

# Mobile X3D Graphics

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Web3D Consortium

W3C Advisory Committee Lightning Talk

Edinburgh Scotland

22 May 2006

# Web3D and X3D

- The Web3D Consortium, like W3C, supports open standardization <http://www.web3D.org>
- Web3D's produces open standards for real-time 3D communication including ISO-certified X3D
- Extensible 3D (X3D) is a powerful, extensible XML-based standard for 3D visual effects, behavioral modeling, interaction, interoperability
- Web3D membership includes companies, institutions, working groups and individuals

Web3D Consortium - Royalty Free, Open Standards for Real-Time 3D Communication - Mozilla Firefox

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http://www.web3d.org/

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Open Standards for Real-Time 3D Communication

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## Communicating with real-time 3D across applications, networks, and XML web services



The X3D ISO standard defines a royalty free runtime system and delivery mechanism for real time 3D content and applications running on a network. It supports several file format encodings and programming languages, providing unsurpassed interoperability for 3D data and significant flexibility in manipulating, communicating and displaying scenes interactively. X3D incorporates the latest advances in graphics hardware, compression and data security to provide the best performance and visual impact in an extensible architecture that supports ongoing evolution. X3D's XML-encoded scene graph enables 3D to be incorporated into web services architectures and distributed environments, facilitating the movement of 3D data between applications.

[X3D Overview](#) [Specifications](#) [Developer Resources](#) [Message Boards](#)

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### Latest X3D News

 [Xj3D v1.0 browser, developer library and test environment](#)

*April 17, 2006* Xj3D is an open source X3D browser, developer library and test environment for real time 3D, virtual reality and augmented reality on the web, desktop or mobile device. The complete application toolkit has had over 50,000 downloads and has been used to prototype many extensions to the X3D spec - physics, fog, 3D textures, CAD, device abstraction, binary formats and more all began life as Xj3D extensions. A primary focus of Xj3D is conformance to the X3D spec while still maintaining high OpenGL accelerated performance. The milestone 1.0 release is available as a [download](#) for Windows, Linux, Mac OS X, and Solaris. It implements:



- **The CAD Geometry Component:** This component describes CAD specific data representations for X3D environments. It maintains CAD structural relationships in a way that facilitates reuse of the CAD data in different domains. It also maintains CAD layer relationships.
- **The Geospatial Component:** This component provides support for geographic and geospatial applications. This support includes the ability to embed geospatial coordinates in certain X3D nodes, to support high-precision geospatial modeling, and to handle large multi-resolution terrain databases.
- **The Humanoid Animation (H-Anim) Component:** The H-Anim standard specifies an abstract representation for modeling 3D human figures that will allow human figures created with modeling tools from one vendor to be animated using motion capture data and animation tools from another vendor. It allows direct access to the joint hierarchy of the human figure as well as the vertices of the geometry in a way that allows animations to be generated in a model independent manner. Xj3D Version 1.0 also supports hardware-accelerated rendering of these models and their animation.
- **The Distributed Interactive Simulation (DIS) Component:** This component defines the binary layout of a series of messages used to transmit simulation information using the DIS Standard (IEEE 1278). Often used by military applications, DIS covers a wide range of data, including entity location, velocity, and orientation, and more obscure features such as electronic warfare and supply logistics. In addition to its original focus on military simulations, DIS is also used in civilian applications.
- **ECMAScript and Java scripting capabilities:** X3D provides developers with interfaces to both ECMAScript and Java programs to allow greater degrees of flexibility in creating their content.
- **VRML Classic, XML and Binary Encodings Support:** The VRML Classic Encoding allows users to create X3D objects and animation using the technique defined in the Virtual Reality Modeling Language (VRML). The XML Encoding allows X3D files to be saved using the Extensible Markup Language (XML) format. The Binary Encoding allows X3D files to be saved in a compact binary form. Each Binary-encoded X3D file supports all of the purposes of X3D files defined in the X3D specification and can take advantage of geometric and information-theoretic compression techniques. Xj3D Version 1.0 includes an Encodings Converter that allows users to convert from one Encoding format to another.

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[Upcoming Events](#)

Web3D 2006: 11th International Symposium on 3D Web Technology April 18-21, 2006 Columbia, Maryland

Virtual Reality in Scientific Applications and Learning Workshop May 8-11, 2006 Glasgow, Scotland (UK)

SIGGRAPH 2006 July 30-August 3, 2006 Boston, MA

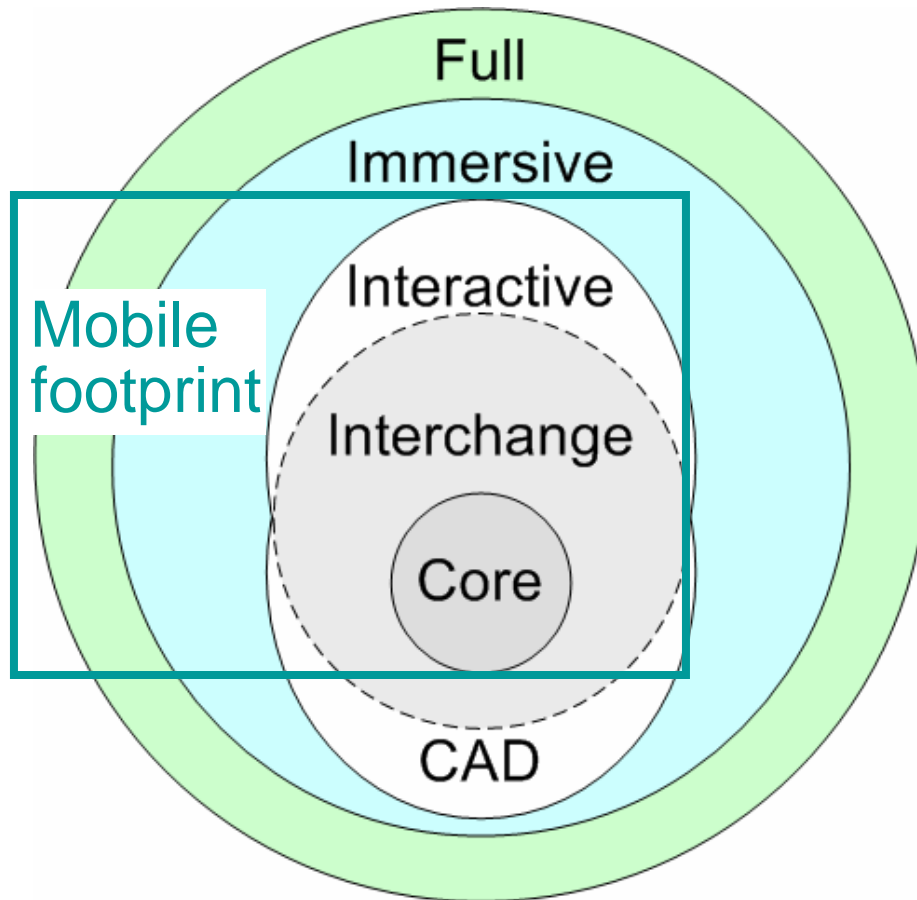
[X3D Message Boards](#)

