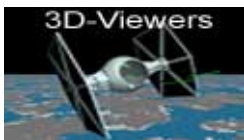


2006 3D Viewers Roundup Product Reference Guide

July 2006

Editor's Note: As the 3D viewer market changes to meet the global market and we move toward the future of the industry, more and more we will see an increase in emphasis on taking the CAD designs beyond just engineers and architects. With the introduction of players like Adobe and Google into the field, the world of 3D modeling is reaching into new territory. For organizations both large and small, 3D viewing technology will take on more importance as it enables collaboration within and without the company. This will only become more common as more players enter the field. By letting users view, markup, and print 3D CAD files without the originating CAD software, the 3D viewer market is moving deeper into the mainstream. But how do you know which 3D viewing solution is best for your organization? Our goal is to help our Community Members answer this question. We give you the 3D Viewers Roundup.

The 2006 3D Viewers Roundup consists of feature article compiled by our staff with interviews from industry experts, two tutorials for users seeking to create interactive 3D PDFs and this Product Reference Guide, which lists specifications for products that provide a range of viewing, markup, and collaboration capabilities in CAD neutral and cross-CAD file formats.



[Get the Latest on 3D Viewers in Our 2006 Roundup](#)

By John Myers

There's big things shaking in the 3D viewer market as CAD design goes mainstream.



[PDF Tips for Manufacturers](#)

By Lars Olson

Easily create interactive 3D PDFs that include CAD models and product manufacturing information.



[More PDF Tips for Manufacturers](#)

By Lars Olson

Creating interactive 3D PDFs to communicate assembly and disassembly procedures more precisely.

The data herein was compiled using submissions from the listed companies. Note that it is not an exhaustive list of companies, nor does it include all the products of each company. However, we have attempted to include all the major software solutions. Those who did not receive an invitation for inclusion in the guide who feel they should have been are urged to contact ConnectPress to have their company added to our list for next year. ConnectPress Ltd. cannot guarantee the accuracy of this data; we suggest you contact specific companies for further information, particularly to confirm technical details regarding their products. Space does not permit us to list all file formats supported, nor are all versions of 3D CAD supported. Please contact individual companies for more specifics. All prices are in U.S. dollars except where otherwise noted.

	3D – TOOL/ Ingo Wulf	Adobe
Product Names	3D – TOOL V 7.5	Adobe Acrobat 3D & Adobe Reader
Import file from which 3D CAD applications? Other file formats?	3D: STEP/ IGS/ VDA/ SAT/ PARASOLID (X_T/ X_B)/ STL/ SLP/ VRML 1/ VRML 2/ IV/ XGL/ 3DS/ OBJ/ DXF/ ASC. 2D: DXF/ DWG/ PLT.	Major CAD and DCC applications
Maximum file size imported?	No limit on file sizes. Depends on hardware configuration.	This is much more a function of the system RAM, video card capabilities and general sub-systems. Acrobat supports very large file sizes (the PDF 1.6 specification has no limit on page size or file size) but there are practicalities involved which limit your file's size based on the level of performance your system is capable of.
Does it support 2D format for 3D files?	Yes, exporting BMP and JPG pictures and printing is supported.	We support both 2D & 3D formats
Uses CAD system API to publish?	No	Not required; our conversion tools are not dependant on the originating CAD application API's.
Outputs which 3D format(s)?	Stand-alone EXE-files containing viewer and data STL/ VRML/ 3DS.	You can output .u3d, and to .rh from a subsidiary application that installs with Acrobat 3D called the 3D Toolkit.
Part/assembly markup, editing in 3D?	Yes, single parts and complex assemblies can be organized and edited as well as shown or hidden. It is possible to add 3D notes and annotations or dimensions, create cross sections and change colors or lighting. An unlimited number of custom views can be saved to facilitate communication and aid design reviews.	Yes on mark up as well as measurement and cross sectioning. Parts can be hidden, made transparent, isolated etc. Editing of the 3D file is possible via the 3D Toolkit.
Stand-alone app., or need native software? If so which?	Stand-alone application.	In most instances there is no need for the native app. For 3DStudio Max and Maya, the native app is required only if you are converting files.
Measuring capabilities?	Yes, (distances, angles, radius, wall thickness, point coordinates, edge length.	Yes
Analysis? File conversion/ cleanup? Batch processing?	Analysis: wall thickness, draft angles, material volume. File Conversion: any imported file type can be exported in any other supported file type. Clean Up: some imported geometry with bad or poorly connected surfaces can be repaired. Batch Processing: yes	Yes, using the 3D Toolkit which ships with Acrobat 3D.
Optimization capabilities?	OpenGL Hardware Acceleration, file size optimization for bundled viewer executable files, lightning and color.	Yes
Animation capabilities?	Yes, will be available in the next release (Version 8.0)	Yes, via the 3D Toolkit which ships with Acrobat 3D.
Full resolution doc. printing?	Yes, uses Windows Print Manager and existing drivers.	Yes, we excel at this
Web publishing and/or tools?	No	You can publish PDF files within web pages
Security, review process controls?	Measurements can be disabled when publishing stand-alone EXE-files.	Multiple levels of control and security are available both at client level as well as at enterprise level, the latter when integrated with Adobe LiveCycle Policy Server software.
Change history?	No	Change history is available within the PDF document.
Integrated w/ doc. mgt. system(s)?	No	PDF is a recognized and primary format of most document management systems.
Any other significant or unique features?	Complete projects can be saved into one compact stand-alone EXE-file. The EXE-file contains the viewer and the data and needs no installation to start up. The intuitive interface allows a close examination of the design without special CAD skills. Additional models can be imported to create assemblies; models can be moved independently of each other to create exploded views. Imported assemblies can be exported as individual part files. Viewer gradient background can display graphics and text notes and notices.	This is the only document-based collaboration tool that has such a significant number of features. The author has considerable control over user access and user available features for participants using the free (and fully functional) Adobe Reader.
Does product load on desktop? Client server? True thin client?	3D-TOOL is a stand-alone application supported on all Windows platforms.	Product can work on a peer-to-peer network (ad hoc collaboration) as well as via servers. Collaboration via a server enables multiple users accessing the same PDF for collaboration placed on a web server. Adobe Reader is available for many platforms, including many handheld devices. 3D features are available for Mac, Win and multiple Unix platforms.
System requirements?	Software: Windows 95/98/ME, Windows NT/2000, Windows XP. Hardware: 600MHz, 32 MB RAM beyond the OS needs, Display 800x600 or better.	The product is available for Microsoft Windows 2000 (with Service Pack 2), Windows XP Professional, Home and Tablet PC Editions, and IBM AIX 5.2, HP UX 11.0, SGI IRIX 6.5, and Sun Solaris 2.8.
Price?	3D-TOOL advanced 300 Euro. 3D-TOOL basic 150 Euro.	US\$995, upgrade US\$545
Full function evaluation copy?	Yes	Yes
Web address	www.3D-TOOL.de	www.adobe.com
Contact name	Ingo Wulf	N/A
Email	Team@3D-TOOL.de	N/A
Phone	+49.6203.955.768	N/A

