

USD Physics Working Group Charter

Approved 12/16/2024

This Working Group Charter establishes the Scope and intellectual property terms used to develop the materials identified in this Working Group Charter for the Project. Only Project Steering Members, General Members, as applicable, that Joined the Working Group Charter will be bound by its terms and be permitted to participate in this Working Group.

1. Working Group Name. USD Physics
2. Working Group Deliverables. This Working Group will create:

X Specifications. There are two options for specification development. The “Community Specification” mode is designed specifically for a repository-based workflow that is familiar to developers while incorporating specification development due process and best practices. The “Traditional” mode uses a governance model that is based on traditional approaches to standards and specification development. The Traditional mode includes a choice of copyright and patent licensing options so you may select the options best suited to your goals. [Check Community Specification Mode or Traditional Mode]

Community Specification Mode.

1. Governance. The Working Group will operate in accordance with terms and policies of the Community Specification materials set forth at <https://github.com/CommunitySpecification/1.0>.
2. Working Group Scope. As set forth in the Working Group repository’s Scope.md file.

X Traditional Mode.

1. Governance. Traditional Mode uses the governance rules as set forth in Appendix A.
2. Working Group Scope. Universal Scene Description (USD) is an established open source technology that forms a foundation for 3D content authoring, interchange and transmission. The goal of the USD Physics Working Group is to extend the capabilities of OpenUSD to include physics concepts and phenomena by developing a normative schema for physical properties and attributes that can be used by many different simulation systems—thereby permitting these simulations to interoperate using a shared USD representation.

Scope: The Physics Working Group will define the strategy for abstracting the physical behaviors of objects and their physical material properties into OpenUSD. It will also seek consensus on how best to represent the physical attributes of objects in OpenUSD, and unambiguously specify and document this representation, such that interoperable tools may be created that share an understanding of such a representation.

Its initial focus and first deliverable will be to provide a normative specification of the existing UsdPhysics schemas and support for rigid-bodies; their properties, attributes and scene description behaviors that are stable, understood and important for interoperability of physics authoring.

Future areas of focus may include:

1. The extension of the UsdPhysics schema to support deformable and soft-bodies physics.
2. Developing approaches to allow for objects within the simulation to selectively express practical or artistic behaviors that are not rooted in physical behavior (example: exempting an object from being subject to gravity) with the goal of compatible interaction with other USD systems such as composition, animation, OpenExec, etc.
3. **Approved Deliverables:** The Working Group's first Approved Deliverable will be the USD Physics Specification. Initially, this will take the form of a baseline description of core physics behaviors and functionality needed for rigid-body simulation authoring developed from the existing UsdPhysics schemas. Subsequent versions of the specification will incorporate future developments such as deformable/soft-body support per the above.
4. **Other Documentation:** In addition to the Approved Deliverables described above, the Physics Working Group may also develop non-normative educational, marketing, and informational materials, as well as white papers, to accompany any Approved Deliverables and to facilitate understanding and adoption of the Approved Deliverables. These documents will not undergo the Approved Deliverable process. All marketing materials should be developed in collaboration with, and approved by, the Marketing Working Group and Legal committee. The Working Group may also develop reference source code implementations of new features that have been formally approved for inclusion in the USD Physics Specification and contribute those to the OpenUSD and UsdPhysics Repositories, subject in each case to approval by the relevant projects.
5. **Out of Scope:** The development of simulation systems themselves is explicitly out of scope as this group will develop the relevant physics attributes in an implementation-agnostic manner. Other areas not identified as in scope are out of scope.

Additional Working Group Provisions: The Working Group may also work with other organizations that have liaison relationships with the AOUSD. As indicated below, the Working Group will operate under (1) the Traditional Mode Governance, as supplemented by the Alliance for OpenUSD Process & Procedures, available on the Alliance's website; (2) the W3C Mode, as supplemented by the Alliance's Process & Procedures; and (3) Apache 2.0 for any source code contributions to the Working Group.

6. Copyright Licensing. Each Working Group must specify the copyright mode under which it will operate prior to initiating any work on any Draft Deliverable or Approved Deliverable other than source code or datasets. The copyright mode for this Working Group is: [Check one box]

X Copyright Grant to Project, as set forth in Appendix B, Copyright Policy Option 1.

Creative Commons Attribution 4.0, as set forth in Appendix B, Copyright Policy Option 2.

Open Web Foundation 1.0. (Only for those Working Groups selecting the Open Web Foundation mode for patent licensing).

7. Patent Licensing. Each Working Group must specify the patent mode under which it will operate prior to initiating any work on any Draft Deliverable or Approved Deliverable other than source code or datasets. The patent mode for this Working Group is: [Check one box]

RAND Royalty-Free Mode, as set forth in Appendix B, Patent Policy Option 1.

International Mode, as set forth in Appendix B, Patent Policy Option 2.

Open Web Foundation Agreement 1.0 Mode, as set forth in Appendix B, Patent Policy Option 3.

X W3C Mode, as set forth in Appendix B, Patent Policy Option 4.

No Patent License. No patent licenses are granted for the Draft Deliverables or Approved Deliverables developed by this Working Group.