

www.rapidform.com

XOSTM

RAPIDFORM[®] XOS/SCANTM

Offering Fully Automated Scan Data ProcessingTM



RAPIDFORM[®] 

THE ONLY 3D SCANNING SOFTWARE

OFFERING FULLY AUTOMATED REVERSE ENGINEERING PROCESSING

Comprehensive Software Application Sets New Price/Performance Standard.

Rapidform® XOS™/Scan offers unprecedented price/performance. It is the world's 1st software offering fully automated scan data processing to allow user to make a NURBS model from raw 3D scan data within a few button clicks. With a four-fold increase in features and functions compared to other software, Rapidform XOS is the most affordable reverse engineering software to end-to-end support point cloud, mesh, color texture, curve and surface operations in an integrated environment. As an all-in-one software for soft reverse engineering applications such as direct engineering, RP, CAE, computer graphics, medical, dental, cultural heritage reconstruction and mass customization, Rapidform XOS widely supports all the possible reverse design workflows using 3D scan data.

3D Scanning to NURBS Conversion Ending up in CAD System with a Few Button Clicks

Throughout the development process, we focused on the automation of tedious and time consuming tasks. For example, Rapidform XOS has a new Mesh Buildup Wizard™ that processes raw, unaligned point clouds into complete, watertight meshes. It has fully automatic multi-shot registration and merging features inside and no more picking common points on adjacent scans is needed, which has been a critical bottleneck of 3D scan data processing. For surface generation, there is an automatic mesh to NURBS feature. Thanks to its fully automated Scan-to-NURBS feature, 3 button clicks from 3D scanning to NURBS conversion can be enough to end up being in other CAD system.

- World's 1st 100% automated tool for defect-free, watertight meshes from raw scan data - Mesh Buildup Wizard™
- Fully automated point cloud and mesh optimization for direct use of 3D scan data in RP, CAM, CAE and visualization
- Intelligently identify and align 3D scan data to an ideal design coordinate system - Align Wizard™
- Redesign within user-defined deviation tolerances - Accuracy Analyzer™
- Automatic re-meshing for generating CAE functional models - Scan-to-CAE

World's Best and Automated Scan-to-NURBS Tool at the Most Affordable Price

We see similarity with the CAD market, which has surface modelers, solid modelers and hybrids that combine both. Some companies need only surface modeling tools, while others require both surfacing and parametric solid modeling in one software package. Rapidform XOS is analogous to the surface modelers. It is for those that have no need to perform redesign on parametric solids. Rapidform XOS offers advanced curve and surface tools for developing precise, high-quality surface models. Compared to Rapidform XOS, Rapidform XOR, Rapidform XOS' family product, is analogous to the hybrid modelers, which is the only 3D scanning software application that builds editable, parametric solid models from a raw 3D scan data.

- One-button quick B-rep surfacing for design analysis & verification applications.
- True hybrid modeling software for point cloud, mesh, texture and freeform surface.
- Highly sophisticated yet familiar modeling capabilities utilizing universal curve and surface modeling features.
- 3D curves extraction and design directly from 3D scan data to transfer them into other CAD systems.

Fully Covering Wide Variety of Non-CAD Soft Reverse Engineering Workflows

A rich set of Rapidform XOS' 3D scan data processing features fully covers all the possible workflows of non-CAD(soft) reverse engineering applications end-to-end. Rapidform XOS offers a number of state-of-art functionalities of point-cloud, polygon, color texture modeling and optimization, 3D curve design and Scan-to-NURBS in an integrated environment. Rapidform XOS is designed to take in data from virtually any device that generates point clouds or polygon meshes, and to handle it effectively no matter what the result is used for. Rapidform XOS widely supports all the possible reverse engineering workflows using 3D scan data as follows:

