Key Benefits

- Reduce costs and shorten development time by automating the process of reverse engineering a physical prototype
- Simplify the workflow, and minimize the learning curve, by using the same CAD program you use to design your products to also reverse engineer a product
- Reduce noise in point cloud data for more accurate product designs
- Maintain design integrity by accurately capturing the design intent of the original product
- Automate the manual process of transforming scan data into manufacturable surfaces
- Easily update old designs without their original digital data to meet new market requirements
- Analyze the differences between the completed model and the original point cloud data to verify accuracy
Pro/ENGINEER Reverse Engineering Extension

Features and Specifications

Point Cloud Refinement
- Point cropping
- Noise reduction
- Automatic deletion of outlying points
- Point sampling (random, uniform and curvature sampling)
- Fill holes in the scanned data

Dynamic Facet Modeling
- Automatic removal of webbing
- Removal of facets as singles, groups or user-defined cropping
- Hole filling operations
- Cleaning operations to redistribute the facets for a cleaner representation
- Decimating and refining operations to reduce or increase the number of facets
- Relax facets to generate a smoother representation
- “Make manifold” operation to remove erroneous facets, ensuring a single contiguous set of facets

Flexible Curve Creation
- Construct curves on a facet, a surface, from a surface boundary, and through points
- Create a curve from the results of an analysis feature such as along the fringe of a colored analysis plot

Flexible Surface Creation
- Develop analytical surfaces such as planes, cylinders, cones, revolutions and extrusions
- Create a surface from a box or boundary
- Enable lofting through multiple curves
- