Adopting Open 3D Graphics Standards and Open Source APIs for Project Application Longevity

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In April 1981, the first space shuttle lifted off from the Kennedy Space Center. Four months later, IBM introduced its first personal computer. In developing a NASA database that includes 3D models for simulation and other applications, one must deal with the longevity of NASA-based equipment and the rapidly changing nature of computer technology. One possible solution is to adopt open standards and open source APIs as the basis for applications development.

This presentation will discuss the Extensible 3D (X3D) standard and the Xj3D Toolkit, and their potential for NASA-based projects such as the Virtual Iron Bird project. X3D is a standard for creating real-time 3D content. X3D's standardization through the International Standards Organization (ISO) ensures that it will have a long shelf life and many compatible implementations. Moreover, the X3D Working Group has established a formal working relationship with the World Wide Web Consortium (W3C) and multiple W3C technical groups to ensure that X3D is interoperable with Extensible Hypertext Markup Language (XHTML), Scalable Vector Graphics (SVG), Mathematics Markup Language (MathML), Synchronized Multimedia Integration Language (SMIL) and other XML-based languages for Web-based content.

Xj3D is a Java-based, open source API for creating VRML 97 and X3D applications. It currently runs on several operating platforms—Windows, Mac OS X, Linux, Solaris and IRIX—and works across various devices such as the Elumens Dome, PC workstations and stereo walls. Employing the LGPL license, the Toolkit allows developers to develop and distribute their own X3D-based applications without having to pay any licensing fees. Moreover since the code is freely available, developers will be able to implement future hardware devices and operating systems. This presentation will include a demonstration to show how developers can use the Xj3D Toolkit to create their own X3D-based applications, and will discuss Xj3D's current status and plans for its future development.