Most Recent Topics

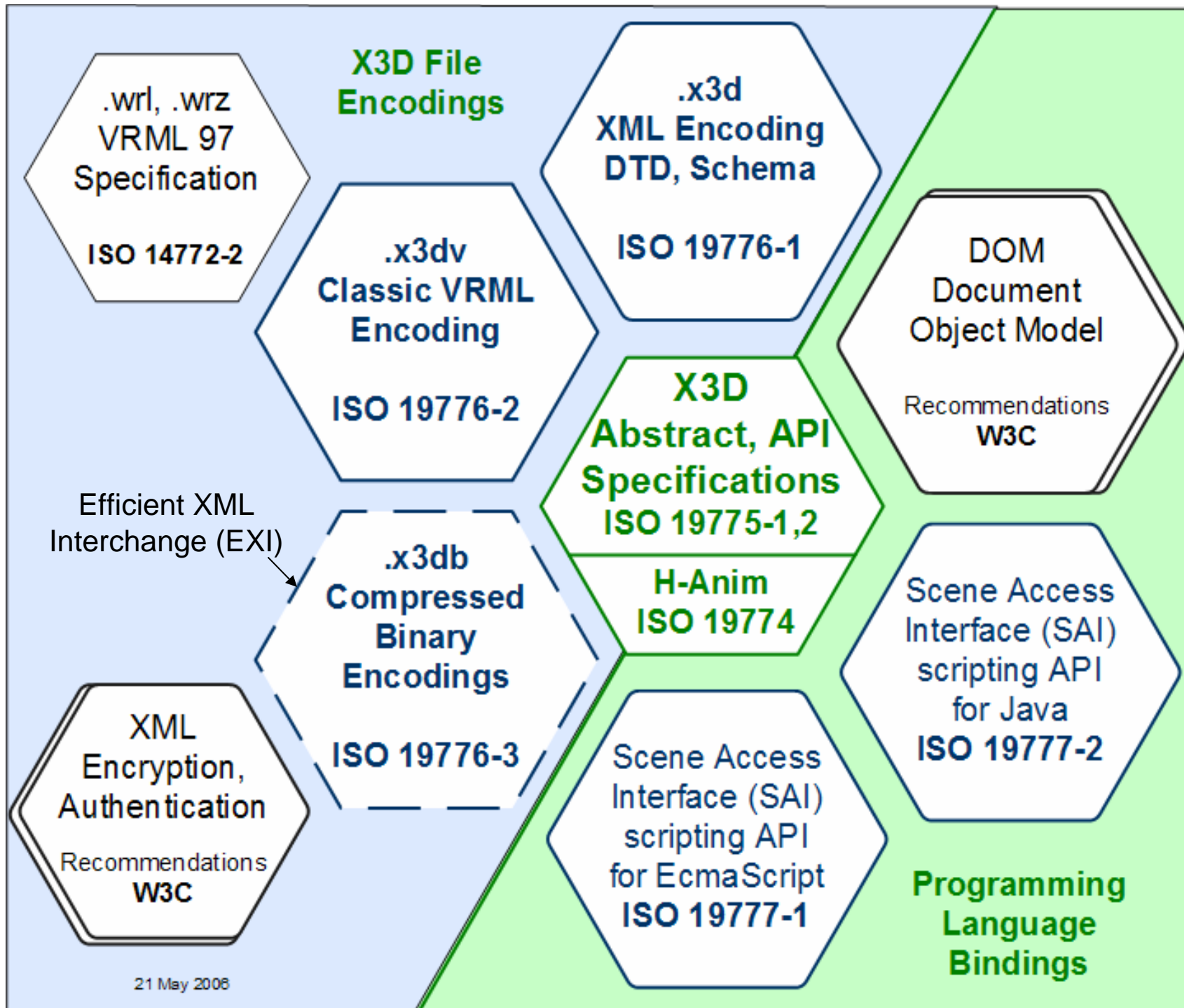
- Some error with Xj3D\_1.0
- Xj3D 1.0 is now out
- Developers zone to share code
- EXCEPTION RUNNING XEENA

Done 2.953s 67.15.54.3

# X3D Extensibility Profiles



- Different levels of content complexity
- Browsers can support increasing levels of capability
- Authors can use the proper palette for intended delivery



## Mobile performance progress

- Web3D 2006 Symposium May showed four browsers running on mobile PDA devices
  - Common application: city walkthrough
- Performance is satisfactory and improving
  - 10-30 frames per second
  - Today's demo: 26,000 polygons
- X3D Interchange Profile is sufficiently lightweight
  - Helpful outcome, don't need downsized "X3D Tiny"
  - Smaller + faster EXI encoding likely to help further

# Web3D 2006 browsers

1. BitManagement Software: *BS Contact Mobile Browser*  
<http://www.bitmanagement.de>
2. *m-LOMA - a Mobile 3D City Map*  
Antti Nurminen
3. *Rendering of X3D Content on Mobile Devices with OpenGL ES*  
Daniele Nadalutti, Luca Chittaro, Fabio Buttussi
4. *Using Expressive Rendering for Remote Visualization of Large City Models*  
Jean-Charles Quillet, Gwenola Thomas, Xavier Granier,  
Jean-Eudes Marvie

<http://www.web3d2006.org>

# MobiWeb X3D browser University of Udine, Italy



# Planet9.com exemplar



# Upcoming event

- Plan to demonstrate multiple lightweight X3D browsers again this summer
  - Web3D “Tech Talk”
  - ACM SIGGRAPH, Boston Massachusetts
  - 30 July – 3 August 2006

# Contact

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