The Professional's Choice for 3D Scene/CAD/Animation & NURBS Translation, Viewing and Scene Composition.

Feature Packed, Customer Proven, Handles all Major 3D File Formats. Written & Supported With Personal Dedication by Okino Programmers.
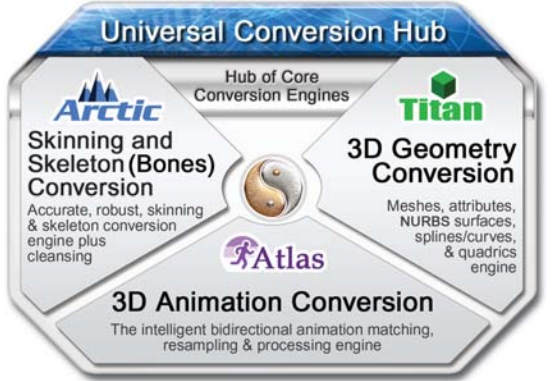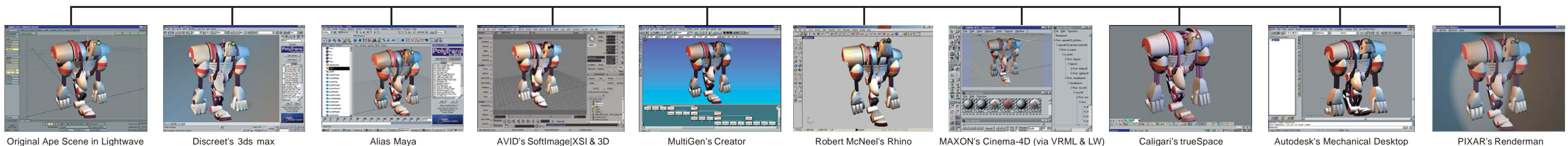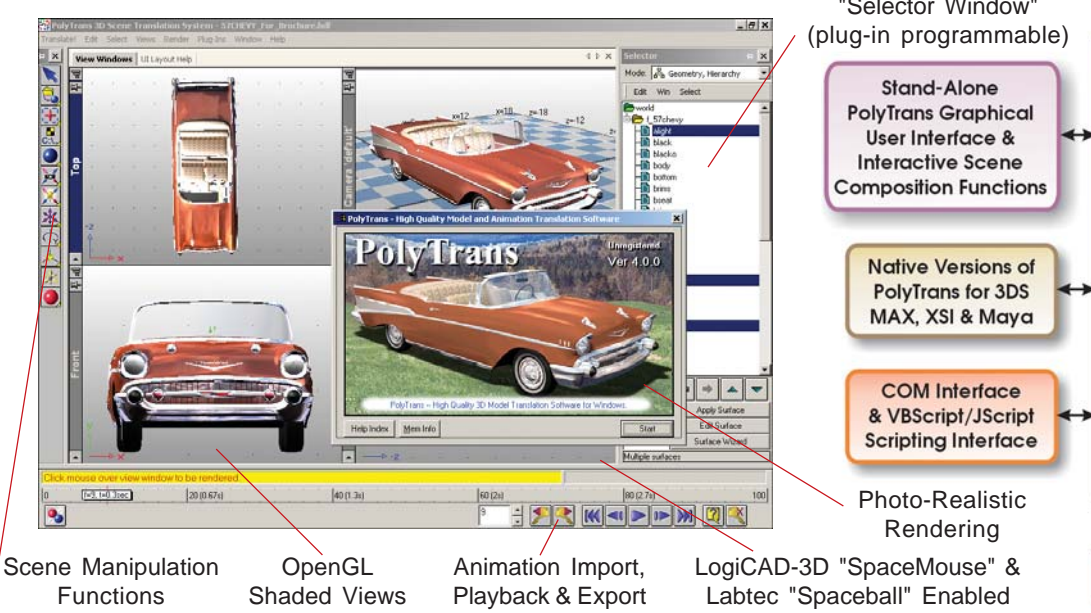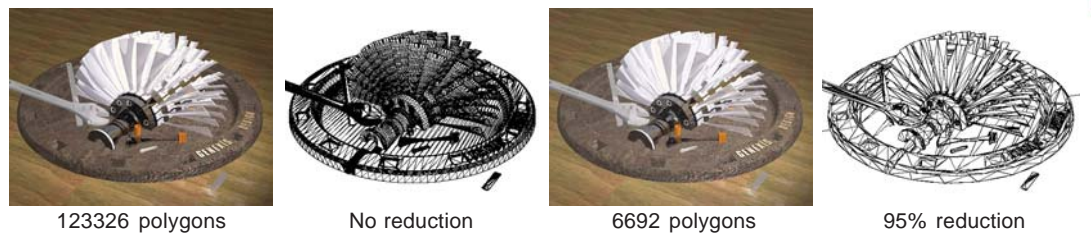
PolyTrans is the most extensive and accurate 3D scene, CAD and animation translation/viewing tool. Used worldwide by thousands of 3D-industry professionals, PolyTrans is an indispensable production pipeline tool that performs clean, robust and reliable translations between the most popular 3D file formats. See for yourself by downloading a demo today.

