

# Deep Exploration™ 5.5 CAD Edition

## Selected Features

### Summary of Selected Features

#### High Productivity Visual Product Communications & Collaboration Desktop Application

##### Easy to Learn User Interface

- Quickly navigate, search and display 2D and 3D graphics with familiar Microsoft Windows Explorer interface
- Unified workspace incorporating translation, 3D object modeling, scene composition, key frame animation, illustration, and publishing
- UI with dockable toolbars for customized layout
- Easily manipulate and interact with 3D scene using standard 2-button mouse (Pan, Zoom, Rotate)
- Search your computer, network, and/or the Internet for files by file name or format
- Keyboard shortcuts for increased productivity
- Improved UI, prompt to Save, Copy & Paste for creating object instances
- ENHANCED** - Search & Select dialog: search area: selected, visible or all, numerical input
- NEW** - Fly to Object via Middle Mouse button/wheel click
- NEW** - Traverse up and select objects in the Scene Tree from an assembly or part selection via Alt Left Mouse click

##### Powerful Object Editing

- Interactive object highlighting to easily identify selected or non-selected objects for editing
- Primitives and modifiers to add simple geometry to scene without the need for other 3D authoring packages
- Grouping and hierarchy tools available to easily manage complex models
- Precision selection tools enable complex shapes to be selected during model cleanup, scene alteration, and animation editing
- Add BOM/Parts List from external XML
- Pull Apart objects tool and reset to original default/home state
- Mirror tool to quickly create object instances with transformations
- NEW** - Alignment Tool to easily align, distribute and center 2D objects
- NEW** - Reorder and group parts and assemblies by drag and drop in Scene Components panel

##### Advanced Scene Configuration and Layout

- Multiple viewport configurations enable up to four simultaneous views of scenes for easy alignment and editing of geometry
- Flexible viewport modes (1/2, 3/4, full) for authoring, editing and viewing
- Gradients and background images can be used as the viewport background
- 3D object shadow makes scenes more aesthetically pleasing and photoreal
- Layers for associating scene components provide an alternate way to group, manage, and display geometry and scene elements
- Optimized rendering engine for the highest quality and performance real-time display
- Merge multiple 3D files into scene
- Reordering of Layers
- ENHANCED** - Detail View zoom tool to create locator graphics
- ENHANCED** - Universal, CAD and PMI Metadata support and Browser
- NEW** - New 2D drag and drop. Deep Exploration now supports a 2D layer in the 3D scene. User can Right Click drag and drop images, symbols and vector files onto a 2D layer or into the 3D scene
- NEW** - Customizable UI layout support, save/load layout option
- NEW** - Materials, Animation, Layers and Parts panels can be moved and docked from Scene Components panel
- NEW** - Camera alignment to point/face/surface

#### Powerful CAD and DCC Transformation

##### Accurate CAD and DCC Model Translation

- Import and translate over 80 CAD, 2D and 3D graphic formats (See View / Import Formats list below)
- Import options to control polygonal mesh density for optimal visual quality
- Maintain CAD and DCC 3D hierarchy, materials, and attributes such as part identifiers, assembly structures, call outs
- Translate camera, key frame animations, inverse kinematics, soft-body animations, skin and bones across all major DCC file formats
- Translate, structure and display vital CAD Product Manufacturing Information (PMI) data to significantly reduce the cost of 2D drawings
- NEW** - Translate, structure and display CATIA v5 Product Manufacturing Information (PMI) with new CATIA Import Module
- NEW** - Translate, structure and display JT Product Manufacturing Information (PMI) with included JT/PMI Module
- NEW** - Visual Compare Tool to easily identify the difference between two versions 3D parts or assemblies by painting every marked object in the scene in 3 different colors



## Powerful CAD and DCC Transformation

### 3D Graphics Optimization

- Best in class, dynamic polygon reduction to reduce file size and preserve shape of objects
- Object instancing for smaller file sizes, faster data transfer and increased real-time performance
- Remove hidden objects which are not visible from the outside of the objects to further reduce file size
- Merge and/or remove materials to reduce the number of materials in the 3D scene
- Join equal points for more efficient models in real-time visualization
- Select and remove small objects dynamically based on the size or polygon count

ENHANCED

### 3D Graphics Repair

- Unify normals for proper orientation to camera
- Invert faces and normals and easily isolate and select backward or front-facing surfaces
- Heal polygonal models, join cracked models and weld vertices while maintaining edge definition

