

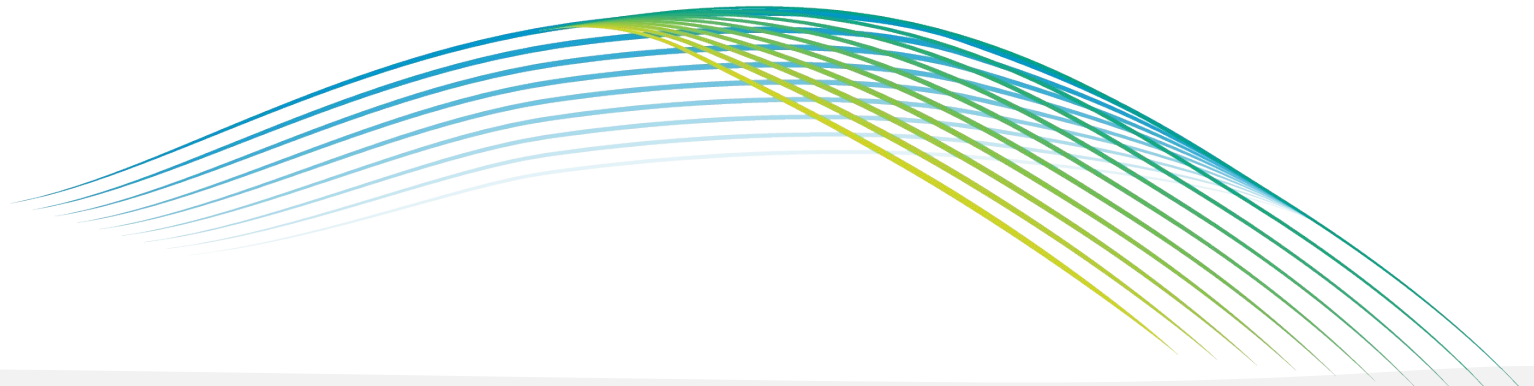


# Collaboration Paths for glTF and USD

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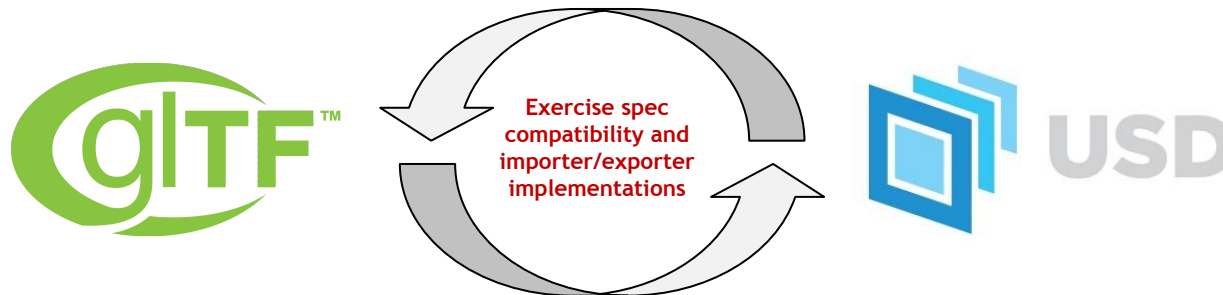


# Collaboration Paths for gITF and USD



Metaverse  
STANDARDS FORUM™

- **First interoperability project. Goals:**
  - gITF -> USD -> gITF “lossless” round trip
  - Building synergistic use of gITF within USD composition framework
- **Mission**
  - Identify features preventing “lossless” round trip between gITF and USD
  - Generate useful data and recommendations for gITF and USD communities
  - Create and distribute mutually agreed test assets
  - For ongoing experimentation and testing
  - Encourage availability and testing of importers/exporters and other tooling



# High-Level Discussions / Questions

- **What does 'round-trip' precisely mean**
  - Conversion to USD and re-conversion to gITF?
  - Or use of unconverted assets within USD run-time?
- **How will USD be using gITF in this project**
  - Import to Preview Surface?
- **What is round-trip success criteria - different levels**
  - Round-tripped assets pass gITF validation!
  - Looks the same in viewer - before and after?
  - Structurally equivalent?
- **Do we want to identify specific tooling?**
  - When will open source importer/exporters be available?
    - nVidia announced open source USD connectors



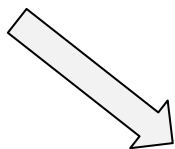
# Phased Testing of glTF Roundtripping

- **Two parallel tracks in each phase**
  - Test what can be round-tripped today
  - Investigate and discuss what we mutually want to round-trip 'tomorrow'
- **First phase needs to be informative but pragmatic**
  - glTF 2.0 + any current widely adopted extensions that can be round-tripped
  - Geometry, Materials, Animations?
- **First step is to agree how much of existing glTF & USD is a round-trip candidate**

Roadmap alignment discussions and investigations

Test round trip of existing glTF 2.0 functionality  
(e.g., materials and animations?)

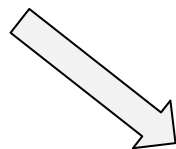
**Phase #1**



Next round of roadmap alignment discussions

Test round trip of additional glTF 2.0 functionality  
(e.g., interactivity, SubDiv, glXF scenes, physics?)

**Phase #2**



**Avoid future incompatibilities through roadmap alignment discussions in parallel with testing**

**Then create assets to exercise round-tripping of those roadmap features through importers/exporters**

**More phases as needed ...**



# How to Bin Technical Features into Phases

- **Current gITF functionality**

- Unlit materials
- GPU-compressed textures (KTX 2.0)
- Metadata
- PBR

- **Future gITF functionality**

- MaterialX materials
- Quads
- SubDiv Surfaces
- Expanded UV channels
- Animation weights and blending
- Physics
- Interactions
- Composition scenes

- **What else?**



# Where we at this moment? At Phase 1

- **PBR material discussion**
- **We ran basic test cases (glTF Asset Repo) for example**
  - Basic geometry
    - Covered: `accessors`, `buffers`, `bufferViews`, `meshes`
    - Ignored: `animations`, `cameras`, `images`, `materials`, `nodes`, `samplers`, `scene`, `scenes`, `skins`, `textures`
  - Animations:
    - Covered: `accessors`, `animations`, `buffers`, `bufferViews`, `meshes`, `nodes`, `samplers`,
    - Ignored: `cameras`, `images`, `materials`, `scene`, `scenes`, `skins`, `textures`
- **We require a formal description what is a “successful roundtrip”**
  - Must have is a glTF and USD conformance
  - Low bar is a visual consistency
  - Next level is structural equivalency. It requires many iterations



# Thank you!

- The Khronos 3D Formats Working Group values this cooperation
- Please join as MSF and/or Khronos member or an advisory panel member
  - <https://metaverse-standards.org/> - “3D Asset Interoperability using USD and glTF”
  - <https://www.khronos.org/> - “3D Formats” and “3D Commerce”