PolyTrans converts scene files, including meshes with holes, trimmed NURBS, hierarchy, animation (format specific), pivot points, vertex normals, U/V tangent vectors, vertex colors, (u,v) texture coordinates, texture mapping parameters, lights & camera views! Just load the translated model into your favorite 3D program and press the render button - nothing could be simpler! Using PolyTrans you'll never again have to spend hours hand tweaking a 3D model.

If your goal is to perform quick and easy 3D translations, or plug PolyTrans into 3DS MAX, Macromedia Director, Maya or XSI, then Okino's PolyTrans is the preferred package. However, if you would like much richer user interface, complete material parameter editing, 2D and 3D texture editing and creation, top notch scanline and multi-threaded ray tracing, polygon level manipulation tools, interactive texture projection and texture placement tools, and 3D font creation, then **Okino's NuGraf** is the preferred package to purchase at a slightly higher price than PolyTrans.
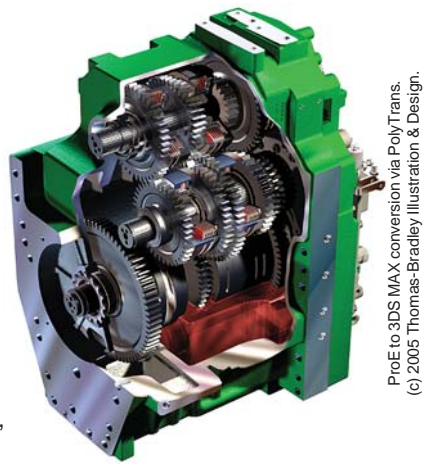
As an innovative and useful feature, PolyTrans includes an integrated **polygon reduction algorithm**. Typical reduction is 80%, with good results up to 95% (as shown below). Includes 60 page tutorial.
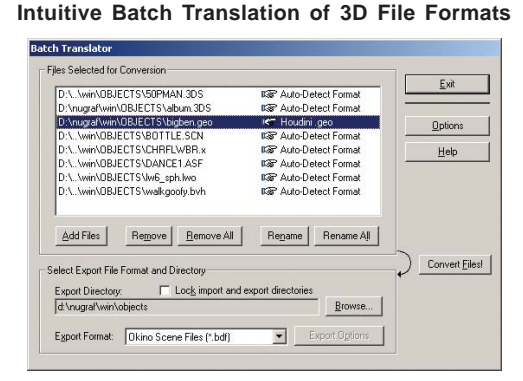
Universal Conversion Hub

Hub of Core Conversion Engines

Arctic — Skinning and Skeleton (Bones) Conversion. Accurate, robust, skinning & skeleton conversion engine plus cleaning

Titan — 3D Geometry Conversion. Meshes, attributes, NURBS surfaces, splines/curves, & quadrics engine

Atlas — 3D Animation Conversion. The intelligent bidirectional animation matching, resampling & processing engine

MICROSOFT WINDOWS COMPATIBLE

Major Application Areas for PolyTrans

3ds max, DirectX, FiLMBOX, Lightwave, Maya, OpenFlight, Softimage, VRML2 — *Animation Conversions*

IGES, Maya, Rhino/OpenNURBS, Softimage, Renderman — Electric Image FACT, Lightwave, Strata SPro

3DMF, 3DS, DirectX, HSF, OBJ, Shc3D, VET, VRML, XGL — *WEB*

Macintosh File Formats — DXF, DWG, OpenFlight, PDB, VRML

Vis Sim — Export to Lightscape, POV, Renderman

PolyTrans-For-MAX, PolyTrans-For-Maya, PolyTrans-for-XSI, PolyTrans-for-Director — *Native Versions*

Rendering "Engines"

DXF, USGS DEM, VistaPro DEM, VRML — *CAD Transfers & Viewing*

Multi Media

GLS

ACIS, Autodesk Inventor, DXF, DWG, IGES, Parasolids, Pro/Engineer, STEP, STL, Solid Edge, SolidWorks, VDA-FS, XGL

AEC

3DS, ACIS, DXF, DWG, IGES, VRML, XGL — *3D Game Development*

All Major 3D Formats Supported. Used by all major 3D game companies!