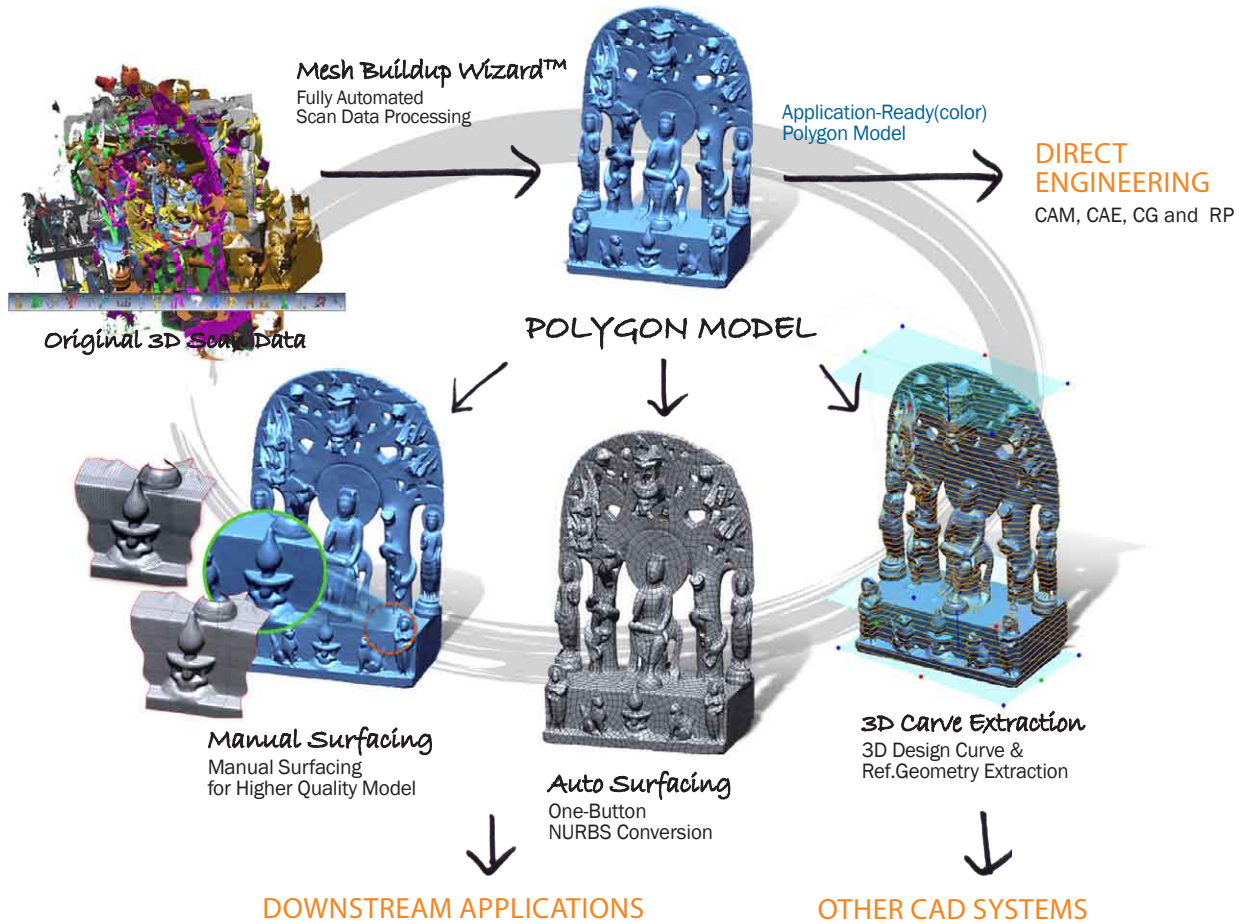
1. 3D(color) scanned mesh data optimization to rapidly buildup watertight mesh model.
2. 3D scan data ► Design curve extraction & modeling ► Reverse design with your CAD system.
3. 3D scan data ► One-button NURBS conversion ► Further processing in various software.

Comprehensive Feature Set for Point Cloud, Polygon and Color Texture Processing

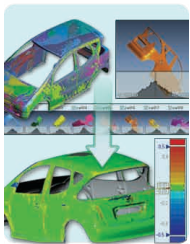
In addition to its Scan-to-NURBS modeling features, Rapidform XOS produces Class-A meshes in a single step. The collection of tools in the Rapidform XOS offers fast and accurate optimization and preparation of point clouds and polygons from any 3D scanning device. The extensive cleanup tools easily remove scan errors, automatically find scanning direction for unorganized data sets, intelligently reduce data size, triangulate, accurately register and merge multiple scans into one, high quality polygon mesh model. Also, a rich set of color-textured polygon model optimization and modeling tools is also available such as direct color texture editing, color-aware polygon operation and color parameter adjustment. The mesh models generated by Rapidform XOS can be directly used as input for target CAE, CAM and RP application software. Rapidform XOS features a powerful optimization tool for point cloud, mesh and color texture that generates a qualified mesh from 3D scan data that meets the specific requirements for the downstream applications.

Powerful yet Great Affordable

The Most Affordable Tool Fully Covering All Possible Reverse Engineering Processes



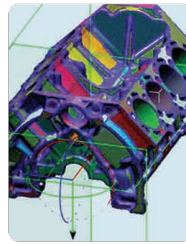
Accuracy Analyzer™



The Accuracy Analyzer tool provides users with real time deviation analysis results based on user defined tolerances to ensure that the model is redesigned within allowable tolerances.

Polygonal mesh deviation (analyze the deviation between the original scan data and optimized mesh model), sketch/curve/surface deviation (comparison with original scan data), geometric property analysis (curvature, continuity, quality, normal vector, etc.)

