AOUSD Industrial and Engineering Digital Twin Interest Group Charter

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

<u>Interest Group Name</u>. Industrial and Engineering Digital Twin (IEDT) Interest Group

1. **Interest Group Purpose (check either or both):**

   X   Explore potential formation of a new AOUSD Working Group.

   X   Discuss area(s) of potential future development at an existing or future AOUSD Working Group.

2. **Interest Group Scope:**
   Scope: The IEDT Interest Group will examine the opportunity for USD in digital twins for industrial and engineering applications and provide a set of recommendations around:
   ● An agreed definition of Digital Twins and where USD can add value to their creation, operation, and optimization
   ● A definition and shared terminology to enable digital twin portability and interoperability within vertical markets
   ● An assessment of the opportunity and role of USD in the space – where it makes sense, and where it does not
   ● The relationships of USD to existing standards, and how that should guide our strategy for supporting digital twin technology
   ● The prioritized requirements needed to drive adoption of USD within the digital twin ecosystem

   Out of Scope:
   ● Per Section 4.2 of the AOUSD Processes, all Interest Groups, including this Interest Group, "cannot develop, propose or publish any normative documents (e.g., schemas), including Deliverables."
   ● Out of scope are any representation of specific human likenesses (for example film or TV actors)

   Motivation:

The digital twin market is expected to reach a revenue of USD $412B by 2033 and is used in wide reaching industries such as manufacturing, automotive and transport, energy, utilities, and telecommunications.

Digital twins are anticipated to become more sophisticated as they incorporate simulation, AI, pervasive sensing, and data analytics, offering greater insights and value for their users. However, digital twins require connections between different teams using different hardware and software elements, such as sophisticated engineering models of components, monitoring and time series data, and simulation technologies. For these siloed teams to form a central understanding of system wide performance, communication using a common language is required. This is where a standard is required to ensure that the various hardware and software elements are connected in a seamless and predictable fashion.

3. **Effective Date of Charter:** November 25, 2024

4. **Date of Charter Review/Expiration (one year after effective date):** November 25, 2025

5. **Planned Output:** A set of recommendations around the priorities for adopting USD in Digital Twins

6. **Connected AOUSD Working Groups (existing or future):** Based on identified priorities, this group may provide recommendations to the Geometry Working Group for Digital Twin related geometric requirements, the Physics Working Group for Digital Twin related phenomena, and the Core Specification Working Group for Digital Twin units and parameters requirements.

7. **Additional Interest Group Provisions:** This Interest Group will operate under (1) the Copyright Grant, Patent Licensing, and Source Code Terms defined below; and (2) all applicable terms in the Alliance for OpenUSD Process & Procedures, available on the Alliance's website.

8. **Copyright Grant**. Each Interest Group Participant grants to the Project a perpetual, worldwide, non-exclusive, no-charge, royalty-free, copyright license, without any obligation for accounting, to reproduce, prepare derivative works of, publicly display, publicly perform, sublicense, and distribute any Submission made by the Interest Group Participant to the full extent of the Interest Group Participant's copyright interest in the Submission.

   Ownership of Collective Works. By participating in an Interest Group, the Interest Group Participant agrees that all copyright created in the collective work belongs to the Project.

9. **Patent Licensing.** By joining this Interest Group, each Interest Group Participant agrees that, to the extent it makes any Submission to this Interest Group which is subsequently included in an Approved Deliverable ("Connected Approved Deliverable") developed by any AOUSD Working Group explicitly identified in Section 6 of this Interest Group's Charter, the Interest

Group Participant shall make available any of its Essential Claims, as defined in the W3C Patent Policy (available at *https://www.w3.org/Consortium/Patent-Policy-20040205/*), under the W3C RF licensing requirements in Section 5 (*https://www.w3.org/Consortium/Patent-Policy-20040205/*), in such Submissions, in whole or in part, that are included in any Connected Approved Deliverable as if the Connected Approved Deliverable was a W3C Recommendation.

"Submission" means any material, including any modifications or additions to an existing work, that the Interest Group Participant submits for inclusion in any documentation or other output developed by the Interest Group.

10. **Source Code.** Interest Group Participants contributing source code to this Interest Group agree that those source code contributions are subject to the Developer Certificate of Origin version 1.1, available at http://developercertificate.org/, the Apache 2.0 license, available at http://www.apache.org/licenses/LICENSE-2.0.html, and any policies and governance rules included in the source code's repository.