Visit http://www.okino.com for demos and extensive product information

A Subset of Notable PolyTrans Features

- PolyTrans is a recognized industry leader for reliable & robust 3D data translation. Okino is completely dedicated to aggressive R&D, innovative additions & personal hands-on technical support.
- Excellent and complete support for the most popular 3D file formats. Extensive conversion options to choose from.
- The industry standard for skeleton & skinned mesh conversion between 3DS MAX, Maya, Lightwave, XSI, DirectX & FBX.
- With support for almost every major 3D & 2D bitmap file format, an integrated bitmap editor, and video file playback, PolyTrans forms the basis of an ideal digital file management tool.
- The industry's choice for over 17 years to convert from every major 3D CAD program and BREP based (crack free) solids modeling file format to all major downstream apps and 3D formats.
- Allows all meshes, trimmed NURBS, vertex attributes, materials, shading parameters, texture map types, lights, cameras, hierarchy and animation to be imported, stored, translated and exported with high accuracy and fidelity. Creates "**Render Ready**" models.
- Ideal and dependable 3D WEB publishing platform: HSF, Shockwave-3D, VET, VRML 1 & 2, XGL.
- Industry leading animation "engine" allows native import, playback and export of keyframe data. Simulates the animation mathematics of all the most popular 3D animation systems which leads to tolerance-based accurate conversions. Includes keyframe resamplers & reducers.
- Includes fast, photo-realistic scanline rendering capabilities, borrowed from Okino's NuGraf.
- Robust polygon processing tools: weld, auto-unify, smoothing, remove redundant polygons, merge triangles to quads, and polygon reduction.
- Well known for processing huge files quickly, such as 40MB to 300MB IGES, DWG, DEM and VRML files (low memory usage).
- Easy access to all scene contents via hierarchical '**Selector Window**'. Use drag-and-drop to change or create object hierarchies.
- Import objects and compose 3D scenes quickly using the real-time object manipulation functions. Prevent objects from intersecting using real-time object collision detection.
- Interactive light & camera placement plus interactive or numeric value modification.
- OpenGL shaded views, with real-time lighting & object texture mapping, real-time interactive object manipulation, texture backgrounds and multi-threaded redraws.
- Special **NVIDIA & ATI** video card support: real time bump & environment mapping.
- Intuitive & productive batch converter for 3D scenes or 2D images.
- Automatic 2D bitmap conversion between formats supported by each 3D file format.
- Attacks and overcomes the hardest conversion problems.
- A large and established professional user base has ensured PolyTrans remains a dependable, robust and highly featured translation system.
- Export scenes to Okino's NuGraf program for fast, photo-realistic scanline or multi-threaded ray trace rendering, animation and material/texture editing. Upgrade from PolyTrans to NuGraf at a low cost. PolyTrans is a subset of the NuGraf software.
- VBScript & JScript embedded languages for converter automation & 'NuScript' for rendering.
- Third party system importers/exporters & system plug-ins via PolyTrans plug-in SDK. Write your own converter, or a UI plug-in such as a renderer, modeling system, uv-map editor, or anything!
- Make the PolyTrans converters appear inside your 3D application using the *PolyTrans!ProServer*. No cost SDK from Okino. Complex interface, simple integration.

Import Converter Modules

Core PolyTrans Functionality

- Hierarchical Animation Storage, Playback and Interpolation System
- Hierarchical 3D Database Management System (Raw 3D Scene Retention)
- BDF File Transfer Format Save / Load Mechanism
- Animation Keyframe Resampling & Reduction System
- Trimmed NURBS to Polygon Conversion and Optimization
- Okino's Photo-Realistic Scanline Renderer
- 3D Mesh, NURBS, Quadrics & Spline Geometry Engine
- Polygon to Polygon Mesh Optimizer & Processing Engine
- 2D Bitmap File Conversion Sub-System

