

Table 1. Visualization Software Features

COMPANY	ALIAS	ALIAS	AUTODESK	AUTO•DES•SYS	INFORMATIX SOFTWARE INTERNATIONAL
Product	ALIAS IMAGESTUDIO	STUDIOTOOLS 11	AUTODESK VIZ 2005	FORM.Z 4.5	PIRANESI 3
E-mail	sales@alias.com	sales@alias.com	Use website form	formz@autodesys.com	info@informatix.co.uk
Web site	www.alias.com	www.alias.com	www.autodesk.com	www.formz.com	www.informatix.co.uk
Price	\$3,999	Starts at \$7,500	\$1,995	\$1,495	\$750
Operating systems					
Supported	Windows XP/2000 Professional	Windows XP/2000 Professional, SGI IRIX	Windows 2000/XP	Windows 98/NT/XP/ME/2000, Macintosh 9/X	Windows 98 and later, Macintosh OS X
Reviewed	Windows XP Professional SP1	Windows XP Professional SP1	Windows XP Professional SP1	Windows XP Professional SP1	Windows XP Professional SP1
Modeling	None	Yes	Yes	Solid and Surface	N/A
NURBS	Imports NURBS models	Yes	Yes	Yes	N/A
Refraction	Yes	Yes	Yes	Yes	N/A
Reflection	Yes	Yes	Yes	Yes	By painting with a generated texture
Anti-aliasing	Yes	Yes	Yes	Yes	N/A
Rendering methods					
Radiosity	Yes, Final Gather	No	Yes, and global illumination/caustics	Yes	N/A*
Ray-tracing	Yes	Yes	Yes	Yes	N/A*
Shade/render (Gouraud)	Yes	Yes	Yes	Yes	N/A*
Animations	No†	Yes	Yes	Walkthrough, Quicktime VR	N/A
Panoramas	Yes	Yes	Yes	Yes	Can paint cubic panoramas and create .MOV files
Base file formats	AIS	Alias StudioTools .wire format	MAX	FMZ	EPX, EPP (panoramas)
Import file formats	StudioTools (.WIRE), IGES, Maya	IGES, STEP, DXF, PTC Granite, CATIA V4/V5, UGS, VDAFS, VDAIS, JAMA-IS, DES, OBJ, EPS AI, Inventor, ASCII	3DS, AI, XML, DEM, DWG, DXF, .FBX, IGES, LS, .STL, VWRL, Inventor (installed)	3DGF, 3DMF, 3DS, Art*lantis, BMP, DWG DXF, EPS, FACT, HPGL, IGES, AI, JPEG, Light-Scape, Lightwave, TIF, MetaFile, OBJ, PICT, Piranesi, PNG, QTVR, Quicktime, RIB, SAT, Shockwave 3D, STL, TGA, VET, VRML	EPX, EPP§; Vedute: converts DXF, 3DS; for plans and elevations; JPG, PNG, TIF, raster formats
Export file formats	TIF, JPG, BMP, GIF, QTVR, PIX, EPS, RLA, Maya MA/MB/IFF, PIC, TGA, MI	IGES, STEP, DXF, PTC Granite, CATIA V4/V5, UGS, VDAFS, VDAIS, JAMA-IS, DES, OBJ, Inventor (IRIX), ACIS, AFFS, C4	3DS, AI, ASE, DWG, DXF, IGES, Lightscape, ATR/BLK/DF/LAY/VW/LP, STL, VRML97, Rendered: AVI, BMP, CIN, EPS, PS, FLC, FLI, CEL JPG, JPE, MOV, RBG, SGI, RLA, RPF, TGA, TIF	3DGF, 3DMF, 3DS, Art*lantis, BMP, DWG, DXF, EPS, FACT, HPGL, IGES, AI, JPEG, Light-Scape, Lightwave, Metafile, OBJ, PICT, PNG, Piranesi, QTVR, Quicktime Image, RIB, SAT, Shockwave 3D, STL, TGA, TIF, VET, VRML	BMP, JPG, TGA, TIF, PNG
Network rendering	Yes, with additional mental ray stand-alone renderers.	No	Yes	Yes	N/A
OpenGL support	Yes	Yes	Yes	Yes	No
Real-time preview	Yes	Yes	Yes, limited	Yes	N/A
Models included	None	Yes, as part of tutorials.	Yes, as part of tutorials	Yes	No
Materials included	Yes, hard-surface materials, eight environments HDRI	Yes	Yes	Yes	2,000 textures and cut-out images
Extensible via plug-ins	No	Yes	Yes	Yes	No
Hardware lock (dongle)	Optional	Optional	No	Yes	No

*Piranesi postprocesses images created by other renderers, specializing in 3D painting.

†Models can be rendered to Quicktime VR format for interactive turntable, rotisserie, and 360-degree visualizations.