	AutoDWG	CADLook
Product Names	DWGSee and DWGSee Pro	CADlook Viewer/Translator Version 9.0
Import file from which 3D CAD applications? Other file formats?	AutoCAD or AutoCAD compatible formats	Import: neutral formats including IGES, STEP, VDA, SAT and Parasolids; Export: to IGES, STEP, VDA, SAT, Parasolid, BMP, JPEG, VRML and STL
Maximum file size imported?	Not limited	No limits on file sizes. Depends on hardware
Does it support 2D format for 3D files?	Yes, it does	Support IGES drawings
Uses CAD system API to publish?	Yes, the API for the developers is available	No
Outputs which 3D format(s)?	This is a DWG file viewer, does not edit and write the DWG files.	Export: to IGES, STEP, VDA, SAT, Parasolid, BMP, JPEG, VRML and STL
Part/assembly markup, editing in 3D?	The markup is assemblies in 2D	Yes; markup. Can view/delete parts in assemblies; users can instantiate, copy parts in assemblies.
Stand-alone app., or need native software? If so which?	Stand-alone application, AutoCAD not required.	Stand-alone application. Users do not have to have any other licenses.
Measuring capabilities?	Measuring on the length and area, with smart snap and with the DWGSee Pro version, you can select to mark up the measurements on the angle, length etc.	Yes; measure & dimension angles/ distances/radii, cross-section, measure curve lengths, calculate area/volume/centroid/ moments of inertia.
Analysis? File conversion/cleanup? Batch processing?	The DWGSee Pro version converts the DWG file to PDF format and image format, such as .JPG .PNG .TIFF .GIF, to publishing the drawing with redline and markup in PDF or image formats.	Analysis: see above; convert from all formats we import to any of formats we export; perform automated clean up or use stitching capability to stitch trimmed surfaces into solids; can batch translate from any of files we import to any of files we export.
Optimization capabilities?	Not available, except multi-shaped redline and mark up features.	Users can change color of any surfaces or objects.
Animation capabilities?	Not available	No
Full resolution doc. printing?	Yes, it does, and featured with print to scale functions.	We provide encapsulated postscript output.
Web publishing and/or tools?	Supports publish DWG file in JPG or PNG file formats, smaller in size.	No
Security, review process controls?	Not available	No
Change history?	Supports embedded raster image ~C January 2006. Supports redline of measurement (pro version only) ~C April 2006.	No
Integrated w/ doc. mgt. system(s)?	Not available	No
Any other significant or unique features?	Simple interface, easy of use, be good to the people who only have basic IT knowledge.	N/A
Does product load on desktop? Client server? True thin client?	Yes, it does load on desktop, client server and true thin client.	Only Windows
System requirements?	Windows 98 thru Windows XP, and Windows NT, windows server 2003, PII 350MHz CPU or greater, 100MB Free Hard drive or more 128MB Memory or more	Windows 2000 and Windows XP. No other restrictions.
Price?	DWGSee USD62.00/user ~ USD35.00/user (order 50 or more); DWGSee Pro USD98.00/user ~ USD62.00/user (order 50 or more)	Price ranges from \$299 for our Basic Viewer to \$799 for our Advanced Viewer/Translator.
Full function evaluation copy?	Yes, full-function trial version, with water mark in the corners of the screen, no expire time limited.	Yes; A 15-day full functional evaluation copy can be downloaded from our website.
Web address	www.autodwg.com/dwg-viewer	www.cadlook.com
Contact name	Kenny Kelland	Fan Chiang
Email	info@autodwg.com	fchiang@cadlook.com
Phone	859.648.0106	650.269.6531