Export Converter Modules

Stand-Alone PolyTrans Graphical User Interface & Interactive Scene Composition Functions
Native Versions of PolyTrans for 3DS MAX, XSI & Maya
COM Interface & VBScript/JScript Scripting Interface
Photo-Realistic Rendering
LogiCAD-3D "SpaceMouse" & Labtec "Spaceball" Enabled

123326 polygons — No reduction — 6692 polygons — 95% reduction

"Selector Window" (plug-in programmable)

Scene Manipulation Functions — OpenGL Shaded Views — Animation Import, Playback & Export

Intuitive Batch Translation of 3D File Formats

Extensive Toolbar Controls for Interactive Scene & Object Manipulation

- Select (Pick) Objects
- View Window Manipulation
- Geometric Primitives
- Translate (Move) Objects
- Rotate Objects
- Scale Objects
- Load/Save Files & Geometry
- Utility Functions
- Camera Controls
- Light Controls
- Pivot Point Manipulation Mode
- Photo-Realistic Rendering

"Selector Window" for Drag-And-Drop Hierachy Creation + Fast Object Selection
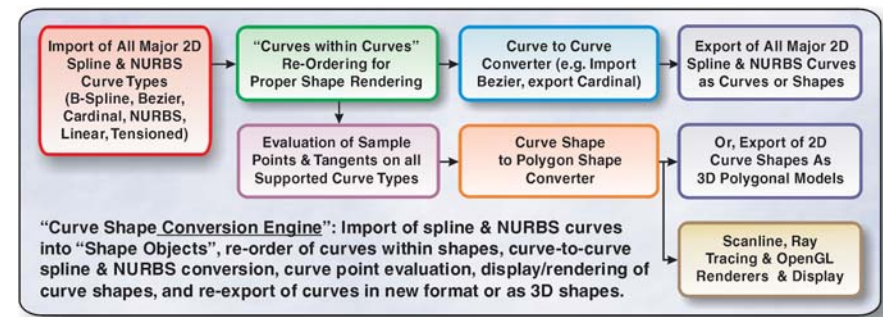
Multi-Media Editor & Viewer.

To aid in digital file asset management and viewing, PolyTrans includes a multi-media editor, viewer and processing system. Loads & saves almost all 2D file formats. Extensive capture system. Views video formats.

NURBS & Spline Sub-System

A significant feature of the core PolyTrans software is a complete 2/3D NURBS curve & spline curve geometry sub-system. This sub-system can import all types of curves, curve "shapes" and surfaces then cross-convert to any other type of spline curve, NURBS curve, NURBS surface or polygon mesh.
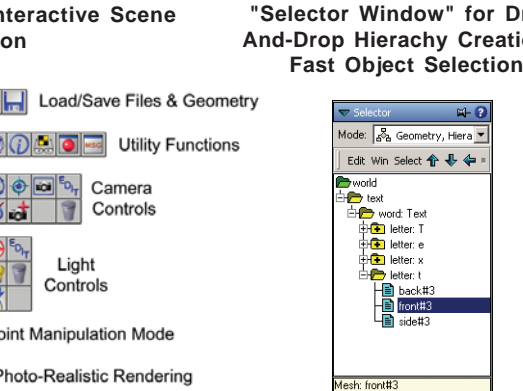
Extensive Import/Export Option Functionality

Expert users have extensive control over the numerous import/export options, including automatic bitmap conversion, selective attribute export and texture filename reference handling. All options default to sane values for beginners.

"PolyTrans!ProServer" Interface

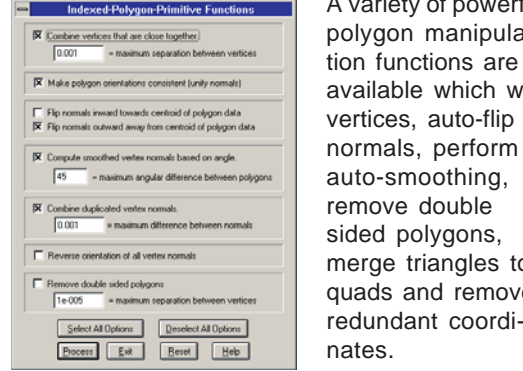**Integrate PolyTrans into Your Own Application!**

