Web3D Emerging Technologies Progress Report

INCITS USA, CAD X3D work: export applications,
Additive Manufacturing 3D Printing, Assess AEC/BIM,
Humanoid Animation (H-Anim) Mocap Export, and
X3D Specification Road Map

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Web3D has joined INCITS

- U.S. InterNational Committee for Information Technology Standards (INCITS)
  - central U.S. standards forum dedicated to creating technology standards for next generation innovation
  - American National Standards Institute (ANSI)
  - http://www.incits.org
- We can work more effectively with U.S. partners
- ISO liaison status remains unchanges, we also comment as contributors to ISO/IEC SC-24

Who owns the future? Or your present?
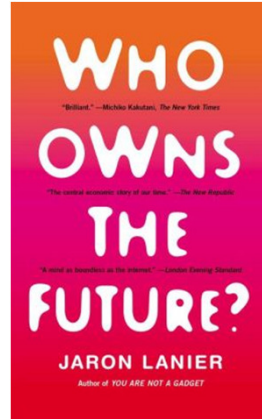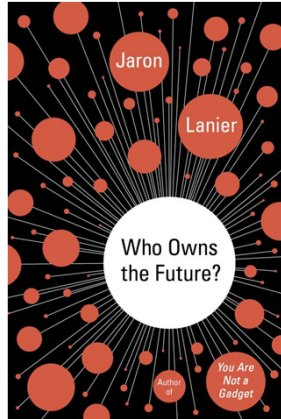
Freedom of choice and control of your data investments
is crucial, now + onward into the future

Computer-Aided Design (CAD)

CAD working group priorities 2014

- Improve NURBS implementations
  - Vince Marchetti has detailed critique
  - Complements binary compression nicely
  - Fully general parametric surfaces
  - Boundary representations (B-Reps) converters only
- Additive manufacturing and 3D printing
  - ISO Additive Manufacturing File format (AMF)
  - Appears exportable from X3D
- X3D Compressed Binary Encoding (CBE)

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Proposed work with zSpace deck

Architecture Engineering Construction (AEC) Building Information Management (BIM)

- Many requirements possible: we are collecting them and building use cases
- Many problem/solution similarities to X3D CAD
- Likely AEC/BIM workshop at Web3D Conference in Vancouver, 8-10 August 2014
  - Determine feasibility of working group effort... likely
- AEC hackathons are intense
  - Dave Arendash built X3D exporter, OpenBimServer
- Opportunities for further collaboration between Web3D and OGC members

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Humanoid Animation Working Group

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Humanoid Animation priorities

- ISO New Work Item for H-Anim: review/revise
- Anatomically correct, complete skeleton
  - ~80% of skeleton, joints already defined
  - Adding hands, feet, face… nearly done
  - Suitable for 3D medical records?
- In progress: BVH motion capture conversion to X3D interpolators for H-Anim (movie)
- Next: skinning – ensure spec & players correct
- TODO: revisit avatars?

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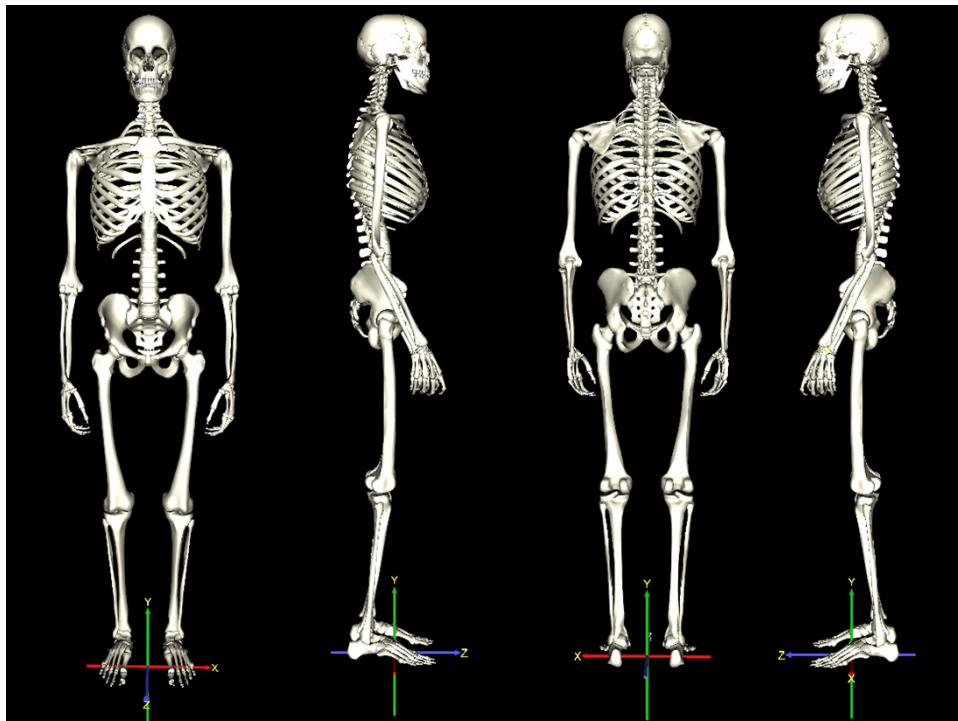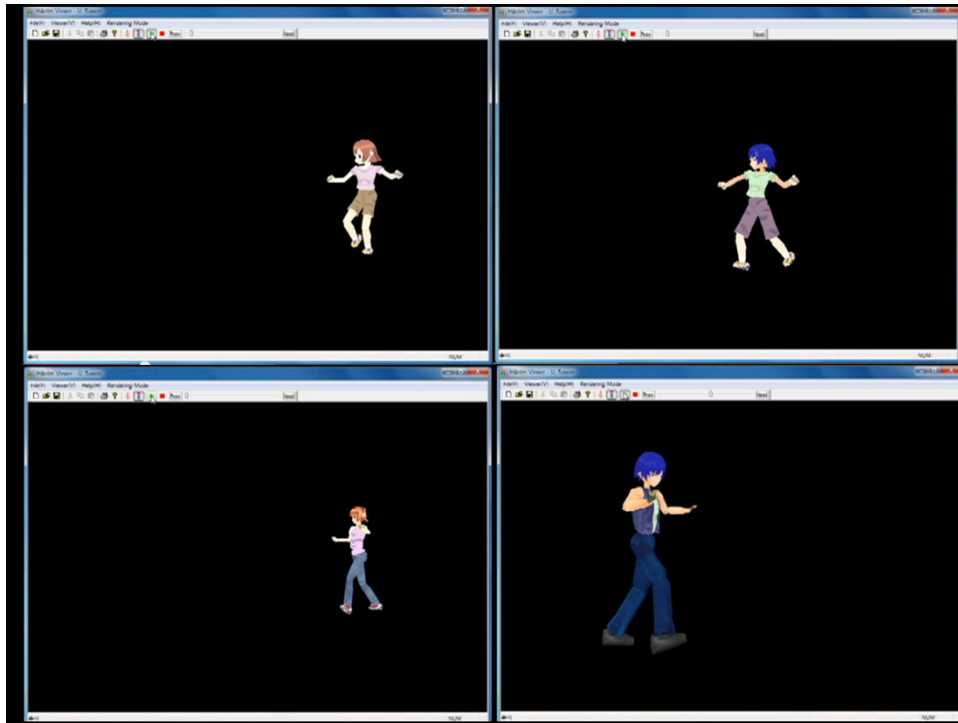
X3D Specification Progress Report