	Cimmetry Systems	IMSI Soft
Product Names	AutoVue Office, AutoVue, AutoVue Professional, AutoVue SolidModel, AutoVue SolidModel Professional, and AutoVue EDA	CAD View and Convert Plus
Import file from which 3D CAD applications? Other file formats?	Can view Natively over 450 file formats, office, raster, 2D and 3D CAD, also EDA file formats. Including CATIA, Unigraphics, SolidWorks, and many more.	Any CAD application supporting the following file formats: ACIS (SAT); AutoCAD, AutoCAD LT (DXF, DWF, DWG); Bentley MicroStation (DGN); DesignCAD (DC, DCD), EPS, FastCAD (FCD, FCW); IGES Drawing (IGS), MTX, Hewlett Packard Plotting (PLT); ACIS (SAT), STEP Drawing (STEP, STP); Stereo Lithography (STL); TurboCAD (TCW). 3D Studio (3DS), FloorPlan (BMF, FP3), Computer Graphics Metafile (CGM), Encapsulated Post Script (EPS); Metastream (MTX); VRML Worlds (3DV, GEO, WRL, WRZ); Windows Meta File (WMF).
Maximum file size imported?	Depends on different factors	No Limit
Does it support 2D format for 3D files?	Yes	Yes, both
Uses CAD system API to publish?	No, do not need to use the native CAD system	No
Outputs which 3D format(s)?	STL and VRML as needed. do not need to use a converted file.	3DS, BMP, DGN, DWF, DWG, DXF, EPS, IGES, JPG, MTX, PDF, PLT, SAT, SHX, STEP, STP, STL, SVG, TCW, WMF, WRL, WRZ.
Part/assembly markup, editing in 3D?	Yes	Yes. Redlining with Text, Revision Clouds and Sketching tool. 2D editing can also be done but edits are saved to a separate drawing layer
Stand-alone app., or need native software? If so which?	Stand alone	Stand-alone application
Measuring capabilities?	Yes	Yes - Angle, Area, Coordinates of the Point, Distance
Analysis? File conversion/cleanup? Batch processing?	Has a great deal of analysis capabilities. Can convert but no clean up, yes can batch process.	None. Yes, complete ability to convert between support Import and Export file formats. None
Optimization capabilities?	N/A	No
Animation capabilities?	No	Models and drawings may be interactively viewed through the Examine, Roll, Slide, Turn, and Walk tools.
Full resolution doc. printing?	Yes	Yes
Web publishing and/or tools?	No	Yes, files can be converted to DWF, JPG or PDF files
Security, review process controls?	Yes	Redlines and edits written to a separate drawing layer
Change history?	Yes	No
Integrated w/ doc. mgt. system(s)?	Yes	No
Any other significant or unique features?	Offers the ability to do real time collaboration and digital mock up.	<u>Dimensioning</u> - Angular, Diameter, Leader, Orthogonal, Parallel, Radius, Rotated; <u>Snaps</u> - Vertex, Intersection, Middle Point, Center Point
Does product load on desktop? Client server? True thin client?	Have different version for desktop and client server and yes the client server version is a true thin client.	Desktop
System requirements?	AutoVue Desktop System requirements: A personal computer with a minimum Intel Pentium CPU, 256 MB RAM • Microsoft Windows 2000, 2003, or XP • A hard disk with at least 250 MB of hard disk space • Windows-supported pointing device such as a trackball or mouse. AutoVue Client-Server Client requirements: Generally, any platform/browser that fully supports Java 1.1.6 or later Java Virtual Machine is supported. • Windows 2000, 2003, XP with Microsoft Internet Explorer 6.x, and Netscape 7, 8 and FireFox 1.0.4. • Macintosh Power PC OS X Safari 2.0 with Java 1.4.2 • Sun Solaris 8,9 and Netscape Navigator 7 with Java 1.4.2 • Redhat Linux 9.0 and Netscape Navigator 7 with Java 1.4.2 • HP-UX 11 and Mozilla 1.7 with Java 1.4.2 • AIX 4.3 and Netscape Navigator 7 with Java 1.4.2 Server requirements: a server running Windows 2000, Windows XP, Windows 2003, Sun Solaris 8&9. A server with a single CPU is OK, however a dual CPU is recommended. For fault tolerance at least 2 servers are required.	<ul style="list-style-type: none"> • 128+ MB RAM • 55 to 260 MB hard disk space • 64+ MB of swap space • Super VGA (1024 x 768) display • High Color (16 bit) graphics card • 4x CD-ROM drive Windows 2000/XP Home Edition/ XP Pro
Price?	Varies from \$395USD for AutoVue to \$1495US for AutoVue SolidModel Professional.	\$89.95US
Full function evaluation copy?	Full-function demo copy	No
Web address	www.cimmetry.com	www.turbocad.com
Contact name	Gerald Fauteux	Bob Mayer
Email	gerald_fauteux@cimmetry.com	bmayer@imsidesign.com
Phone	514.735.3219 x143	415.878.4268

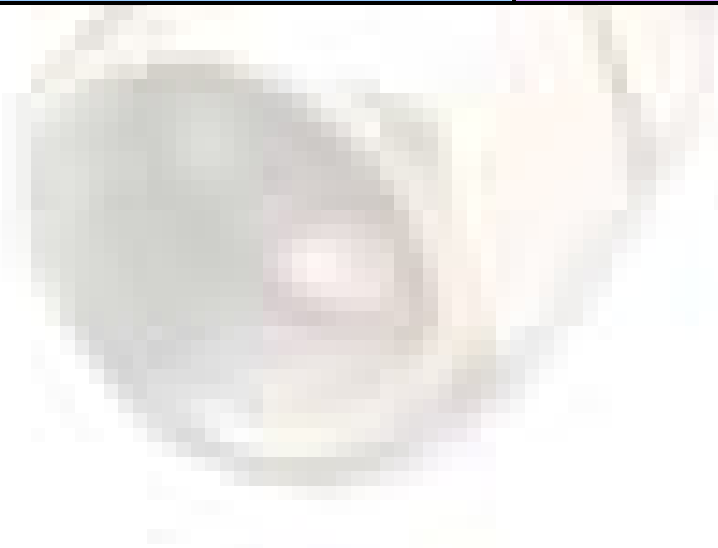
	Informative Graphics	Kubotek
Product Names	ModelPress Desktop	Kubotek Spectrum
Import file from which 3D CAD applications? Other file formats?	3DS: 3D studio model (studiomax), DWG: 3D AutoCAD (including ACIS), HSF: OpenHSF, IAM,IPT: Inventor 3D (may require additional download), ICS: IronCAD, IGES: Initial graphics exchange specification, PAR,PSM,ASM: Solid Edge parts and assemblies, PRT, ASM, XPR, XAS: Pro/E (requires Granite option), SAT: special ACIS format, SLDPRT, SLDASM: SolidWorks parts and assemblies, STEP,STP': standard for the exchange of product model data (requires Granite option), STL: stereolithography, VDA: VDA (requires Granite One option), WRL (VRML) Virtual reality modeling, Language: XGL/ZGL extensible graphics language.	Kubotek Spectrum reads 3D CAD files directly from AutoCAD, Autodesk Inventor, CADKEY, CATIA 4, KeyCreator, Pro/Engineer, Pro/E Wildfire, and SolidWorks. STEP, IGES, ACIS SAT, Parasolid X_T, and STL are also read.
Maximum file size imported?	No size limit	No set limits on file size
Does it support 2D format for 3D files?	3D only	No
Uses CAD system API to publish?	Autodesk Inventor	No
Outputs which 3D format(s)?	AutoCAD 3D DWF/DWG/DXF, Inventor, SolidWorks, Solid Edge, IGES, STL, VRML, OpenHSF, XGL, SAT, 3DS and IGC's content secure 3DF format.	No output of 3D CAD models
Part/assembly markup, editing in 3D?	No	No
Stand-alone app., or need native software? If so which?	ModelPress	Fully stand-alone
Measuring capabilities?	Yes	Yes, distances, entity/edge lengths, perimeters, 2D areas, and 3D volumes, and moments.
Analysis? File conversion/cleanup? Batch processing?	Yes N/A No	No analysis, No conversion, No batch-processing
Optimization capabilities?	No	No
Animation capabilities?	No	No
Full resolution doc. printing?	N/A	Yes
Web publishing and/or tools?	Yes	Yes, publish 2D and 3D to HOOPS HSF format
Security, review process controls?	Yes	None, no changes allowed
Change history?	No	No changes allowed
Integrated w/ doc. mgt. system(s)?	Yes, EMC Documentum, Open Text, Microsoft Share Point.	Callable but no integrations
Any other significant or unique features?	N/A	Printer configurations print stamping, temporary transparency and face coloring, 3DConnexion input device and multimedia keyboard support.
Does product load on desktop? Client server? True thin client?	Yes No No	Standard Windows program installed on each user's PC, Power User or higher permission level required.
System requirements?	Pentium 1100, Windows 2000/XP/NT 4, 75 MB hard disk, 256 RAM 3D, 500MB available swap disk space.	Windows XP or 2000 SP2, 115 MB hard drive space for installation , 1024 x 768 resolution (minimum)
Price?	\$99.00US	No charge for single download, floating network license \$1,995US for up to 20 users
Full function evaluation copy?	Yes	Yes, download only
Web address	www.infograph.com	www.kubotekusa.com/products/spectrum
Contact name	Bill Gould (Director of Marketing)	Sales
Email	billg@infograph.com	sales@kubotekusa.com
Phone	602.971.6061 x144	800.372.3872