PolyTrans includes an extensive and well documented "COM" automation interface. This allows all of the import and export converters to be enumerated inside a third party application program, and for that program to automate a full import/export process complete with data optimization (such as polygon reduction).
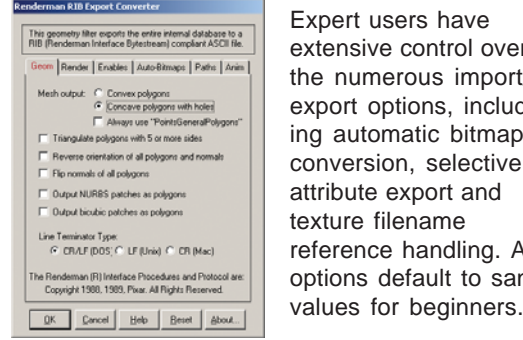
Developers need only compile in the "Okino COM Client-Side Framework" library (OCCF) in their applications. When completed, the developer program will show all PolyTrans converters in its menus, and all messages, PolyTrans dialog boxes and status feedback as an integrated part of its user interface. Please contact Okino technical support to sign the necessary SDK agreements and to obtain documentation & source code.

Okino COM Interface

Golden Pixie Award Winner

Customer Testimonials

PolyTrans is 'the' premiere 3D conversion tool available today. The most critical aspect of a data conversion program is that although many of these programs claim to handle a large subset of these formats, they often handle only 'most' of the capabilities of each format.

A final aspect of this tool is the incredible depth of the software; if you are at all familiar with the complexity of many file formats, and the odd intricacies of them, you should greatly appreciate the time required to create a tool of this capability/magnitude.

- Peter-Joseph Kovach (3D Magazine Writer)

Kudos to Okino for a product that's worked exactly as advertised, and much more! PolyTrans has proven to be a rock-solid, full-featured, easy-to-use and extremely accurate translator for our Lightwave and 3D Studio MAX scenes. Even our most esoteric scenes converted flawlessly.

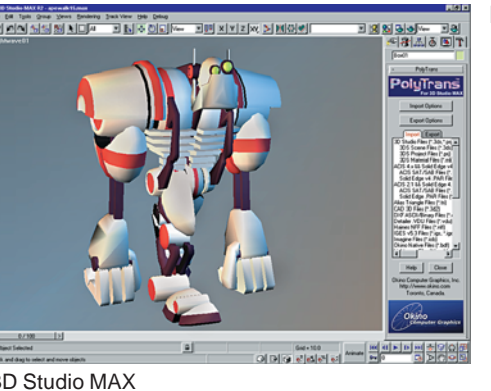**-Gord Davison**, 3D Animator & Designer **IBM Laboratory - Media Design**

PolyTrans does something that's relatively rare among data translation tools; namely, animation transfers. You can literally take a Lightwave scene and render it in 3D Studio MAX or Softimage with no tweaking. I did a test in which I took one of our in-game characters from Lightwave, converted it to 3D Studio MAX, and then back over to Lightwave. PolyTrans left all the geometry, animation, surface, lighting and camera properties intact.

-Christian Aubert, Game Developer Magazine

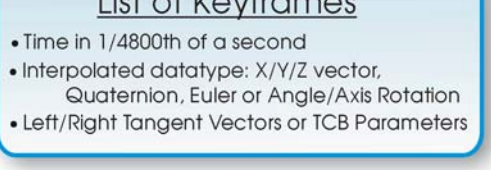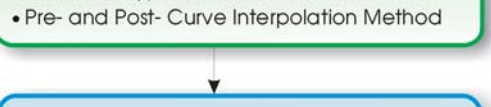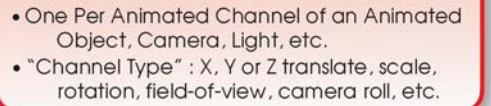## Special Plug-In Versions of PolyTrans for 3DS MAX, Maya, XSI & Director

PolyTrans-for-Maya and **PolyTrans-for-3DS-MAX** are the premiere 3D data translation native plug-ins for Maya and 3DS MAX that create high fidelity "Render Ready" scenes - just load and render, or export! Access all the import and export converters of PolyTrans directly inside Maya or 3DS MAX without the need for intermediate file format conversions.

Since the Maya and 3DS MAX file formats are proprietary, and depend upon the special plug-in modules of their respective programs, PolyTrans has been re-engineered to work directly inside these software packages, thus bypassing the proprietary file format problem. Users of these native plug-ins now have a great selection of industry standard 3D formats. See also the **PolyTrans-for-Softimage|XSI** & **PolyTrans-for-Macromedia-Director** plug-ins.

