

## Digital Fashion Wearables Domain Working Group Charter

### 1. Status and Change History

7 Oct 2022	First Draft
27 Nov 2022	Second Draft
27 Mar 2023	Third Draft
15 Nov 2023	Submitted to Oversight (now incorporating edits for clarity from first review)
20 Dec 2023	Approved by Oversight

### 2. Process and Officers

The Working Group shall operate under Forum Cohort Processes, including but not limited to all the relevant values of openness, transparency and inclusion.

Chairs Pro Tem (Appointed chairs until first election):

- Aditya Mani , YOLOgram Style
- Nelly V. Tacheva, Tangra & Simply Flows
- Jin | OMI

We appreciate contributions from:

- Robert Nava
- Digvijay Tiwary
- Kerem Torun

Other Officer positions may be created as needed.

The Working Group will work to engage membership through recruiting and encouraging additional officers and regular contributors, and effective delegation of research and other tasks to members, with well-defined timelines.

### 3. Motivations and Goals (and NON-Goals)

This Working Group will explore how wearable, inventory and layering systems are implemented across multiple platforms, and encourage increased interoperability to drive adoption and support for increasingly sophisticated use cases.

#### 3.1 Goals

The goals for the creation of a Digital Fashion Wearables Working Group include:

- Reducing fragmentation between standards and practitioners for avatar wearables - including layering for clothing, shoes, and accessories
- Conduct interoperability experiments on existing solutions and provide feedback and recommendations for improving the ecosystem in cooperation with relevant standards organizations and industry.

#### 3.2 Non-goals

This Working Group will not create standards, but work to drive insights and assist progress needed standards at existing standards organizations.

This Working Group will focus on wearables, and will cooperate closely with other Forum Groups, including making our deliverables easily shareable with other working groups. This Working Group will NOT work on::

- Avatars (humanoid and non-humanoid) and rig (skeleton) systems
  - But will cooperate with the Interoperable Avatars / Characters Working Group
- 3D asset files formats, including centralized vs decentralized approaches
  - But will cooperate with the Digital Asset Management group and glTF USD Interoperability Group
- Payment rails used for purchasing wearables with
  - Receipts are still important, but would fall under cooperation with the Digital Asset Management Working Group scope

## 4. Deliverables / Milestones Plan

### 4.1 Tasks

1. Survey and categorizes existing file formats for storing avatars and their wearables, including examples
2. Analyze and document the different existing layering systems.
3. Conduct experiments for each avatar wearable system, compare pros and cons
4. Create publicly deliverable flow chart/documentation overview of interoperable avatars and associated wearable systems, including:
  - Attachable wearable system: loots, certain armor, weapons, etc (certain fashion wearables won in a giveaway or product promotion).
  - Based on offset transforms from armature point / bone
  - The structures of file formats and challenges with animation systems in collaboration with Avatar group
5. Gather guidelines / resources for optimization targets based on various platform documentation.
6. Describe potential enhancements and liaise with 3D software to identify and develop plugins
7. Collaborate with relevant standards bodies for enhancements to support wearables use cases, including:
  - Base (naked) avatar customization including body parameter and head customization including face, hair, ribbons, tattoos, etc falls around 50/50 with avatar characters group
8. Attend industry events/conferences and present to drive awareness and gather input from various players.

### 4.2 Milestones

Table 1 provides definition of phases in the development of the Working Group deliverables. The timing of the deliverables will be agreed at the first Working Group meetings.

Phase	Description	Milestone	Duration
1	Use case matrix	Define matrix of priority use cases versus key interoperability requirements. This matrix shall be used to exercise and refine the other Working Group deliverables below.	
2	Design and run interoperability testing	Publish test source code and results of interoperability testing, including skinning, skeleton systems, and software/game engine integration	
3	Seek community feedback on interop testing	Incorporate community feedback, iterate based on test results	
4	Publish interoperability research results	Integrate avatar and wearables research in a shared document / knowledge space - and generate visibility through blogs /articles	
5	Translation Framework	Create translation framework using glTF 2.0 as a common baseline asset format, together with a set of recommended guidelines for handling import and export of meshes, materials, skeletons, animations, physics, and metadata (possibly including brand data). More details below.	
6	Validation Tool	Open source certification application that can be used to check if avatar wearable assets conform to the Translation Framework format and guidelines	

