ISO/IEC/Web3D Status Report

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ISO/IEC JTC1/SC24 Liaison
to
Web3D Consortium
ISO/IEC 14772-1:1997/Amd 1:2003—VRML
ISO/IEC 14772-2:2004—VRML EAI
ISO/IEC 19774:2006—H-Anim
ISO/IEC 19775-1:2013—X3D (vs. 3.3)
ISO/IEC 19775-2:2010—X3D SAI (vs. 3.3)
ISO/IEC 19776-1:2016—X3D XML Encoding (vs. 3.3)
ISO/IEC 19776-2:2016—X3D Classic VRML Encoding (vs. 3.3)
ISO/IEC 19776-3:2016—X3D Compressed Binary Encoding (vs. 3.3)
Current SC24 Standards Projects

- ISO/IEC FDIS 19774-1:201x—H-Anim architecture (Vs. 2.0)
- ISO/IEC FDIS 19774-2:201x—H-Anim Motion Animation (Vs. 1.0)
- ISO/IEC DIS 19777-1:201x—X3D ECMAScript language binding (Vs. 2.0)
- ISO/IEC WD 19777-2:201x—Java LB Vs. 3.3
- ISO/IEC CD 19777-3:201x—C LB Vs. 3.3
- ISO/IEC CD 19777-4:201x—C++ LB Vs. 3.3
- ISO/IEC CD 19777-5:201x—C# LB Vs. 3.3
- ISO/IEC WD 19777-6:201x—Python Vs. 3.3
Current SC24 Standards Projects (cont.)

- ISO/IEC IS 18520:2019—Benchmarking of vision-based geometric registration and tracking method for MAR
- ISO/IEC FDIS 18039:201x—MAR reference model
- ISO/IEC CD 18038:201x—Sensor representation in MAR
- ISO/IEC CD 18040:201x—Live actor and entity representation in MAR
- ISO/IEC AWI 21858:20xx—MAR content information model

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SC24 Anticipated Projects

- X3D EXI Encoding now that EXI specification approved by W3C
- X3D JSON Encoding (in work)
- HL7 Integration including metadata
- X3D Version 4.0 discussions underway
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
- Compatibility with X3DOM & X-cite (formerly Cobweb)
- Support for non-HTML environments
X3D Version 4.0 Functionality

- The following is under consideration:
  - Annotation component
  - Multi-Planar Reconstruction
  - Enhancements to Geospatial component
  - Haptics
  - Corrections and improvements
  - NetworkSensor node
  - 3D printing & 3D scanning enhancements
  - glTF access including mesh support
  - Advanced materials and advanced lighting models
X3D Version 4.0 Functionality (cont.)

- Projective texture mapping
- Camera nodes
- Sensors (e.g., GPS)
- Special support for VR
- H-Anim facial animation
- H-Anim internal organ representation

- Two independent implementations for submission to ISO
- Use simultaneous NP/CD ballot mechanism wherever possible
Questions to be answered

- Can the event models of X3D and the HTML5 DOM be accessed compatibly?
- Are two different data models necessary—one supporting X3D events and one supporting DOM events?
- How much backwards compatibility can be achieved?
- Must a non-HTML implementation also support DOM activities?
Preferred considerations:

- Backwards compatibility should be considered first.
- X3D authors should not need to sense the environment to tailor their programs.
- Programs should behave the same in every environment.
- Both HTML5 and non-HTML5 environments should be possible.
Capabilities minimally used:

- Layout component—**Should be removed**
- GeoOrigin — **Currently deprecated but recently discovered to be needed in some instances**
- Programmable Shaders component—**Should this be removed with shader functionality reserved for browser implementers?**
Capabilities that would expand the ease of use based on long-term research:

- AdvancedMaterials node(s)
- Shadows (perhaps just an on/off switch)
- Flexible body physics
- CSS integration
Capabilities that would expand the ease of use based on long-term research (cont.):

- Projective texture mapping
- Support for H-Anim 2.0
- Profile between Core and Interchange
- Is an HTML5 profile needed?
- Is a 3D Printing and scanning profile needed?
- Better point control (shape, size, splat, etc.)
In addition to technical aspects of standards development, the following should also be considered:

- Urgent need to develop X3D vs. 4.0 text.
- Urgent need to develop new and modified features in existing browsers where two implementations have not yet occurred.
- Urgent need for new active participants in SC24 standards development
- Urgent need for representation on related non-SC24 standards developments
End of Presentation
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
JTC1-Joint Technical Committee 1

- Joint committee of ISO and IEC
  - Since 1976
  - Handles ISO/IEC information technology
  - 1/3 of all ISO, IEC work
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.

December 13, 2010
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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