

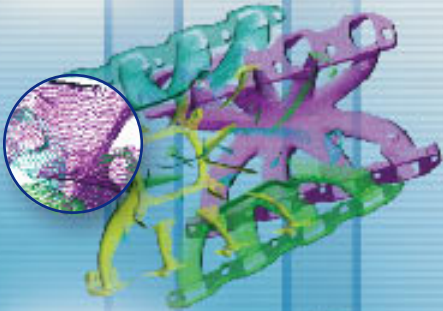
# geomagicstudio®

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](http://www.geomagic.com)

## 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

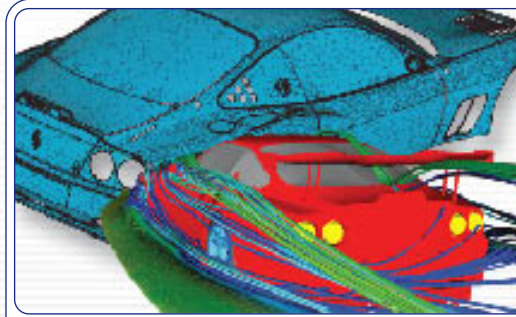
### Developer Tools

- 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



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**



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**

raindrop geomagic®

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