## Unified 2D and 3D Product Graphics Authoring

### Photoreal 3D Image Authoring

- Apply real world materials, textures and reflection maps from advanced materials palette to achieve realism
- Edit material attributes including diffuse, bump, opacity, reflection, and more
- Enhanced automatic UV maps capability enables texture maps to be applied to 3D models
- Realight™ that bakes shadows to texture maps or vertex colors to simulate global illumination
- Apply different colors to adjacent objects for easy visualization of complex assemblies
- Selectable Object Elements tool allows materials to be set for groups of faces, add different materials, flip normals
- Add lights and advanced primitives
- Bake Transformation tool
- Improved Color palette/selector
- Advanced material thumbnail display allowing easy material identification and object selection by material
- Environment Maps support enables higher quality real time display and photo realistic renderings

ENHANCED

NEW

### 3D Animation Authoring

- Create and edit advanced key frame 3D graphic and camera animations
- Full featured animation timeline editing allows key frame location and properties manipulation
- Independent multiple animations control using animation sequences and sequence tracks for position, rotation, scale, and opacity
- Assign sequences to steps to create assembly / disassembly procedures
- Numeric and interactive object positioning tools allows precise object and animation editing
- Explode objects and create explode animations automatically
- Camera trajectory editing
- Key framing extensions to new data types - color, position, rotation, texture UV
- Automated parts and assemblies update workflow
- Direct frame or time input to jump Animation Scrubber Playhead
- Direct animation Sequence editing of start and end points and duration within the Animation panel.
- Reorder animation Sequences by drag and drop within the Animation panel.
- Direct editing of animation Sequence Name.
- Ability to merge multiple selected animation Sequences into a single animation Sequence.
- Record Keyframes button added to Animation controls
- Record Keyframes button in the On position highlights the 3D Viewport in Red and displays [REC] in top right corner of the 3D Viewport

ENHANCED

NEW

NEW

NEW

NEW

NEW

NEW

NEW

### Steps & Procedures Authoring

- Step authoring to communicate interactive assembly / disassembly procedures
- Each step includes the step name, description, keyword metadata, and one or more sequences
- Multiple Procedures supported in .RH file
- Expand & collapse Procedures to view Steps within a Procedure
- Direct text editing of Procedure Name, Step Name and Step Description
- Duplicate & Reverse a selected Procedure enables the automatic creation of an Assembly Procedure from a Disassembly Procedure and visa versa
- Multi select Steps using Shift and or Ctrl Keys for moving and deleting Step selections
- Render to Video file will render selected Step or Steps and Animation Sequences to a .AVI file or frames including Step subtitles
- Render to Raster will render all selected Steps to a Raster file
- Render to Vector will render all selected Steps to a Vector file
- Sequence Highlight will automatically highlight all objects that are animated within attached Animation Sequences per Step
- Output Size options are now persistent per Step

ENHANCED

ENHANCED

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## Unified 2D and 3D Product Graphics Authoring

### Model Views & Portfolio Authoring

- Predefined views of graphics to ease viewing and navigation
- ENHANCED** - Associate current camera position, render mode, and 3D object visibility within each model view
- NEW** - Standard and custom Output Size options dialog for precise graphics alignment
- NEW** - Expand & collapse a Portfolio to view Model Views within a Portfolio.
- NEW** - Multiple Portfolios supported in .RH file
- NEW** - Direct text editing of Portfolio Name
- NEW** - Duplicate command duplicates a selected Portfolio and all Model Views within the selected Portfolio.
- NEW** - Update Render Mode will update selected Model Views render mode to the current render mode state.
- NEW** - Render to Raster will render all selected Model Views to a Raster file
- NEW** - Render to Vector will render all selected Model Views to a Vector file
- NEW** - Output Size options are now persistent per Model View