X3D Road Map

- X3D version 3.4 – stable evolution
- X3D version 4.0 – next generation
  - HTML5 integration using X3DOM approach
  - Mixed and Augmented Reality (MAR)
  - Maximize backwards/forwards compatibility
- X3D Compressed Binary Encoding (CBE)
  - Call for Contributions still open... will close by summer
  - Geometric shape compression
  - Efficient XML Interchange (EXI) W3C Recommendation
- X3D MIME media types (98% complete)

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X3D version 3.4 – stable evolution

- Many goals
- All appear to be achievable
- Implement at least twice, evaluate, test cases
- Web3D members approve
- Results are vetted by ISO and national bodies
- http://www.web3d.org/wiki/index.php/X3D_version_3.4_Development

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X3D version 4.0 – next generation

- HTML5: elevating DOM reconciled all major issues
- X3DOM: player plugins are optional
  - 51% complete support of X3D, reconcile event models
- Mixed, Augmented Reality (MAR) Reference Model
  - ISO SC 24 Working Group
  - Joint Ad hoc Group with SC29; open IPR policy
- Get involved!
- http://web3d.org/wiki/index.php/X3D_version_4.0_Development

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X3D Compressed Binary Encoding
Call For Contributions

- **Motivation** Merits of the X3D Graphics standard include broad generality for many 3D applications. Lots of work has already been accomplished using the X3D Compressed Binary Encoding (CBE) standard. X3D has numerous coherent approaches already available that meet author requirements for a general Web-based 3D transmission format. We are working to demonstrate and standardize multiple interoperable improvements in 2013.
- **Approach** We are looking for component technologies that can help improve X3D CBE standard. Our goal is to produce a revision in 2013. This standard has two parts:
- 3D graphics compression technology continues to improve steadily. The Web3D Consortium wants to enable progress to interoperate compatibly.
- World Wide Web Consortium (W3C) adoption of the Efficient XML Interchange (EXI) Recommendation makes the possibility of a new X3D encoding appealing.
- Additional technical approaches that might apply to all X3D encodings (something like a 3dTransmissionFormat node) are also of interest
- We want to emphasize that each individual contribution is not expected to provide an overall comprehensive solution to all Web-compression challenges. Rather, the X3D Working Group is looking for additional technical capabilities that have the potential to work well together within our proven framework. If your capability might fix into this rich mix, please let us know!
- http://www.web3d.org/realtime-3d/working-groups/x3d/compressed-binary/x3d-compressed-binary-encoding-call-contributions

X3D MIME Media Types

- Internet Assigned Numbers Authority (IANA.org)
- Model/Standards Tree - x3d+xml
- Model/Standards Tree - x3d-vrml
- Model/Standards Tree - x3d+fastinfoset awaiting final review

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X3D MIME-Type

The X3D Working Group has provided formal submissions

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  1.2 Work list
  1.3 Submission status
  1.4 Deployment Action Items
2 Registration application for X3D MIME type (draft)
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  2.2 2. Subtype names
  2.3 3. Required parameters
  2.4 4. Optional parameters
  2.5 5. Encoding considerations
  2.6 6. Security considerations
  2.7 7. Interoperability considerations
  2.8 8. Published specification
  2.9 9. Applications that use this media type
  2.10 10. Fragment identifier considerations
  2.11 11. Restrictions on usage
  2.12 12. Provisional registration?
  2.13 13. Additional information
  2.14 14. Intended usage
  2.15 15. Other Information/General Comment
  2.16 16. Person to contact for further information

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