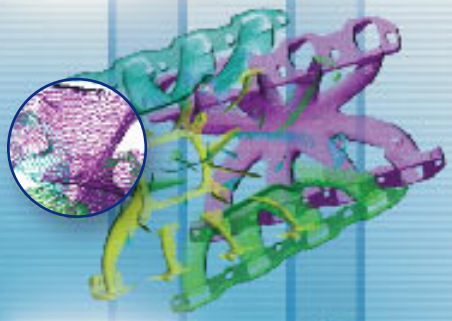
geomagic studio®

Reverse Engineering Software

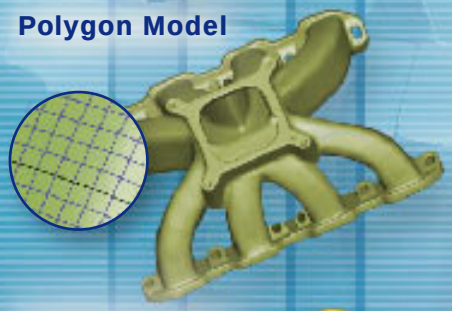
Automotive Exhaust Manifold

Physical Part



Point Cloud

Polygon Model



NURBS Patches

CAD Model

Manufactured Parts

The only complete solution for transforming physical parts into manufacturable digital models

Geomagic Studio automatically generates an accurate digital model from any physical part. The world's #1 software for automated reverse engineering, Geomagic Studio is also ideal for emerging applications such as mass production of customized devices, build-to-order manufacturing, and automatic re-creation of legacy parts. Only Geomagic Studio delivers all of this:

- Guaranteed watertight polygon and NURBS models
- Ten-fold productivity increases over traditional CAD software when processing complex or free-form shapes
- Automated features and simplified workflow that reduce training time and allow users to bypass tedious, labor-intensive tasks
- Integration with all major 3D scanners and CAD/CAM software
- Ability to work as a stand-alone application for rapid manufacturing or as a complement to CAD software

It's no wonder more than 2,000 professionals worldwide use Geomagic technology to customize products, automate processes and increase throughput.

"Without accurate geometry, CFD, FEA and secondary machining simulations cannot be performed effectively. When it comes to replicating cast parts, Geomagic Studio is the way to go."

- Richard Childress Racing

www.geomagic.com

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Reverse Engineering Software

Software Features

Scan Registration Tools
- ordered and unordered data handling
- load / save transformation matrices
- 1-point and n-point manual registration
- target (tooling ball) registration
- global registration
- automatic multiple scan merging

Point Processing
- uniform, curvature, and ordered sampling
- noise reduction with deviation display
- hole filling
- outlier and boundary selection

Polygon Creation and Repair
- wrap triangulation
- curvature-based hole filling
- partial hole filling and bridge creation
- tolerance and shape-based decimation
- fix intersections
- make open / closed manifold

Polygon Editing
- Boolean operations
- text engraving / embossing
- shelling and offsetting
- sectioning of shelled objects
- interactive relaxation / cleaning
- smooth, fit, trim, project, and extend boundary edges

Feature Extraction and Sharpening
- step-by-step sharpening wizard
- feature detection for holes, slots, and rectangles
- extract planes and cylinders
- extract feature curves as IGES 126 entities
- reconstruct theoretical intersection of surfaces

NURBS Surface Creation
- one-click auto surfacing
- automatic curvature detecting and editing
- automatic patch construction
- user-controlled surface layout
- patch error detection and repair
- automatic UV parametrization
- automatic surface fitting (C0 and C1)
- surface trimming with curves, features, and other surfaces

Template-Based Workflow
- save layouts as templates
- mirror and edit templates
- automatic template alignment

Analysis
- point-to-point and on-surface distance
- tolerance analysis
  - polygon to cloud
  - NURBS surface to cloud
- curve analysis
  - curvature
  - tangency

Color Support
- color editing and correction
- color-aware polygon operations
- automatic texture, bump, and displacement map generation

Tools
- enhanced datum creation and support
- datum-based and best-fit alignment
- mirror / scale / transform

Large Data Handling
- triangulation and decimation methods can process models in excess of 100 million triangles
- multi-threaded operations for dual processors
- batch processing

User Interface
- customizable toolbars, right-mouse menu, and hotkeys
- user-defined color themes
- dockable toolbars and panels
- user-defined macros
- context-sensitive help

Developer Tools
- hardware API
- COM interface provides scripting access via Visual Basic, C, C++, or Java

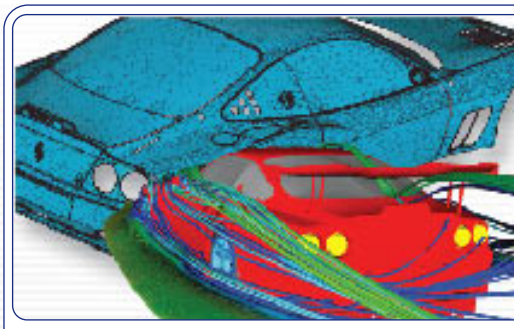
File I/O
Geomagic Studio supports all 3D digitizers, cameras, and scanners in XYZ / ASCII format and handles ordered and unordered surface and volume data.

- native scan import formats:
  - 3PI - ShapeGrabber
  - AC - Steinbichler
  - ASC - generic ASCII
  - BIN, SWL - Perceptron
  - BRE - Breuckmann
  - CAM, CDM, VVD - Minolta
  - CWK - Kreon
  - DBT - Digibotics
  - DPI - Dimensional Photonics
  - G3D, SURF - GOM
  - GPD - Geomagic
  - GTI - Genex
  - HYM - Hymarc
  - MET, MTN - Metron
  - NET - InSpeck
  - OPT - Open Technologies
  - PIX - Roland
  - PMJ/X - 3D Digital
  - SAB2 - 3D Scanners
  - SCN, PCN - LDI/Datasculpt
  - XYZ - Opton
  - XYZN - Cognitens
- polygon import/export:
  3DS, DXF, IGS, LWO, NAS, OBJ, PLY, STL, VRML, WRP
- CAD import/export:
  IGES, STEP 203/214, Neutral, VDA, Pro/E PRT*, SAT, Parasolid .x_t* and .x_b*

* import only

Aerospace Components

"Our rapid design and manufacturing processes require automation, throughput and customization - all of which Geomagic has the unique ability to provide."
- Align Technology



FEA & CFD Analysis

Medical Research & Devices

Consumer Products

"It was not until we started using Geomagic Studio software that we were really able to digitally model parts with ultimate accuracy."
- Fisher-Price

Built on PTC GRANITE

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