	Lattice 3D	Navisworks
Product Names	XVL Player: Viewer/Animation Playback; XVL XVL Player Pro: adds sectioning/measurement; XVL; XVL Studio: animation creation, process automation, model combination/assembly editing; XVL Signer: XVL file encryption; XVL Notebook: create 3D-aware documents; XVL Webmaster: automatic creation of 3D-aware web pages.	JetStream v5
Import file from which 3D CAD applications? Other file formats?	XVL Converters; Import files from all significantly adopted CAD systems; SVG, ParaSolid, IGES, VRML, OBJ, STL, DXF, 3DS, PDF	AutoCAD R14 to 2007, ADT 3.3 to 2007, Autodesk Building Systems, Inventor 5 to 11, Autodesk MDT 6 to 2007, Revit 4 to 7, Revit Building 8.1, Revit Structure 2.0, Autodesk 3ds Max 3 to 7, Autodesk Viz 3 to 2006, Autodesk Maya, Bentley AutoPlant, MicroStation SE, MicroStation J, MicroStation v8 to 8.5, Bentley Triforma J, Triforma v8 to 8.5, ArchiCAD 6.5 to 7, ArchiCAD 8 to 9, Graphisoft Constructor 2005, AceCad StruCad, AEC CADPIPE, AVEVA PDMS, CADKEY 20, CADopia IntelliCAD, CEA Plant-4D, e CADWorx PLANT, CADWorx STEEL, Coins BSLink, Coins Framing R3, CSC 3D+, CATIA, Google SketchUp, Hannappel Software GmbH elcoCAD R4, Intergraph PDS, Informatix MicroGDS, ITandFactory TriCAD, Kiwi GmbH ProSteel 3D, M.A.P. CAD-Duct, Mensch und Maschine RoCAD, MultiSuite MultiSteel, Nemetschek Allplan, PRO-CAD 3DSMART, Pro/E, PTC CADD5, QuickPen PipeDesigner3D, QuickPen DuctDesigner3D, RAM International CADStudio, Robert McNeel & Associates Rhino, SolidWorks 97+ to 2006, Tekla Structures, Xsteel, think3 thinkdesign, UGS I-DEAS, Solid Edge 17 (and earlier), UGS, FactoryCAD, UHP FabPro Pipe, X-Plant; .3ds .PRJ, .DWG .DXF, .ASC .TXT, .DGN .PRP .PRW, .IGS .IGES, .IFC, .MAN .CV7, .IPT .IAM .IPJ, .PTS .PTX, .FLS .FWS .iQscan .iQmode .iQwsp, .3DD, .RVM, .ASM .PAR .PSM, .SLDASM .SLDPRT, .STP .STEP, .STL
Maximum file size imported?	Any size up to and exceeding CAD models in excess of 60 GB	10 times available RAM
Does it support 2D format for 3D files?	Yes; e.g., 2D exploded part diagrams as SVG files	No
Uses CAD system API to publish?	No; CAD files are converted to XVL using CAD system APIs then published via Lattice3D applications without use of CAD system.	No
Outputs which 3D format(s)?	XVL	.NWD, .NWF [NavisWorks Review file formats] .DWF
Part/assembly markup, editing in 3D?	Yes; XVL Studio, XVL Notebook, XVL Webmaster	Yes
Stand-alone app., or need native software? If so which?	XVL player is stand-alone or automatically integrated. XVL Converters require native CAD license as Plug-in or Server Converter. Other Lattice products available as stand-alone or shared licenses	Stand-alone
Measuring capabilities?	Yes; in XVL Player Pro, Studio, Notebook, Webmaster	Yes
Analysis? File conversion/cleanup? Batch processing?	Yes to all; XVL Converters do file conversion, clean-up; XVL Converter Server, XVL Signer, XVL Filter, Webmaster offers batch processing.	No analysis. File conversion, Yes. Batch processing, Yes.
Optimization capabilities?	Yes; in XVL Studio and Webmaster	Yes
Animation capabilities?	Yes; in XVL Studio and Webmaster	Yes
Full resolution doc. printing?	Yes	No
Web publishing and/or tools?	Yes	Yes
Security, review process controls?	Yes; XVL Signer	Yes
Change history?	No; we integrate with CAD & PLM systems	Yes
Integrated w/ doc. mgt. system(s)?	Yes; various PDM and PLM systems e.g. SMARTEAM, WebSphere Product Center	Yes
Any other significant or unique features?	Comprehensive 3D publishing platform; best available compression with high fidelity graphics; Ability to vary accuracy of the model – very useful for 'dumbing-down' a model; Ability to re-tessellate on zoom to obtain detail at the single part level; XVL is a minimum NURBS mathematical model rather than polygons saved at some particular level of tessellation; Full camera control, color mapping, selectable element displays with annotations, surface processing controls with tessellation, scriptable via JavaScript and VBScript, graphics acceleration support, browser and Office support as an ActiveX control.	The most effective real-time engine available for smooth walkththrough of the largest / most complex 3D models. Compatibility with the most popular 3D design file formats & the ability to unite them in a single model. A rich and easy to use review tool kit that includes interference detection & 4D simulation. Free viewer – Freedom.
Does product load on desktop? Client server? True thin client?	Yes – free XVL Player is a thick client (~5MB download)	Desktop
System requirements?	Windows 2000 with SP2 or later, or Windows XP. Recommend: Pentium III or higher, 512 RAM, 100MB hard disk space	Recommended specification: Pentium III processor (or equivalent), Hardware-accelerated OpenGL graphics card, 128MB RAM, Windows NT 4 or above
Price?	Free Player; 3D publishing solutions from \$3K	From £ 700.00, \$1150.00, €1050.00
Full function evaluation copy?	XVL Player: free download; multiple 3D publishing evaluation demos	Yes
Web address	www.lattice3d.com	www.navisworks.com
Contact name	Aya Osada	Andrew Fox
Email	info@lattice3d.com	C/o info@navisworks.com
Phone	Tel: 1.415 274 1670, Fax: 1.415 274 1671	0044 [0]114 2900 150