### High Quality Line Art Illustrations Authoring and Rendering

- Industry standard vector and raster file formats
- Create illustrations from predefined isometric, diametric, and trimetric views and specify unique views via XML
- Multiple render modes such as Line Illustration, Solid Outline, Shaded Illustration, Transparent, Wireframe, and more
- Specialized rendering engine mode to emulate technical illustration line art
- Orthographic and perspective camera projection
- Callouts adapt to 3D motion and can be automatically positioned to face the camera
- Callouts generated from 3D scene, selected parts or a list may be externally supplied in XML format
- Edge threshold, line weight, color and shading parameters controls
- High quality photoreal raytraced images generation that include shadows, reflections, transparency and other effects
- Realistic lighting effects
- Render images with alpha channels for advanced compositing
- 2D Alpha tool for creation, removal, and manipulation of alpha channels in texture maps
- ENHANCED** - Bills of Material (BOM) display associated with scene parts
- ENHANCED** - Enhanced Callouts Dialogs to improve speed of authoring
- ENHANCED** - Automated display of parts callouts
- ENHANCED** - 2D and 3D Symbol library that is S1000D compliant
- ENHANCED** - 2D line styles in 3D Viewer and 2D vector and raster Illustration outputs
- ENHANCED** - Easy Thrustline creation including animation
- ENHANCED** - High quality illustration export - removal of duplicate lines, join lines, etc.
- ENHANCED** - Illustration support, thick n thin rendering, color fill, and more
- ENHANCED** - Drawing tools added to improve technical illustration workflows
- ENHANCED** - WebCGM export including automatic hotspot creation and XML companion file
- ENHANCED** - CAD loaders to enable dynamic "Thick and Thin" line display
- ENHANCED** - Rendering speeds and accurate line rendering via hidden line removal by calculating intersections (Speed increase up to 40% )
- ENHANCED** - Bi-directional Callout editing between Parts List/BOM and Callouts
- NEW** - Individual Part or Assembly transparency for enhanced illustration techniques
- NEW** - Vector Preview can render vector illustration and the load it into Deep Exploration
- NEW** - Improved halo / arrow size for callouts with user-defined thickness to adhere to S1000 D requirements
- NEW** - Append multiple Existing BOM's when applying Callouts

## View and Markup Graphics

- Slide show mode to display both 2D and 3D graphics
- XYZ markup filtering for improved collaboration
- Ability to calculate surface area and volume of a model
- Thumbnails of 3D Models viewable within Microsoft Explorer
- ENHANCED** - Measurement tools measure the distance between two object including angles and display focusing on relevant measurements
- ENHANCED** - Markup and annotations including note, cloud, URL, line, and various shapes
- ENHANCED** - Clipping plane to create dynamic cross sections to better understand 3D models
- ENHANCED** - Cross section cutting plane, half and quarter sections - box section cutting
- ENHANCED** - Detail Views for detail and locator view graphics
- ENHANCED** - Partslist functionality, including Drag and Drop renumbering, support for external BOMs, and multicolumn metadata support
- NEW** - Image Notes can be used to markup graphics
- NEW** - Magnify Glass to designate a closed Detail View
- NEW** - Notes and Drawing shapes and lines can be projected onto 3D surfaces
- NEW** - Ability to disable measurements in .RH file for IP security when engaged in collaborative design and outsourcing using Deep Exploration, Deep View and Deep Access



## Flexible Options For Publishing Finished Product Graphics and Documents

- Export to over 40 2D and 3D graphics formats (See Export Format list below)
- Publish and view 2D and animated 3D graphic content within Microsoft Office and Adobe Framemaker documents
- Publish and view 2D and animated 3D graphic content within HTML pages
- Publish CAD Product Manufacturing Information (PMI) data
- ENHANCED** - 2D and interactive 3D PDF publishing with the included PDF Publishing Module
- ENHANCED** - Create custom PDF templates for 2D and interactive 3D PDF document publishing
- NEW** - 20+ PDF Template Designer controls added
- NEW** - Support for multiple Procedure publishing to HTML and PDF Templates
- NEW** - Optimized PDF loading times, Materials usage in U3D and selection JavaScript in PDF Publishing
- NEW** - Publish Background Images to 3D Annotation now supported in PDF Publishing
- NEW** - Hyperlinks supported in PDF Publishing of Steps Descriptions

## Support for High Volume, 2D and 3D Graphics Processes

- Use Deep Exploration CAD Edition to define and pilot graphics transformation and authoring processes before automating these processes in Deep Server
- Use Deep Exploration CAD or Standard Edition to perform final touch-ups on graphics automatically generated by Deep Server
- Upload 3D graphics authored in Deep Exploration CAD Edition into Deep Server via Deep Access to automatically generate additional predefined 2D and 3D product graphics
- Use Deep Exploration CAD Edition for one-offs and other small projects where Deep Server scale automation is not required
- Use Deep Access to manage 2D and 3D graphics authored in Deep Exploration CAD or Standard Edition

