

## **Name: X3D Semantic Web Working Group**

- Provides complete clarity about our scope: two standards areas, X3D and the Semantic Web
- Provide clarity how other diverse 3D technologies might best use semantic technologies

## **Mission**

- Publish models to the Web using X3D to best gain Web interoperability and enable intelligent 3D applications, feature-based 3D model querying, and reasoning over 3D scenes

## **Motivations**

- a. Establish best practices for metadata and semantic information/relationships using X3D as a Web-based presentation layer.
- b. Enable authors to utilize the power of X3Dv4 and HTML5/DOM together in any Web page utilizing a family of specifications and practices provided by the Semantic Web, such as HTML5 Microdata (microformats) and Linked Open Data, (possibly) MPEG-7 and related references.
- c. Align the X3Dv4 specification with these standards as best possible to further enable the Digital Publishing industry and communities.
- d. Describe value proposition for utilizing semantic information in concert with archival export, publishing, visualization, and printing of any 3D model as X3D.

## **Goals**

- a. Enable more effective indexing, search, comparison, and analysis of X3D models through the advanced use of metadata, shape geometry, etc.
- b. Create and partially autogenerate X3Dv4 OWL ontology from the X3D Unified Object Model (X3DUOM) using best-practice design patterns, starting with those shown by prior published work.
- c. Support various Web3D Working Group domains, including CAD, 3D printing/scanning, Medical, Cultural and Natural Heritage, Humanoid Animation (HAnim) and someday Building Information Models (BIM).
- d. Build and maintain a list of domain-specific controlled vocabularies and taxonomies that are suitable for use in concert with the X3D Ontology.

## **Work Summary**

We plan to collaboratively design a general framework covering a number of open issues focused on but not limited to:

1. representation of semantics of 3D objects within X3D documents,
2. representation of semantics of the counterpart real objects within X3D documents,
3. automatic generating of X3D documents based on ontologies and vice versa,
4. queries to semantic X3D documents.

Such a general framework could be gradually extended with new concepts related to very different areas of using semantics with X3D.

## Outcomes

- a. Create appropriate specifications and recommended practices for Semantic X3D.
- b. Publish and deploy products based on the X3D Ontology using multiple syntax formats including RDF/OWL, Turtle Triple Language (TTL) and JSON for Linked Data (JSON-LD).
- c. Build suite of exemplars and tools, including X3D Model Exchange  
<https://modelexchange.nps.edu>
- d. Publish papers, provide tutorials, hold workshops, and influence other groups within and outside Web3D.

## Working Group Participation and Visibility

- a. Must be a Web3D Consortium member, sign Intellectual Property Rights (IPR) agreement etc. to participate in working group. (This provides strong protection for all our work.)
- b. Results will be openly accessible and publicly downloadable to encourage feedback, at first likely using same location and design patterns as X3D Example Archives, X3D Specifications and X3D Unified Object Model (X3DUOM) on SourceForge.
- c. If we want to put member-only examples up on github (for example, private work shared with other liaisons like HL7 or DICOM perhaps), we do have infrastructure in place now.
- d. If we want to put public examples on github, we'll need another account there.
- e. Frequency of meetings is likely to be every 1-2 weeks, using Web3D teleconference line, with meeting times will be determined by participants.

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