	Okino	PTC
Product Names	PolyTrans & NuGraf	ProductView 8.0
Import file from which 3D CAD applications? Other file formats?	AutoCAD v2006, Inventor 11, JT Open, Pro/E Wildfire 3, Rhino-3D, Solid Edge, SolidWorks, CATIA V4, V5; MicroStation (Parasolid), UG (best via IGES or STEP); Other CAD via: Autodesk DXF/DWG/DWF-3D, ACIS SAT, IGES, JT Open, Parasolid, STEP, VDA-FS, XGL, U3D. Other 3D import formats: Apple 3D Metafile, 3D Studio max v4.0 - v7.0+, Adobe Illustrator, Biovision BVH & Acclaim motion capture, DirectX, DXF/ DWG 2006, Electric Image FACT, FilmBox (FBX), IGES 5.3, GameExchange2, Inventor 11, Lightwave 5.6, 6.5+, Maya (native plug-ins), Okino, native BDF, Open Flight v14.2, v15.2+, OpenNURBS, PLY, Protein Database, Pro/E assemblies, part files; Rhino-3D/OpenNURBS, SketchUp, Softimage 3D, XSI, Solid Edge, SolidWorks, STL, trueSpace, U3D, USGS DEM & Gtopo-30, VistaPro, VRML1/ Inventor2, VRML2, Wavefront (Full NURBS + Polygons) & XGL. Native: CATIA V4, V5. PTC Granite v4 import converters: ACIS SAT, IGES-solids, native Pro/E, STEP, Parasolid, Pro/Desktop, VDA. Skeletons & skinning mesh deformations supported in: Maya, 3ds max, Softimage-XSI, Lightwave, DirectX, U3D.	Pro/E, CADD5, CATIA V4, CATIA V5, I-DEAS, SolidWorks, UGS, MicroStation, AutoCAD, Cadence, Mentor, Accell, PADS, PCAD, VeriBest, Zuken, Gerber, IGES, VRML, STL, JT, DXF, DWG, PDF, MS Office: HPGL, TIFF, JPEG and GIF.
Maximum file size imported?	Memory limiting	Up to 2Gigabytes
Does it support 2D format for 3D files?	We convert 2D DXF into 3D DXF, as well as vector data import from AI and IGES files.	Yes
Uses CAD system API to publish?	No	Yes
Outputs which 3D format(s)?	Apple 3D Metafile, 3D Studio MAX v4-v7.0+ (native plug-ins), DirectX, DXF, DWG, DWF-3D, Electric Image FACT, FBX, GameExchange2, HOOPS HSF, IGES 5.x, JT Open, Lightscape, Lightwave 5.6, 6.5+; Maya 4+, Okino native BDF, Open GL C Code, OpenFlight v14.2, v15.6+, PLY, POV Ray 2.0, 3.0, Pro/E SLP Render File, Renderman RIB (NURBS & Meshes), RenderWare/ Active-Worlds, Rhino-3D/OpenNURBS, Shockwave-3D, SketchUp, Softimage XSI, STL, Strata v1.75, trueSpace, Wavefront OBJ, U3D, Viewpoint VET/ Metastream, VRML 1, VRML 2, XGL and SGI Inventor2.	VRML, IGES, STL
Part/assembly markup, editing in 3D?	Editing of parts and assemblies in 3D	Yes
Stand-alone app., or need native software? If so which?	Stand-alone. However, it will benefit if a local copy of Autodesk Inventor, Solid Edge or SolidWorks is available	Stand-alone, and also included capability with PTC's Windchill solutions.
Measuring capabilities?	No	Yes
Analysis? File conversion/cleanup? Batch processing?	No; Yes. We are an industry standard since 1988 for doing this. Our customers are every major 3D user; Yes	Yes: Distance, angles, lengths, sectioning, mass props., sweep volumes, interference check. Measurements use accurate Boundary Representation. Conversion: certain formats, in interactive mode. No file clean-up. Batch printing only.
Optimization capabilities?	Yes, e.g., full material/texture & scene editing, model composition & attribute editing, rendering & re-export.	Yes
Animation capabilities?	Yes	Yes
Full resolution doc. printing?	No	Yes
Web publishing and/or tools?	Yes, Web publishing tools	Yes
Security, review process controls?	No	Provides ITAR-like copyright warning message function
Change history?	No	That is a function of the PLM system
Integrated w/ doc. mgt. system(s)?	No	Windchill PDMLink
Any other significant or unique features?	Native plug-in versions for Maya (PolyTrans), 3ds max (PolyTrans). Extensible via import, export & "system-level" plug-ins: 18 years of development of import/export & system level plug-ins w/ SDK & documentation. Plug-in system & SDK is on par with that of 3ds max, one of best plug-in animation packages (we are more specialized for rendering & accurate 3D data conversion). Core NuGraf API is 15+ years old; can cross convert and retain almost all 3D data types. "UI API" allows customizable docked user interfaces, incl. toolbars, trays, roll-up windows & full API access for 3 rd parties. Bitmap file formats: TIFF, JPEG, BMP, SGI, GIF, IFF Lightwave, IFF Maya, PIC, PIX, PNG, PPM, PSD, Targa. LeadTools supported bitmap formats: AFP, BMP, CMP, CUT, EPS, EXIF, FLC, GEM, ICO, IFF, ITG, FPX, MAC, MSP, PCD, PCT, CLP, PCX, PSD, PBM, PNG, PTK, SCT, SGI, SMP, RAS, TIFF, TGA, WBMP, XWD and XPM. Video formats: AVI, MPEG-1, 2, 4, QuickTime (.qt, .mov, .mtv) & Flash (SWF). Plug-In Systems: One of better lens flare systems in an embedded rendering package; sunlight calculation system; multi-media editor and viewer (see formats above). "OkinoScript" JScript & VBScript scripting languages, NuScript scripting language for scene graph description, COM interface for developers, & camera "perspective matching".	Powerful sectioning capability, placement, alignment and interference detection, support for drawing-less environment, PDF collaboration module, module for digital mockup studies on heterogeneous MCAD models, option for the creation and deployment of interactive assembly, creation and deployment of interactive assembly, kinematic linkages, real-time collaboration
Does product load on desktop? Client server? True thin client?	Desktop	Thick and thin clients available
System requirements?	128MB and up. Windows 98, XP, 2000, 2003 and XP. NVIDIA or ATI accelerated video card optional.	Windows 2000, HP-UX, AIX, Solaris with any OpenGL compliant graphics hardware
Price?	\$395 base, PolyTrans; \$495 base, NuGraf; http://www.okino.com/conv/order/order.htm	Contact PTC for pricing information
Full function evaluation copy?	Yes, www.okino.com/conv/demos.htm	No
Web address	www.okino.com	www.ptc.com
Contact name	Robert Lansdale	Sales
Email	sales@okino.com	www.ptc.com
Phone	1.905.672.9328, 888.336.5466	781.370.5000

