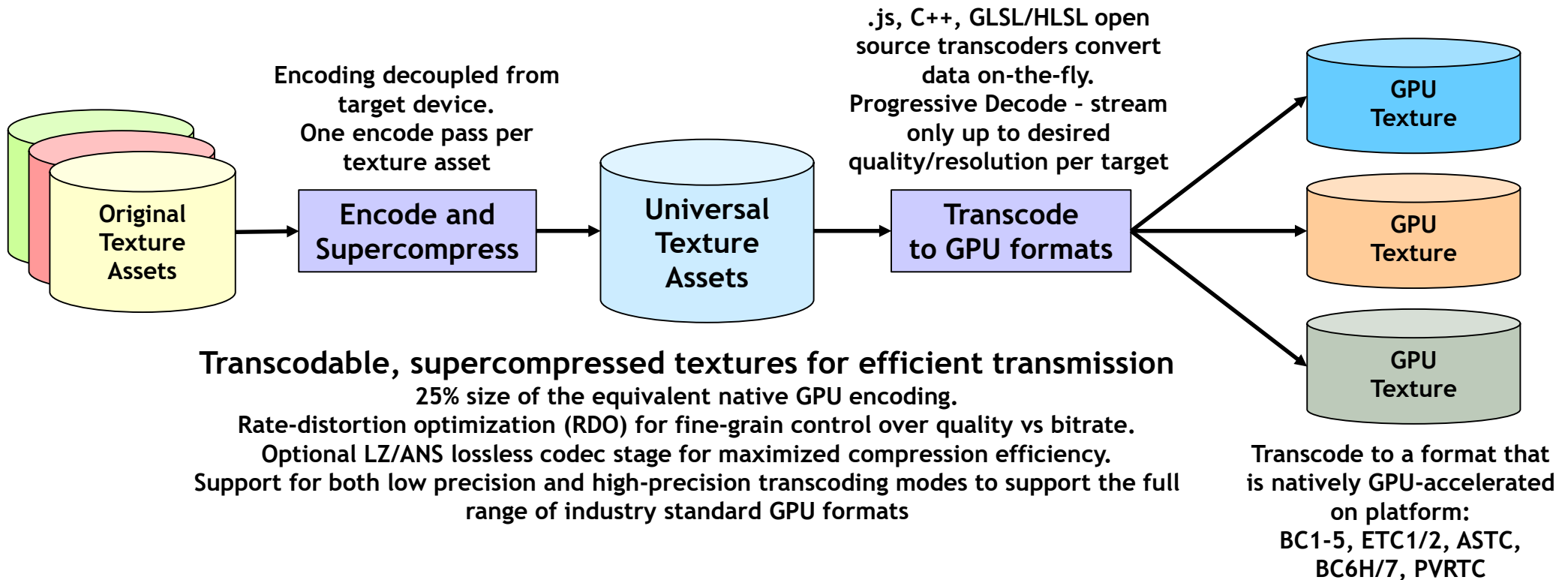


Integrate extensions into new core spec only when:

- 1) Widespread need is confirmed by the industry
- 2) Widespread reliable implementation is enabled (e.g. open source)



# Texture Transmission Extension in Progress



**Extension in design - welcome industry feedback**

<https://github.com/KhronosGroup/glTF-Texture-Transmission-Tools>

# Initial Roadmap Discussion List

- Cross-platform visual consistency - challenges and requirements - Martin Enthed, IKEA
- PBR roadmap and open source release of MDL - Lutz Kettner, NVIDIA
- Texture Transmission Extension - progress and feedback - Mark Callow
- Large models and asset linkage - Johannes Behr, Fraunhofer
- glTF for social Web - Pär Winzell, Facebook
  
- What are YOUR key hot issues?
  - What topics should we add to the agenda for today?

# Forum Outcomes - See you on GitHub!

- **Materials: Nodes + Algebra, OSL/MaterialX Interop - Champion: Lutz (NVIDIA)**
  - Baseline + Links to higher order material representations for scalability
- **Links to enable extension fallbacks in general**
  - E.g. if Draco compressed assets not understood, link to uncompressed assets
- **Rendering definitions and accuracy, Reference viewer/images - Champion: Martin (IKEA)**
  - Define Ground Truth, Confirm implementations are correct
- **Metadata**
  - Standard fields for Attribution, licensing, positioning/geotagging
- **Asset linkage and libraries - Champion: Johannes (Fraunhofer)**
  - Including cross-domain linkage
- **Classification of models**
- **Public Table of communication on progress for extensions**
- **Up axis and orientation, fix software tools?**
- **Lifetime supply of glTF T-Shirts for Mark at Autodesk**

# Future Topics

- Topics we didn't have time for this Forum - in *rough* interest order
- LOD +3
- Progressive Texture loading
- Advanced Animations
  - Avatars and Facial animations
  - 'must be as good as Apple Facial anime animations using USD with blending'
- Video Textures
- Storing segmentation data
- Point clouds, height maps, terrain
- File security and encryption
- Compressed Animations

# Calls to Action

- Engage on GitHub to help drive the ecosystem forward
  - Share ideas, issues, problems, proposals
  - If you have products that use glTF - let us know we so we can help promote!
  - <https://github.com/KhronosGroup/glTF>
- Join Khronos!
  - Get directly involved in the glTF Working Group

