

3DVIA Virtools 5

Comprehensive Platform for Creating Highly Interactive 3D Applications



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The 3DVIA Virtools 4 Platform ushers in a unique solution for pervasively developing and deploying 3D experiences on personal computers, game consoles, Intranets and the web, demonstrating Dassault Systèmes' commitment to bringing the power of 3D to all user communities. The open-ended architecture of 3DVIA Virtools 5 supports a wide variety of 3D formats. 3D Content Capture plugins support most commonly used DCC software formats (3ds Max®, Maya®, XSI®, Lightwave®, Collada®) for importing/exporting 3D XML files, making real-time 3D technology easily available.

3DVIA Virtools 5 allows users to imagine, share and experience highly interactive 3D content. 3DVIA Virtools 5 Platform enables easy development of virtual experiences such as driving, shopping, product use, maintenance and marketing tests. 3DVIA Virtools 5 also extends the range of target environments for deploying 3D experiences: Microsoft™ Windows® and Apple™ MacOS® computers, Wii and Xbox 360 game consoles, Intranets via Office and XE Players, Internet via the 3DVIA player, as well as immersive environments via the VR Library.

This broad scope highlights the diversity of potential deployment options and provides a large range of communities with a powerful solution to create and experience life content.

Key Features

- Programming system based on separation of objects, data and behaviors
- Intuitive user interface with real time visualization window and graphical programming
- Cutting-edge rendering with Programmable Vertex and Pixel Shaders
- Highly intuitive PCS model for creating highly interactive life-like experience
- Multi-tiered programming with Virtools Scripting Language or the Virtools C++ SDK for easy implementation of customized functions, custom devices, custom 2D and 3D formats and 3rd party technologies
- Dedicated modules and building blocks for Client and Server side
- Standalone and Peer Server Solution depending on the final needs
- Secured communication

Cutting-Edge Technology at Your Fingertips

The VR Library/Publisher enables distributed computing for PC clusters, which can radically lower the cost of VR projects while offering very high performance. Scenes are synchronized by reading parameters in the master scene and passing them to client scenes.

Relevant parameters for synchronization are determined by the developer authoring the application, and are easily accessible in the Schematic editor of 3DVIA Virtools 5. PC cluster distributed computing enables rendering from different viewpoints, a requirement for high-performance passive stereoscopy or multi-screen displays. Note that PCs with two graphics cards or a dual-head graphics card can render two or more viewpoints simultaneously.

The VR Publisher can also take advantage of scalable cluster platforms such as Orad DVG: add more rendering nodes per screen to increase polygon or pixel performance and/or antialiasing quality.

Ensured Time-To-Market, Higher ROI And Reduced Development Risks

By separating objects from the data and behaviors applied to them, developers using 3DVIA Virtools 5 can more economically develop various application modules simultaneously, further shortening time-to-market. Development time is further reduced thanks to Virtools' library of over 500 reusable behavior building blocks.

Virtools' multi-tiered access (Graphical User Interface, VSL, SDK) enables both non-technical designers and high-end programmers to assemble the sophisticated behaviors needed to create rich interactivity. Applications grow more complex while scripts remain easy to manage. What previously required over a year of development time can now be accomplished in a matter of months.

By using 3DVIA Virtools 5, companies can now bring together a balanced team of designers and hardcore programmers, all working with 3DVIA Virtools 5 as a single hub to create high-powered technical applications that deliver compelling interactive content. By dramatically optimizing the development of interactive 3D applications with 3DVIA Virtools 5, our clients clearly minimize their production costs.

With 3DVIA Virtools 5, corporate developers, game studios, web agencies and system integrators also reduce development risks usually associated with creating 3D highly interactive applications. Virtools' iterative development process lets production teams move forward together. Usability can be tested throughout the development process and the reusability of Virtools building blocks means developers can optimize workflow for future projects.

3DVIA Virtools 5

Comprehensive *Platform* for Creating Highly Interactive 3D Applications

3DVIA Virtools 5 includes five key components: the Graphical User Interface to develop sophisticated applications by visually assembling objects and behaviors, the Behavior Engine to run interactive applications, the Render Engine to render graphics in real-time, the Virtools Scripting Language to create low level specific functions without any C++ line and the SDK to create custom behaviors.

