Web3D-related Standards Published

- ISO/IEC 14772-2:2004—VRML EAI
- ISO/IEC 19775-1:2013—X3D (vs. 3.3)
- ISO/IEC 19775-2:2010—X3D SAI (vs. 3.2)
- ISO/IEC 19776-1:2009—X3D XML Encoding (vs. 3.2)
- ISO/IEC 19776-2:2008—X3D Classic VRML Encoding (vs. 3.2)
- ISO/IEC 19776-3:2011—X3D Compressed Binary Encoding (vs. 3.2)
Current Web3D Standards Projects

- ISO/IEC 19774-1:201x/NP—H-Anim architecture (Vs. 2.0)
- ISO/IEC 19774-2:201x/NP—H-Anim Motion Capture (Vs. 1.0)
- ISO/IEC 19775-2:2015/DIS—X3D SAI Vs. 3.3 (IS in prep.)
- ISO/IEC 19776-1:2015/DIS—X3D XML Vs. 3.3 (IS in prep.)
- ISO/IEC 19776-2:2015/DIS—X3D Classic VRML Vs. 3.3 (IS in prep.)
- ISO/IEC 19776-3:2015/DIS—X3D Compressed Binary Vs. 3.3 (in prep.)
Current Web3D Standards Projects (cont.)

- ISO/IEC 19777-1:201x/NP—ECMASCript LB Vs. 3.3
- ISO/IEC 19777-2:201x/NP—Java LB Vs. 3.3
- ISO/IEC 19776-3:201x/DIS—X3D Efficient Binary Encoding Vs. 3.3
- ISO/IEC 18039:201x/CD—MAR Reference Model
- ISO/IEC new number:201x/WD—MAR Physical Sensors
- ISO/IEC new number:201x/WD—MAR Real Character Representation

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Goal: Add new functionality that does not require architectural change

Provides backwards compatibility in that it supports all previous Version 3.x functionality as well

Fleshes out existing functionality to better support vertical applications (e.g., Medical and CAD)
The following is under consideration:

- Annotation component
- Multi-Planar Reconstruction
- Enhancements to Geospatial component
- Haptics
- Corrections and improvements
- NetworkSensor node
- 3D Printing enhancements
– Projective texture mapping
– Camera nodes
– Sensors (e.g., GPS)
– Nodes in support of augmented and mixed reality

- Two independent implementations for submission to ISO
- Encodings based on W3C EXI format and JSON
Goal: Add changes needed to better support HTML5 while remaining backwards compatible as much as possible

Primary areas of investigation:
- Event handling and interoperability with the DOM
- Routes
- Compatibility with X3DOM
- Backwards compatibility with Vs. 3.x
X3D Standardization Timeline

- X3D Version 3.3 related Encodings ISO publication Spring/Summer 2015
- X3D Version 3.3 related language bindings to ISO 3rd Qtr 2015
- X3D EXI Encoding now that EXI specification approved by W3C
- X3D JSON Encoding
- X3D Python and C# language bindings
- X3D Version 4.0 discussions underway

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ISO/IEC Information

- Standards committees
- Process
- Organization
- Relationship to Liaison Organizations
Worldwide federation of standards bodies

- 1 per country
- US = ANSI, Germany = DIN, Korea = KATS, etc.
- www.iso.org
Joint committee of ISO and IEC
- Since 1976
- Handles ISO/IEC information technology
- 1/3 of all ISO, IEC work
ISO/IEC JTC1/SC24

ISO

IEC

TC184, TC211 & Other TCs

JTC1

SC24
Computer Graphics, Imaging & Environmental Representation

WG6
API's & Interchange

WG7
Imaging

WG8
Environmental Representation

WG9
Mixed and Augmented Reality

SC29 & Other SCs

MAR Joint ad hoc Group
SC 24 and Web3D Consortium

- Category C Liaison
- Cooperative Agreement
  - Spells out rights and procedures
  - Web3D Standards submitted as Committee Drafts
  - Technical work done by Web3D
  - Editorial and technical review done by SC 24
  - ISO standard owned by both parties separately
Web3D Procedures

- Technical work initiated by BOD
- Technical work occurs within a Web3D WG
- Two independent implementations required for Web3D approval and ISO submission
- Both BOD and Membership must approve forwarding to ISO
- X3D WG provides architectural control and design integrity check
Each new standard, amendment, or revision requires a new project.

Projects are approved by JTC1 based on New Work Item Proposal (NWIP).

New projects require about 6 months to be approved and can be submitted at any time.

Web3D drafts are processed as HTML documents.
ISO Procedures

- Input text from Web3D registered as Committee Draft
- CD is circulated for review and ballot (4 months).
- Comments received are only justification for changing the text
- Technical changes may induce another balloting round.
- When ready, last CD is registered as DIS and circulated within JTC1 for vote.
- When ready, last DIS is registered as DIS and circulated within JTC1 for YES/NO vote.
- Final Text published as International Standard.
Types of standardization

- **New standard**: New independent specification
- **New Part**: Independent portion of a standard within an overall standard. Ex.: X3D Part 2: SAI
- **Amendment**: Changes (modifications, additions, deletions) to existing standard. Ex.: Amendment 1 to X3D Part 1
- **Revision**: Makeover of existing standard and/or incorporation of amendments (considered for each standard at least every five years or required after two amendments). Ex. X3D 2008
- **Registration**: Add new optional nodes, PROTOs, or other items focused at specific targets
Possible Future Web3D Work

- Additional functionality for X3D
  - New nodes
  - New components
  - New profiles

- Additional parts to X3D standards
  - Binary Encoding based on EXI
  - JSON Encoding
  - Additional language bindings

- Revised non-X3D Web3D standards
  - Revision to ISO/IEC 19774—H-Anim

- New non-X3D Web3D Standards

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