## Multiple File Options

### View / Import Formats (see complete file import/export details on Right Hemisphere Web site)

- Over 30 2D raster image file formats including PSD, BMP, TIF, GIF, JPG, PNG, and HDR
- Over 50 DCC file formats from leading DCC applications including 3ds max, Lightwave 3D, Cinema 4D, Maya, XSI and more (RH, U3D, MAX, 3DS, LWS, LWO, XSI, C4D, MB, OBJ, X, COB, FLT, and VRML, etc.)
- Over 30 CAD file formats from leading CAD vendors including Dassault Systems, Autodesk, PTC, UGS and more (CATPart, CATProduct, Model, ASM, PRT, SLDASM, SLDPRT, IAM, IPT, JT, MF1, XV3, XV0, PAR, DGN, STEP, IGES, DWG, DXF, STL, SAT, etc)
- Vector Illustration file formats including AI, EPS, DXF, CGM, SVG, SWF, and WMF
- Audio file formats including MP3, MP2, WAV, AIFF, SND, MIDI, RMI, AU, and MPA
- Video file formats including AVI, MPEG, M1V, and ASF
- Motion capture file formats including BVH, CSM, C3D, HTR, TRB and TRC
- Text in XML
- Bill Of Materials (BOM) in XML format
- Google SketchUp - SKP
- AutoDesk FiLMBOX - FBX
- Silo3D
- NEW** - CATIA v5 Module imports and structures Product Manufacturing Information (PMI) per the ASME Y14.41 Product Data Definition Standard
- NEW** - JT/PMI Module imports and structures Product Manufacturing Information (PMI) from JT files per the ASME Y14.41 Product Data Definition Standard

### Export Formats (see complete file import/export details on Right Hemisphere Web site)

- 2D raster image file formats including BMP, TIF, JPG, PNG, EXR, PPM, IIF, and TGA
- PDF documents including 2D, 3D, text and forms via the included PDF Publishing Module
- Video AVI
- Motion capture file formats including BVH, CSM, TRC
- Silo3D
- 3D XAML
- Google SketchUp - SKP
- ENHANCED** - 3D graphics file formats including RH, U3D, MAX, MB, LWS, LWO, XSI, OBJ, 3DS, FLT, GEO, COB, X, and VRML
- ENHANCED** - Vector Illustration file formats including AI, EPS, DXF, CGM, SVG, and SWF
- ENHANCED** - AutoDesk FiLMBOX - FBX
- ENHANCED** - WebCGM export including automatic hotspot creation and XML Companion file
- NEW** - JT export with the included JT/PMI Module



## Deep Exploration System Requirements

### Minimum

- Windows 2000 SP4 operating system
- Pentium 4 1Ghz processor or higher
- 512MB of RAM (more for large model and texture sizes)
- Microsoft DirectX, version 8
- Internet Explorer 6.0
- Graphics card capable of displaying 24-bit color
- 3D hardware accelerator video card

### Recommended

- Windows XP SP3 operating system
- Pentium 4, 2Ghz processor or higher
- 3GB of RAM (more for large model and texture sizes)
- Microsoft DirectX, version 9
- 3D hardware accelerator video card with 128MB of RAM

### Additional

- To create custom PDF Templates using the included PDF Template Designer requires one of the following version of Adobe® Acrobat®: Acrobat 8.1+ Pro, Acrobat 3D v8.1+, Acrobat 9 Pro or Acrobat 9 Pro Extended
- An Internet connection is required for 3D Web searches and Cortex updates
- To view and save 3ds max files, a copy of 3ds max must be installed
- To view and save Maya files, a copy of Maya must be installed
- To view Inventor 2008 files, Autodesk Inventor 2008 Viewer must be installed
- To view 3D content in a HTML Document with 3D (.html) files, Deep View must be installed
- The .rh file type must be added to the Microsoft Windows Server 2003 "recognize file type" set



**RIGHT**  
HEMISPHERE®

3825 Hopyard Road , Suite 150 , Pleasanton, CA 94588  
www.righthemisphere.com sales@righthemisphere.com  
phone: 925-460-8133