The Graphical User Interface

The Virtools 5 Graphical User Interface is used throughout every stage of development. It includes:

- A 3D Layout to display content in a real-time environment.
- Graphical tools for navigating, creating, editing, selecting and manipulating 3D objects, lights, cameras and curves.
- Creating and editing lights, cameras, materials, textures, grids and paths.
- Translation, rotation, scaling of 3D entities and navigation within the virtual environment.
- Drag-and-drop of behaviors onto 2D and 3D objects.
- Creation of new, reusable behaviors by graphically combining existing ones.
- A Schematic View to graphically assemble and fine-tune behavior building blocks for creation of interactive content.
- A Script Debugger to fine-tune applications.
- Entity Setup Tools to edit the parameters of any object that has associated behaviors.
- An Attribute Manager for quick visualization and modification of attribute values for multiple objects.
- An Action Manager to create scripts for frequently used functions, which performs a predefined task on a selection or parameter and accesses them in just a few keystrokes.
- A Hierarchy Manager to display a tree view of all the objects present in any level.

Open Architecture

3DVIA Virtools offers an open and flexible architecture that is compatible with the following standard technology formats:

- **3D files:** 3D XML, 3ds Max®, Maya®, XSI®, Lightwave®, Collada®.
- **Images:** JPG, PNG, TIFF, TGA, BMP, PCX.
- **Sounds:** MP3, WMA, WAV, MIDI.

Virtools Scripting Language (VSL)

The Virtools Scripting Language is a powerful scripting language that complements the Virtools 5 Schematic editor and the Virtools SDK with an intelligent coloring system, context-sensitive completion and function arguments display. VSL scripts can be processed at run-time or in Author mode.

VSL offers full debugging mode with breakpoint support, variables with value editing that can be monitored, and step by step debugging (also step into/out support).

Technical requirements

Hardware

- Pentium III or equivalent
- 1 Gigabyte (GB) of RAM
- DVD ROM drive
- Monitor capable of displaying 1024 by 768 in 16 bit color (65536 color/ Hicolor)
- Pointing device (mouse, trackball...)
- Direct3D or OpenGL compatible 3D graphic card with 128 MB of RAM
- DirectSound compatible sound card (not a requirement but recommended)
- You should ensure you have the latest official drivers for your graphics card

Software

- Microsoft Windows (2000, XP, Vista)
- Microsoft DirectX 9.0C for DirectX compatible 3D graphic accelerator cards
- For OpenGL, an OpenGL 2.0 compatible graphics card and driver
- Microsoft Internet Explorer 6.0 (for the Online Reference)

The Behavior Engine

The behavior engine runs both custom and out-of-the-box behaviors. 3DVIA Virtools 5 includes standard behaviors in the following categories: Cameras, Characters, Collisions, Controllers, Grids, Interface, Lights, Logics, Materials-Textures, Mesh modifications, Narratives, Optimizations, Particles, Sounds, Shaders, Visuals, Web, World Environments and more.

The Virtools Behavior Library can be extended with custom behaviors developed with the SDK, with the Behavior Pack or with third-party behaviors created by the Virtools user community.

The Render Engine

The render engine provides high-quality, real-time rendering of 3D images and animations. It includes the following features:

- Support for key industry standards: DirectX and OpenGL.
- Support for programmable Vertex and Pixel Shaders (DX9.c, OpenGL 2.0, HLSL, CgFX, Shader Model 3)
- Support for 3D modeling objects and animation from 3ds Max®, Maya®, XSI®, Lightwave® and Collada®.

The Software Development Kit (SDK)

The Virtools SDK is a suite of development tools (libraries, DLLs, header files) that provide access to all the low-level functionality used by Virtools software. Developers can write the following application components:

- Custom application executables using the Virtools engines as underlying technology.
- Extensions to the Virtools engines such as Behaviors, Media Importer, Manager, Render Engines Plugins, Rasterizers and Extension Plugins (specific Parameter Types).