§Renderers that generate EPX directly are found in 3D Studio MAX and VIZ, ArchiCAD, Architectural Desktop, Art*lantis, Autodesk Building Systems, Cinema 4D R8, form•Z, LightWave, MicroStation, MicroGDS, NavisWorks, RenderWorks, SketchUp.

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Table 1. Visualization Software Features, continued

COMPANY	OKINO COMPUTER GRAPHICS	ROBERT MCNEEL & ASSOCIATES	ROBERT MCNEEL & ASSOCIATES	ROBERT MCNEEL & ASSOCIATES	ROBERT MCNEEL & ASSOCIATES
Product	NUGRAF RENDERING SYSTEM V4.1.2	ACCURENDER 3	FLAMINGO	PENGUIN	RHINO
E-mail	sales@okino.com	sales@mcneel.com	sales@mcneel.com	sales@mcneel.com	sales@mcneel.com
Web site	www.okino.com	www.accurender.com	www.flamingo3d.com	www.penguin3d.com	www.rhino3d.com
Price	\$495 NuGraf, \$395 PolyTrans CAD/Pack, \$245, DCC Pack - \$245, Granite/Pack PTC \$395	\$495	\$495	\$495	\$895
Operating systems					
Supported	Windows 98/ME/2000/2003 Server/XP	Runs inside AutoCAD	Windows	Windows	Windows
Reviewed	Windows XP Professional SP1	Windows XP Professional SP1	Windows XP Professional SP1	Windows XP Professional SP1	Windows XP Professional SP1
Modeling	No	N/A	Yes, via Rhino	Yes, via Rhino	Yes
NURBS	Yes	N/A	Yes, via Rhino	Yes, via Rhino	Yes
Refraction	Yes	Yes	Yes	No	No
Reflection	Yes	Yes	Yes	No	No
Anti-aliasing	Yes	Yes	Yes	Yes	Yes
Rendering methods					
Radiosity	Yes	Yes	Yes	No	No
Ray-tracing	Yes	Yes	Yes	No	Yes
Shade/render (Gouraud)	Yes	Yes	Yes	Yes	Yes
Animations	No	Yes	Yes	Yes (plug-in)	Yes (plug-in)
Panoramas	No	Yes	No	No	No
Base file formats	TIF, JPG, BMP, SGI, GIF, IFF Lightwave/Maya, PIC, PIX, PNG, PPM, PSD, TGA. With LeadTools supports 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, XPM. Video: AVI, MPEG-1, 2, 4, QT, MOV, MTV, SWF	DWG	N/A	N/A	3DM
Import file formats	Apple 3D Metafile, 3DS, AI, BVH, Acclaim motion capture, DirectX, DXF/DWG 2005, Electric Image FACT, FBX, IGES 5.3, Game-Exchange2, Inventor 9, Lightwave 5.6/6.5+, Maya 3+, BDF, OpenFlight v14.2/v15.2+, OpenNURBS, PDB, native encrypted, Pro/ENGINEER, Rhino-3D/OpenNURBS, SoftImage-3D, Softimage-XSI, Solid Edge v7-v15+, SolidWorks 98-2004+, STL, Strata v1.75, trueSpace v2-v5.0+, USGS DEM/Gtopo-30, VistaPro, VRML1/Inventor2, VRML2, Wavefront, XGL, all PTC Granite v2 import converters: ACIS SAT, IGES-solids, native ProE, STEP, Parasolids, Pro/Desktop, VDA, Skeletons/skinning mesh deformations: Maya, 3ds max, Softimage-XSI and DirectX..	N/A	All Rhino	All Rhino	IGES, STEP, 3DS, DXF, DWG, OBJ, LWO, plug-ins
Export file formats	Apple 3D Metafile, 3DS v2-v6.0+, DirectX, DXF, Electric Image FACT, GameExchange2, HOOPS, HSF, IGES 5.x, Lightscape, Lightwave 5.6/6.5+, Maya 3+, BDF, OpenGL C Code, OpenFlight v14.2/v15.6+, POV Ray 2/3, SLP, RIB, RenderWare/ActiveWorlds, Rhino-3D/OpenNURBS, Shockwave-3D, SoftImage, STL, Strata v1.75, trueSpace v2-v5+, Wavefront OBJ, VET/Meta-stream, VRML 1/2, XGL, SGI Inventor2	N/A	All Rhino	All Rhino	IGES, STEP, 3DS, DXF, DWG, OBJ, LWO, plug-ins
Network rendering	No. Use Smedge (\$40)	Yes (plug-in)	No	No	No
OpenGL support	Yes, extensive.	N/A	Yes	Yes	Yes
Real-time preview	Yes, with full shaded displays with texture mapping, environment mapping, and more.	N/A	Yes	Yes	Yes
Models included	Yes, limited	Yes	Yes	Yes	Yes
Materials included	Yes	Yes	Yes	Yes	No
Extensible via plug-ins	Yes, via import/export and system-level plug-ins	Yes	Yes	Yes	Yes
Hardware lock (dongle)	No	No	Regional	Regional	Regional