	Right Hemisphere	Seemage
Product Names	Deep Exploration CAD Edition	Seemage Viz, Seemage Mockup, Seemage Publisher, Seemage Player
Import file from which 3D CAD applications? Other file formats?	Imports: CATIA V4, V5; UGS, Pro/E, SolidWorks, JT, SDRG I-DEAS, IGES, MicroStation, CADkey, AutoCAD, Solid Edge, STEP, VDA. Also: major DCC & publishing apps. e.g. 3ds max, SOFIMAGE XSI, Maya, LightWave 3D, Cinema 4D, Adobe Photoshop and Illustrator.	CATIA V4 (model, session, export, pipe, harnesses), V5 (part, graphic data, assembly); JT Reader, ACIS Text & Bin, IGES, Parasolid, STEP (to AP214), Pro/E (assembly, part, family), VDA/FS, Inventor, SolidWorks, UGS NX 1-3, Discreet 3D Studio, Wavefront, VRML 2.0, Seemage memo3D.
Maximum file size imported?	Up to max. system memory. Some high level assemblies can exceed avail. memory when loading all sub assemblies etc. Coming 64 bit version will address issue.	Approximately 30,000 parts can be imported and displayed on a laptop, 50,000+ parts on a workstation.
Does it support 2D format for 3D files?	Yes, it allows automated creation of 2D illustration files directly from a 3D file.	Many 2D formats in the apps. Also available in Player following a .CSF conversion: 000 Plot File, 906/ 90 Plot File, AutoCAD 2D DWG R12-2006, DXF R12-2006, Web Format DWF, Auto-trol Raster & Vector, CADKEY, CAD Overlay, CAMCAD CC File, CGM, EDMICS, GTX Group III, IV, GTX Runlength, HP CAD ME10 - v10, HPGL Plot File, IGES 2D v5.2, Inventor 2D v 5.3, v60; MicroStation Drawing - v8.0, Group IV, Runlength; OrCad, Solid Edge Drawings 2D v8-14, SolidWorks Drawings 2D, Wavesoft. Also support image formats: CALS Group IV, DCX (multi-page), EDCARS, Formtek Raster, GIF, ISO 8613/CALS, JPG, JPEG, Raytheon G4/ Navy DIF. TIF, TIFF, Bitmap.
Uses CAD system API to publish?	No. It is not a CAD file format interchange system.	No, files are converted into lightweight formats. Seemage apps. also read .jt, .SMG, .U3D, & soon 3D XML & DWF.
Outputs which 3D format(s)?	Deep Exploration supports over 120 2D and 3D file formats.	One Seemage app. outputs .IT, .SMG, .U3D, VRML, .WRL, STL, ACIS Text & Binary, IGES, STEP, CATIA V4, Parasolid, VDA, 3DStudio mesh (.DS) & Alias Wavefront (.OBI). Other apps. export subset of tessellated formats.
Part/assembly markup, editing in 3D?	Yes, markups and callouts can be added, and output in 2D vector formats.	Parts can be marked up; mark-up is made directly on surface, not above. User can edit assemblies, including kinematic links. Apps. support update of parts from external PDM/ERP/PLM. Manual or automatic updates.
Stand-alone app., or need native software? If so which?	Stand-alone application. Will import many formats and export to many non-CAD native formats.	All the applications are stand-alone
Measuring capabilities?	Yes	Yes, large array of tools, distances, diameters, distance b/w point & plane, distance b/w two lines. Varies with intent of app. for specific use case.
Analysis? File conversion/cleanup? Batch processing?	Analysis capabilities – No. File conversion – Yes. File clean-up - Yes, including unifying normals, healing meshes, and polygon reduction. Batch processing - Yes, to a limited extent.	Mockup: full analysis capabilities. Read/write conversions b/w IT, SMG, U3D; later this year 3D XML, DWF. E.g., user reads IT file & exports in U3D format. Self-healing mode avail. for imports, conversions. Batch proc.: yes.
Optimization capabilities?	Yes, except editing geometry directly.	Path Planning, avail. July 2006, enables accessibility, serviceability studies for subassemblies & assemblies. Finds paths if exist & displays animation of optimized path for access & disassembly of part or subassembly.
Animation capabilities?	Yes. Sophisticated editing and addition of translation, scale and rotation animation capabilities are included.	Publisher & Mockup contain real-time key frame engine; can use most of properties as animation attributes. Animations automatically updated when parts modified. Player & Viz: play, pause, stop, etc., animations.
Full resolution doc. printing?	Yes, in postscript, PDF, HTML, vector formats, raster renders.	Seemage Publisher supports raster images up to 8,000 x 8,000 pixels, & vector images such as SVG, CGM.
Web publishing and/or tools?	Yes, included in Deep Exploration as an HTML or PDF document generation.	Player can be embedded into Explorer, Firefox. Seemage provides ActiveX, Java APIs. Player can be embedded into Office doc formats & .PDF.
Security, review process controls?	No security except as supported by individual file formats such as PDF.	Player can be encrypted (AES-128). User defines privileges granted to recipient of Player (save, access period, annotations, mark-ups, measurements, cutting plane). Secure3D (patent pending) alters geometry for intellectual property purposes. Annotations etc. are XML - can be parsed & integrated in other process controls.
Change history?	No	Models, animations updated manually or automatically, when parts modified. We offer solutions for integration of the apps.in PLM/PDM/ERP/CAD systems.
Integrated w/ doc. mgt. system(s)?	No. But ERP level Product Graphics Management app., Deep Server, is easily integrated into enterprise level doc. mgt. systems, e.g. Lifecycle servers, Arbortext, Astoria, Documentum to enable automated publishing into these environments.	Yes, architecture is flexible with 3 levels of XML. XML integration provides multi-file support, geometry sharing b/w users, instances management, assemblies definition, user-defined properties, incremental synchronization. We will be part of S1000D testbed later this year.
Any other significant or unique features?	Deep Exploration: only 3D authoring, viewing allowing import, export to 120+ 2D, 3D formats. Right Hemisphere is technology inside both Adobe Reader & Acrobat 3D so has most complete authoring, publishing tools for PDF. DE produces lightweight models by allowing flexible polygon reduction levels, healing, normals adjustment & patented lighting technology.	Very easy to use applications for content authoring and content playing High performance.
Does product load on desktop? Client server? True thin client?	Desktop	All apps. run on desktop or laptop. For field apps. (usually older machines), app. requirements are low.
System requirements?	Windows 2000 SP4, Pentium III 266 processor or higher, 128MB of RAM (more for large model and texture sizes), Microsoft DirectX, version 8, Explorer 6.0, Graphics card capable of displaying 24-bit color.	Player executable code approx. 1.5MB. Compactness of geometry varies w/ initial format & goes up to compression ratio of 200. Min. Pentium III, 128MB, reasonable graphic card. Other apps: Pentium 4, 1GB RAM, good graphic card.
Price?	Deep Exploration CAD: \$1,495; Standard: \$149 (intro version); ask about upgrade to CAD Ed. from DE 3.5.	Player is free. Other applications vary from \$2,000 to \$15,000+.
Full function evaluation copy?	Yes, 30 day free trial	Player: full-function eval. copy: free download. Other apps: available for limited period to qualified parties.
Web address	www.RightHemisphere.com	www.seemage.com
Contact name	For Customers: Kai Larson, For Media: Susan Austin	JJ Grimaud
Email	kai.larson@RightHemisphere.com , susan.austin@RightHemisphere.com	jjg@seemage.com
Phone	510-786-6079, 408-266-2322	781.482.1021