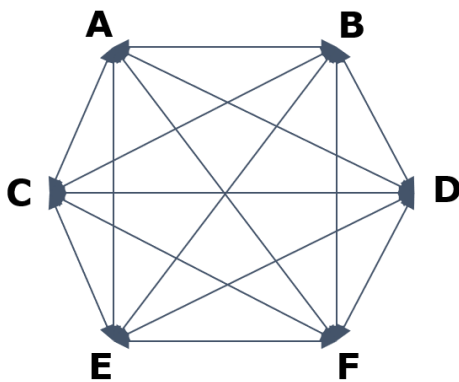
**Table 1 – Wearables Working Group Milestones**

### 4.3 Wearables Translation Framework Details

1. Propose a translation framework that improves wearables interoperability across different systems (Daz, Clo, VRoid, DCL, Voxels, RPM, etc)
2. There are many potential benefits of enabling multiple tools and runtimes to exchange avatar and character data, however it is not feasible, or necessarily desirable, for multiple applications to use the same internal avatar format as runtime engines typically use proprietary internal formats due to development history, platform constraints, business and use case imperatives and aesthetics. This makes exchange of wearable and character data problematic, as any tool or application would need to import or export multiple proprietary formats.

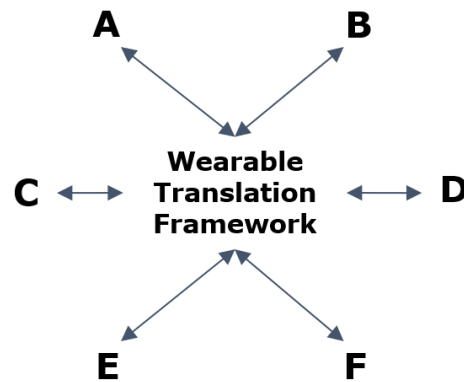
It is therefore proposed to incrementally define an Avatar Wearables Translation Framework that comprises a common baseline asset format using glTF 2.0, together with a set of recommended guidelines for handling import and export of meshes, materials, skeletons, animations, physics, and metadata. We'll align closely with the Interoperable Avatars / Characters group to produce this framework since our groups overlap in many areas.

### Multiple Wearables Tools and Platforms



#### Before

Each tool or platform must import or export every other proprietary wearable format



#### After

Each tool or platform can import/export using a single agreed asset format and guidelines

3. Tools and platforms may choose what internal wearable data to translate and export using the Translation Framework for other tools and applications to straightforwardly import. An exporter does not need to populate all data fields defined by the Framework, just data that may be meaningfully converted, and which the application chooses to export.
4. Similarly, engines may import just the Framework data fields that are relevant to their needs, populating other internal data structures as they wish, or converting any data fields to meet any platform technical or aesthetic requirements.
5. Developing the Translation Framework is intended to be an effective vehicle to build consensus on common data representations and guidelines for avatar and character data interoperability that tools and engines may leverage if and when it provides them benefit, fueling incremental expansion of the scope of the Translation Framework over time.

## **5. Coordination**

The Working Group shall maintain regular contact with other Forum Working Groups and relevant external standards organizations, to discuss the progress and status of this project.

### **5.1 Forum Working Groups**

- Forum Avatars Working Group
- USD glTF Interoperability Forum Working Group
- Asset management Working Group

### **5.2 External Groups**

- Web3D Consortium for HAnim
- Khronos 3D Formats Working Groups for glTF
- Khronos 3D Commerce Working Group for Wearables

## **6. Communication Plan**

The Working Group officers will provide quarterly updates to the Forum Oversight Committee, Forum membership, coordination partners and public, or when major milestones are achieved.

The Working Group will solicit subject matter experts to present to the Working Group members on wearable -specific topics.

## **7. Working Group Renewal**

Two years from approval of charter

## **8. Project Funding and Resources**

Requests for funding and/or resources will be submitted to the Forum Oversight Committee for approval once the detailed project planning is complete.