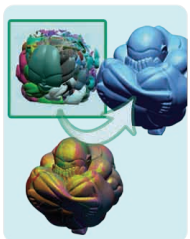
Align Wizard™



Rapidform XOS provides a tool that intelligently identifies coordinate systems in order of the likelihood that the original designer had used.

The user can either choose the coordinate system recommended by the Align Wizard, or manually determine the coordinate system that is believed to be the most appropriate for the part, by using an intuitive coordinate system setup tool.

Mesh Buildup Wizard™



World's 1st 100% automated tool for defect-free, watertight meshes from raw scan data.

Rapidform XOS is the world's 1st software offering fully automated scan data processing to allow user to make a NURBS model from raw 3D scan data within a few button clicks. Mesh Buildup Wizard's wizard-style interface has been developed to automate the creation of a defect-free and watertight mesh model from multi-shot raw scan data. Also, it has fully automatic multi-shot registration and merging features inside and no more picking common points on adjacent scans is needed, which has been a critical bottleneck of 3D scan data processing. Thanks to Mesh Buildup Wizard with XOS' quick mesh-to-surface feature, 3 button clicks from 3D scanning to NURBS conversion can be theoretically enough to end up being in other CAD system.

liveScan™



liveScan tool provides a real-time guided scanning interface that effectively combines data from the wide variety of 3D scanning devices.

Rapidform XOS offers a seamless interface with the wide variety of 3D scanning hardware. liveScan tool is a real-time guided scanning feature that scans and generates results in real time. All the captured scan data through liveScan can be directly utilized as a design foundation to make a parametric CAD model. In addition to direct scanning, tactile probing is also supported to define primitives (vector, plane, etc), thereby supporting alignments and reference geometry modeling using probed datum features. Probing is also supported to create freeform interpolation curves and surfaces. The 3D scanner direct control of Rapidform XOS supports 100% real-time automated registration and scan data processing as well.

PRODUCT SPECIFICATIONS

Supported File Formats

Rapidform Proprietary Formats

XRL(XOR model file), XDL(Rapidform XOY(XOS) model file), MDL(rapidform2006 model file), FCS(mesh file), ICF(INUS Compression Format), RPS(Rapidform Point-Stream file)

Standard File Formats

STL, OBJ, PLY, 3DS, WRL(VRML), IGES, STEP, VDAFS, Parasolid model file(X_T, X_B), Rhino(3DM))

3D scanner file format

VVD/CDM/CAM/CDK(Minolta), AC(Steinbichler), CBK/GRK/CWK(Kreon), G3D/CLOUD/SURF(GOM), HYM(Hymarc), ICV/SNX(Solutionix), IQSCAN (iQvolution), PSL(LDI), PMJ/PMJX(3D Digital Corp.), RTP/XYZI/XYZRGB (3rd Tech), PTS/PTX(Cyra), SAB/SAB2(3D Scanners), SOL(MENSI), 3DD(Riegl), STB(Scantech), SWL/BIN/SWB(Perceptron), TFM(Wicks & Wilson), XYZ/CRS/LIN/SMH/BIN(Opton), 3PI(Shape Grabber), PLY(Cyberware), BRE (Breuckmann), M3D(Steintek), FLS(Faro), SCN(NextEngine), PIX(Roland DG)

Point Cloud & Mesh Cleanup

- Automatic point cloud/mesh healing & cleaning
- Automatic scan data processing from multi-shot point cloud into qualified mesh - **Mesh Buildup Wizard™**
- Watertight and optimized mesh from raw scan data just with one click - **Rewrap™**
- Advanced CAD mesh healing
- Automatic hole filling with high curvature continuity

Best-in-class Point Cloud & Mesh Operations

Cross sectioning freeform curve design on point cloud and mesh
Instant mesh optimization for direct use in RP, CAM & CAE
Detail resolution controls(decimate & subdivide)
Smoothness controls(global & local smoothing)
Automatic re-meshing for CAE functional models
Professional yet highly interactive point cloud/mesh editing tools
Advanced point cloud/mesh modeling & optimization
global remesh, remove marker, de-feature, hole filling, fix boundary, smooth boundary, fit boundary, fit region to analytic shape, split & trim, divide, thicken, offset, etc.

Direct Color Texture Editing

Color-texture-aware mesh operation and texture preservation
Color parameter adjustments and editing
Automatic color balancing between multiple scans
Create single texture atlas from multiple textures with minimizing mosaic textures
3D data compression and streaming for web publishing

Align Wizard™

Wizard for aligning 3D scan data to ideal design coordinate system
Highly interactive toolset for coordinate alignment
Quick fit, Best fit, 3-2-1, Datum, By Ref. coordinates, etc.

Accuracy Analyzer™

Redesign within user-defined allowable tolerances
Automatic and real-time error visualization
Diverse object sensitive analysis tools(mesh to mesh, mesh to CAD, etc.)