	Strata Live 3D	SolidWorks
Product Names	Strata Live 3D	eDrawings Professional
Import file from which 3D CAD applications? Other file formats?	Import any 3D CAD application which exports VRML, DXF and WIRE 3D files. Supports textures in JPEG, GIF, PNG, PSD, BMP, TIFF, TGA. Live 3D automatically extracts geometry, appearance and animation and prepares it for use.	AutoCAD, SolidWorks, eDrawings, 3DXML
Maximum file size imported?	Limited only by host memory.	No maximum file size
Does it support 2D format for 3D files?	N/A	Yes
Uses CAD system API to publish?	No	Yes, Works with most major CAD applications to publish eDrawings files.
Outputs which 3D format(s)?	U3D, 3D PDF (with Adobe Acrobat), and XMM.	eDrawings, STL
Part/assembly markup, editing in 3D?	Yes. Applications that support this can be built on the Meson viewer platform.	Yes
Stand-alone app., or need native software? If so which?	Strata 3D Live is a stand alone application.	Standalone Application or Activex control
Measuring capabilities?	Yes	Yes in 2D and 3D
Analysis? File conversion/cleanup? Batch processing?	Strata Live 3D converts VRML and WIRE to XMM. It also does Mesh decimation, hierarchy repair, and animation.	No
Optimization capabilities?	Yes, material and lighting editing and optimizing are a primary functions of Live 3D.	No
Animation capabilities?	Yes, Live 3D includes building complex scripts of reusable animations as well as modeling system behaviors and interdependencies.	Yes
Full resolution doc. printing?	No	Yes
Web publishing and/or tools?	Yes. Strata Live 3D requires no plug-ins and touts the best compression in the industry.	Yes, automatic HTML page generation
Security, review process controls?	No	Yes, password control and markups
Change history?	No	Yes, review threads can be created
Integrated w/ doc. mgt. system(s)?	No	Yes, numerous document management systems can use eDrawings.
Any other significant or unique features?	Strata Live 3D is based on Java, the cross-platform programming language. This commitment to Java provides a tremendous amount of power to the entire Strata Live 3D system. Both the application and player are platform independent. Live 3D models are viewable by virtually anyone with internet access. It also comes with sophisticated GUI based behavior, scripting capability and has a fully programmable viewer to create any web UI needed. Live 3D works with Strata 3D CX, Adobe Acrobat 3D, and Flash.	The 3D file can be included and distributed along with a viewer in the same small executable file. It can also be sent as a HTML file so the viewer can be easily accessed by anyone. eDrawing professional has numerous viewing, and markup capabilities.
Does product load on desktop? Client server? True thin client?	Strata Live 3D is an application which creates the content. The content is viewable in a web browser through Java and inside a PDF document via U3D.	Desktop, Web pages, Activex control (can be embedded in Office products)
System requirements?	Windows 2000 or later. Mac OS X 10.3 or later. Viewer applet runs on almost every O/S, browser.	Microsoft Windows XP Professional, Microsoft Windows XP Tablet PC Edition, Windows 2000, Windows NT® 4.0 with Service Pack 6 or later, Windows Me, Windows 98 2nd Edition are supported. MAC OS.
Price?	\$495 US Dollars SRP. Special pricing also available	Viewer is free, publishers for CAD products vary
Full function evaluation copy?	Yes	Yes
Web address	www.strata.com	www.edrawingsviewer.com
Contact name	Dennis Derrick	Aaron Kelly
Email	dennisd@strata.com	aaron@solidworks.com
Phone	435.628.5218	978.371.5133