Popular uses of these native PolyTrans plug-ins :

- Move entire scenes between Maya, XSI, and 3DS MAX via Okino's "Transfer File Format", including **skinning & animation**.
- Bi-directional import/export of complete Lightwave files + animation.
- Bi-directional access to Softimage-3D files and databases directly inside MAX/Maya.
- NURBS export to Softimage-3D, IGES, OpenNURBS, Renderman, and others.
- NURBS import from Softimage|XSI, IGES, OBJ.
- Import DXF/DWG files 10x faster via PolyTrans.
- Export quads or n-sided polygons from 3DS MAX to formats such as Wavefront OBJ.
- Import parts and assemblies directly from IGES, IV, Pro/Engineer, SolidWorks, STEP, etc.
- DirectX export with animation & hierarchy.
- Output to OpenFlight for scene tagging.
- Proper and fast import of STL files to MAX.

Automatic Polygon Processing Functions

A variety of powerful polygon manipulation functions are available which weld vertices, auto-flip normals, perform auto-smoothing, remove double sided polygons, merge triangles to quads and remove redundant coordinates.

Animation Conversion Through Accurate Keyframe Resampling & Reduction

Through years of research, development and refinement, PolyTrans has come to include the industry-leading major feature of **animation conversion**. Simply put, *animation conversion is a hard problem.* To convert between the different mathematics used by each major 3D animation package, and their different methods of internally representing 3D animated objects, Okino Computer Graphics has developed a unique "**animation conversion engine**". This engine allows raw animation data to be imported from the most popular 3D animation programs, accurately played back in real-time, resampled to alternate forms of animation mathematical representation and exported to other 3D animation file formats. Note that PolyTrans converts function curve based animation; it does not convert procedural or Inverse Kinematics (IK) animation data.

As shown in the left diagram, the internal "engine" stores the raw imported animation data as a series of hierarchical "channels" (such as X/Y/Z translation), each of which has a "controller" which simulates the most popular animation interpolation methods (Bezier, TCB, etc.), and to each controller a series of keyframes representing the animation curve over time. This ensures accurate retention of the imported animation data.

A vital aspect of accurate animation conversion is the "keyframe resampling & reduction" algorithm of PolyTrans; as shown below, this algorithm allows incompatible animation methods to be converted with tolerance-based accuracy. The example below shows how X/Y/Z Euler rotations (from Lightwave or Maya) are converted into the mathematically different Quaternion rotation method (used by DirectX and 3DS MAX, for example).

Animation Channel
- One Per Animated Channel of an Animated Object. Camera, Light, etc.
- "Channel Type" - X, Y or Z translate, scale, rotation, field-of-view, camera roll, etc.

Animation Controller
- Controller type: Bezier, TCB, Motion Path.
- Pre- and Post- Curve Interpolation Method

List of Keyframes
- Time in 1/4800th of a second
- Interpolated datatype: X/Y/Z vector, Quaternion, Euler or Angle/Axis Rotation
- Left/Right Tangent Vectors or TCB Parameters

3 X/Y/Z Rotation Animation Curves — One Resampled & Reduced Quaternion Animation Curve

Sample X/Y/Z Animation Curves At Current Time → Convert Euler X/Y/Z Angles to Rotation Matrix → Convert Rotation Matrix to Quaternion → Perform Keyframe Reduction

Example X/Y/Z Euler to Quaternion Rotation Animation Curve Resampling Process

PolyTrans Plug-In SDK

Since 1988 Okino Computer Graphics has been aggressively developing an extensive 3D scene database system and 'C' callable API that emulates the best-of-class features from most 3D animation, modeling, VisSim and CAD packages. Okino is making this extensive API SDK freely available to third party developers as a means to write custom import, export & user interface ("system-level") modules.

Interesting Okino WEB Pages

- http://www.okino.com — Okino home page
- http://www.okino.com/conv/conv.htm — PolyTrans home page
- http://www.okino.com/nrs/nrs.htm — NuGraf home page
- http://www.okino.com/conv/filefrmt.htm — Supported file formats
- http://www.okino.com/conv/testimon.htm — Customer testimonials and product reviews
- http://www.okino.com/conv/users.htm — A short list of our notable users
- http://www.okino.com/mainpic.htm — Okino's "Pictures of the Month" gallery

Original Ape Scene in Lightwave — Discreet's 3ds max — Alias Maya — AVID's Softimage|XSI & 3D — MultiGen's Creator — Robert McNeel's Rhino — MAXON's Cinema-4D (via VRML & LW) — Caligari's trueSpace — Autodesk's Mechanical Desktop — PIXAR's Renderman