

geomagic®

# STUDIO®

Create Accurate Digital  
Models from Real World Objects

the magic of making it simple™



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With Geomagic Studio, you can digitally reconstruct an infinite variety of complex real world shapes more quickly and easily than ever before. Using 3D scan data of these objects, you'll be able to create accurate models that capture either the design intent or the as-built part. From product design, re-engineering of parts and mass customization to engineering analysis, rapid prototyping and digital archiving, Geomagic Studio opens up a new world of possibilities by bringing your physical parts into the digital realm.

Certified by the PTB (Physikalisch-Technische Bundesanstalt), Geomagic Studio is powered by patented technology and algorithms that produce high quality surfaces, accurate geometry, color and textures.



#### **Leverage the physical objects you already have**

There's no need to start with a blank screen that requires you to input dimensions and shapes when you already have a physical part that represents what you want. With Geomagic Studio, you can leverage these existing assets to shorten the design cycle and prepare models for analysis, CAD or other downstream applications.

#### **Create complex freeform shapes in a fraction of the time**

Creating complex freeform shapes can be a painstaking process using traditional CAD tools—much more laborious than creating a physical model. With Geomagic Studio, you start with the physical model, scan it and then automatically generate perfect continuous surfaces and watertight models that represent it. Advanced editing tools let you further refine the model.

#### **Close the loop between digital and physical**

Changes are a natural part of the design process as concepts are refined and prepared for manufacturing. Changes can also occur once a part is put in use due to wear and tear. Geomagic Studio closes the loop and aligns the physical and digital worlds, ensuring that you have a digital model that accurately represents the current as-built product. There's no need to manually update existing CAD models to compensate for the differences.

#### **Assess true performance characteristics**

Conducting engineering analysis such as computational fluid dynamics (CFD) or finite element analysis (FEA) on CAD models does not always tell the whole story. By capturing and creating a model of the as-built product, you'll be able to assess true performance characteristics that you can compare to the theoretical analysis performed on the perfect CAD model.





### Reproduce design intent

With the Geomagic Fashion module, you can quickly extract design intent and recreate original surface aesthetics. The software automatically identifies, analyzes and corrects imperfections in the scan data to create high quality analytic and freeform surfaces that are CAD ready. Analytic surfaces and profile curves can be further manipulated in your favorite CAD package. The result—you'll spend less time creating the initial form, leaving more time to focus on fit and function.

## Geomagic Studio Editions at a Glance

### Fashion Edition

Our premier solution to create CAD-ready surfaces for mechanical design applications such as new design and reverse engineering.

### Shape Edition

Designed for medical and scientific applications where users create exact 3D replicas of organic objects such as bones or historical artifacts.

### Complete Edition

Ideal for mechanical designers wanting to extract design intent from existing objects and perform FEA and CFD analysis on as-built parts.



## Geomagic Studio at a glance

### Scan data processing

	Geomagic Studio Fashion Edition	Geomagic Studio Shape Edition	Geomagic Studio Complete Edition
Process large data sets	•	•	•
Collect point data from all major 3D scanners and digitizers	•	•	•
Optimize scan data (using remove outliers, reduce noise and other available tools)	•	•	•
Align and merge multiple scan data sets	•	•	•
Automatically or manually register multiple point clouds	•	•	•

### Point and polygon editing

Reduce dense data sets with random, uniform and curvature-based point sampling	•	•	•
Create polygon mesh from point cloud data	•	•	•
Modify, edit and clean polygon model	•	•	•
Detect and create features in the model	•	•	•
Repair and sharpen boundary edges	•	•	•
Export model in several file formats including STL, OBJ, VRML1, VRML2, DXF, PLY and 3DS	•	•	•

### CAD-ready surface design

Automatically or manually classify surface types (planes, cylinders and others) of a model	•		•
Choose all or a selected number of surfaces to process	•		•
Control surface fitting using available tools and parameters	•	•	•
Create a single, stitched surface that is a blend of planar, cylindrical, conical, extruded, revolved, and free-form surfaces	•		•
Extract optimized profile curves	•		•
Analyze surface fitting results using inspection, walk-through or visualization tools	•	•	•
Export profile curves or CAD-ready surfaces as IGES or STEP files for downstream processing	•		•

### Surface modeling

Automatically create watertight NURBS surfaces from polygon models		•	•
Easily create new patch layouts manually by drawing curves	•	•	•
Automatically define UV parameterization		•	•
Adaptively fit surfaces (C0 and C1) based on tolerance	•	•	•
Obtain guaranteed C1 continuity between surface patches		•	•
Create templates for rapid surfacing of similar objects		•	•
Ability to output sharp edges and planar surfaces	•	•	•
Detect and repair patch errors with step-through dialogs		•	•
Export model in several formats including IGES, STEP, VDA, NEU, SAT	•	•	•