Quick Mesh-to-Surface

Intelligent primitive(reference geometry) extraction from point cloud/mesh
Automatic shrink wrapped surface model generation
Optimized representations of original mesh data with negligible deviation error
Interactive mesh-fit surfacing(region fit & boundary fit)

Sophisticated Curve Tools

Automatic extraction of design curve and feature curve from mesh
Intelligent dimensioning & constraining
Comprehensive 3D curve design tools e.g. section curves
Intelligent real-time geometry recognition
Curvature-based curve network design

liveScan™ - Direct Interface with 3D Scanning Devices

Real-time guided scanning
Scan and generate design features on-the-fly
Tightly integrated with Mesh Buildup Wizard
Fully automated multi-shot registration and scan data processing
Digitizing with hard probe

RAPIDFORM FAMILY PRODUCTS



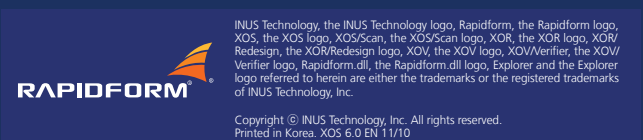
- Create parametric CAD models from 3D scan data
- Send full history-based models to other CAD systems
- Design parts faster using familiar CAD modeling concepts
- Intelligent tools for extracting design parameters from 3D scan data
 - **Redesign Assistant™**
- Redesign within user-defined deviation tolerances - **Accuracy Analyzer™**
- Intelligently identify and align 3D scan data to an ideal design coordinate system
 - **Align Wizard™**
- Modeling history and parameter management
- Mesh, freeform surface and parametric solid hybrid modeling functions
- Update existing CAD models to reflect changes in the as-built part
 - **CAD-to-Scan Refit**
- Instant mesh optimization for direct use in RP, CAM, CAE and visualization
- One-button quick Mesh-to-Surface conversion



- Truly repeatable CAT(Computer Aided Testing) software
- Fully automatic part inspection with 100% repeatability of every measurement
- Comprehensive geometric dimensioning & tolerancing(GD&T) analysis capabilities
- Interactive deviation analysis with detailed color maps(3D/2D cross sections and boundary/trim line deviation mapping)
- Easy, customizable inspection reporting with PowerPoint-like interface and Web 3D viewer
- Recognizes more geometry types than any other point cloud inspection software
Ref. Geometry, GD&T 2D & 3D, Master point, Comparison point, Section deviation, Surface deviation, Boundary edge, Silhouette curve, Virtual edge, Trend, Gap & Flush, Turbine blade, etc.
- Proven calculation accuracy, certified by Germany's PTB and tested by the American NIST and Britain's NPL
- Compatible with all major CAD systems, including CATIA, Pro/ENGINEER, UGS and SolidWorks

RAPIDFORM.dll™

- The world's 1st software development toolkit(SDK) for 3rd party 3D scanning application developers



For More Information

For more information about Rapidform XOS, contact your local Rapidform reseller, or visit www.rapidform.com to find a regional INUS Technology office or the closest Rapidform reseller. You may also call us toll-free at +1.866.RAPIDFORM for additional information or to speak with a Rapidform sales representative. If you are calling from outside the US, please dial **+82.2.6262.9900**.

INUS Technology, Inc.

INUS Technology, Inc. is the global leader in the development of 3D scanning software. The company's flagship product, Rapidform, is the world's #1 3D scanning software based on the number of users in production, customer satisfaction and sales. With Rapidform XOR and Rapidform XOV high density point clouds become organized, intelligent and accurate 3D data definitions. Whether used to produce polygonal mesh files or to supply surface and solid model data to advanced 3D CAD software, Rapidform provides the control to capture, process, manipulate and interrogate the raw data from laser, white light, full-body and long range scanners. For more information, visit www.rapidform.com.

Rapidform GLOBAL HEADQUARTERS INUS Technology, Inc.
601-20 Yeoksam-dong Gangnam-gu Seoul 135-080, KOREA
Tel: +82.2.6262.9900 Fax: +82.2.6262.9999 Email: info@rapidform.com

Rapidform, Inc.
1185 Bordeaux Drive, Suite A, Sunnyvale, CA 94089, USA
Toll Free: 866.RAPIDFORM(U.S. Only)
Tel: +1.408.856.6200 Fax: +1.408.340.7128 Email: us.sales@rapidform.com

Rapidform, JAPAN
Ichibancho II Bldg. 5F, 4-42 Ichibancho, Chiyoda-ku, Tokyo 102-0082, JAPAN
Tel: +81.3.3265.9446 Fax: +81.3.3265.9447 Email: japan.sales@rapidform.com

Rapidform, EMEA
8th Floor, Ludwig-Erhard-Str.30-34 D-65760 Eschborn, Germany
Tel: +49.6196.769.48.0 Fax: +49.(0)6196.769.48.29 Email: eusales@rapidform.com