	UGS	UGS
Product Names	JT2Go 6.0	Teamcenter Visualization 6.0
Import file from which 3D CAD applications? Other file formats?	Supports all major CAD systems via the neutral JT format (all versions). Other file formats: CGM, TIF	All major CAD systems via neutral JT format (NX, Ideas NX, Solid Edge, CADDs, AutoCAD, Inventor, Pro/E, CATIA V4 & V5, SolidWorks), VRML, STL; PLM XML, CGM, TIF, IGES, STEP, DXF, DWG, PDF, HPGL, GIF, BMP, DWF (6.0)
Maximum file size imported?	Limited only by hardware	Limited only by hardware. Have tested models > 20 GB.
Does it support 2D format for 3D files?	No	Yes; 2D, 3D viewing for combined formats like NX, AutoCAD. 2D outputs: TIF, PNG, BMP, JPG, PS, HTML
Uses CAD system API to publish?	N/A; JT2Go does not do translations	N/A, app. does not do translations. Some translators use native apps.' APIs (Pro/E, AutoCAD, SolidWorks) while others (CATIA V4/V5, STEP, IGES, DXF) do not.
Outputs which 3D format(s)?	N/A	JT, VRML, Nastran BLK, PLM XML
Part/assembly markup, editing in 3D?	No	Yes; collaborative markup w/ authentication & mgt. for different users. Includes visual issue capture and routing.
Stand-alone app., or need native software? If so which?	Stand-alone	Multiple deployment options: stand-alone, integrated with PDM, embedded in PDM window, web-browser based.
Measuring capabilities?	Yes, 90-day trial	Yes
Analysis? File conversion/cleanup? Batch processing?	Analysis capabilities? No; File conversion? No; File clean-up? No; Batch processing? No	Analysis: Dynamic clearance & interference, rules-based clearance/interference mgt., CAE results viewing. File conversion: Yes, export to JT or VRML; direct-read of NX, Solid Edge. Clean-up: Flexible re-tesselation options, product structure editing. Batch processing: Yes, incl. optional automatic upon check-in & triggers based on workflows
Optimization capabilities?	No	Yes
Animation capabilities?	No	Yes
Full resolution doc. printing?	Yes	Yes
Web publishing and/or tools?	Yes, supports embedding viewer in web pages	Yes, including support for technical publication authoring
Security, review process controls?	No	Yes, when combined with Teamcenter PDM Products
Change history?	No	Yes, when combined with Teamcenter PDM
Integrated w/ doc. mgt. system(s)?	No	Yes; Teamcenter Engineering, Enterprise, & Community; SAP, MatrixOne, + customizable integration capabilities.
Any other significant or unique features?	Includes Microsoft Office plug-in that enables embedded 3D viewing in Office documents (Word, Excel, PowerPoint) and web pages.	Teamcenter Visualization supports largest assembly sizes of any product. Built-in capabilities for performance tuning allow flexible usage on virtually any computer. JT format supports both faceted (triangles) for visualization & BREP for measurements as precise as native CAD. Supports viewing of CAE results + intelligent 3D annotations for product manufacturing information. Supports real-time, interactive 3D conferencing + stereo viewing in VR environments (CAVEs, Powerwalls, etc.)
Does product load on desktop? Client server? True thin client?	Yes	Yes; Yes, for streaming; Yes, iSeries deployment is a thin client.
System requirements?	Windows NT 4.0 Service Pack 6a , Windows 2000, Service Pack 3; Windows XP Pro Service Pack 1. Required Web browsers: IE 5.5 SP2 or IE 6.0 SP1 Minimum System: For 3D models, 128 MB of RAM, 24-bit color video card with hardware Zbuffer. For 2D images, video card capable of displaying 16-bit graphics or higher is required. Recommended System: For 3D models and 2D images, your system should have a 1 GHz processor or equivalent, 512 MB RAM, video card with 32 MB of VRAM and hardware Zbuffering, and 1 GB of virtual memory.	Windows 2000 Service Pack 4, Windows XP Pro SP 2 , HP-UX 11.0, 11.11 (32-bit, 64-bit), IBM AIX 5.1, 5.2 (32-bit only), SGI IRIX 6.5.22 + subsequent 6.5.x level patches (32-bit & 64-bit); Sun Solaris 8, 9 (32-bit & 64-bit), Linux SUSE. Minimum system: for 3D models, 128 MB RAM, 24-bit color video card w/ hardware Z-buffer, OpenGL support. 2D images: video card for 16-bit graphics or higher. Most lower-end graphics cards will work with most current graphics driver. Min. recommended system: for 3D models, 2D images: 1 GHz processor, 512 MB RAM, video card w/ 32 MB VRAM, hardware Z buffering, OpenGL support, 1 GB of virtual memory
Price?	Free	Various prices for service levels. Global currency differences affect prices. Contact a sales rep.
Full function evaluation copy?	Yes	Yes
Web address	www.JT2Go.com	www.UGS.com
Contact name	Stu Johnson	Stu Johnson
Email	stu.johnson@ugs.com	stu.johnson@ugs.com
Phone	734.452.2507; Europe - +44.1276.705151, Asia Pacific – 852.2230.3333	734.452.2507; Europe - +44.1276.705151, Asia Pacific – 852.2230.3333