X3D Activity Overview

... fasten your seat belts!

Don Brutzman

X3D Working Group

Web3D Consortium

20 January 2019

First…

Many thanks to Korea Chapter of Web3D Consortium for

- Many sustained and stellar technical efforts
- Collegial and constructive efforts
- Organization and coordination
- Foresight and Vision

Standards progress and plans   1

- H-Anim 2 Architecture and Motion Capture
  - implementation efforts for X3D: schema is now published
  - Issue: rename to HAnim: simplify search, unify document/program representations
  - Issue: review, address ISO editor
- X3D Scene Access Interface (SAI)
  - Current status is up to date, small errata being encountered
  - Some changes may be desirable based on new language additions
- X3D C, C++, C#: NWIP approved, work in progress.
  - Sharable?
- X3D Java SAI: implementation mature, specification review/update
  - automatically updating X3DJSAIL codebase with X3D v4 changes
- X3D Python SAI: implementation in tandem with Java
  - ISO NWIP and initial-draft specification document by SIGGRAPH

Standards progress and plans 2

- X3D JSON Encoding: implementation mature, JSON schema evolution, first-draft specification, NWIP needed
- X3D 4.0 for HTML5/DOM/CSS, in progress
  - Many components proposed, increasing participation
  - Two open-source JavaScript implementations guarantee successful execution
  - Three additional open-source implementations (C++, Pascal, Java) also active
  - Will begin listing assets online
- X3D 4.1 Mixed/AR/VR/XR, in tandem
  - Will build on W3C WebXR Immersive Web working group
- Spatialized sound: strategy developed, renewed activity
  - Dependency, partnership on W3C Audio

Standards progress and plans   3

- Data-centric security: applying implementations
  - XML Encryption for privacy
  - XML Authentication for authentication
- Metadata and Annotations
  - Printing and Scanning
  - Medical
  - CAD
  - Cultural Heritage
- X3D Unified Object Model (X3DUOM) mature – specify in X3D v4?
- X3D Semantic Web Working Group has begun, building X3D Ontology, portions likely autogeneratable using X3DUOM

Projective Texture Mapping (PTM) Component

- Initial draft added to Github X3D Specifications
  - First edit to occur this week. Several iterations for continuous improvement.
- Next: add to XML Schema
  - Then X3DUOM, X3DJSAIL, DTD, X3D Tooltips
  - February X3D Working Group Review, confirm it is a separate component. Add as component.
  - X3D Schematron validation heuristics (if any) as diagnostics for X3D Validator.
- Implementations
  - Existing: FreeWrl has implemented, X3DOM (proposed)
  - Recommended: X3DOM, X_ITE (either means both) for broad deployability as X3Dv4
  - Suggested: Castle Game Engine
- Examples Provided, Need to be Published
  - X3D Basic Examples Archive (most likely)
- Review, finalize, submit paper. Take care to ensure that no legal problems occur.

Catalysts

- Coherent functionality among all file encodings, language bindings
- Github version control for draft specifications
- Steadily increasing validation capabilities ensure high quality models
  - also facilitates rapid software development
- Increased availability of X3D codebases to support export and import
- Insistence on example scenes for all new components enables
  - better sharing and mutual testing
  - demonstrated adoption of other standards
- Events: Web3D and SIGGRAPH Conferences, regular ISO meetings, etc.
- Web3D process, community, archival mailing lists, and Mantis issue tracker

Gating factors and challenges

Giant understatement: A Lot of Work is Going On!

- Communication

- Coordinated efforts on design, documents and implementations

- Growth into many areas needing 3D portrayal on the Web

Don Brutzman

Naval Postgraduate School (NPS)

brutzman@nps.edu

https://faculty.nps.edu/brutzman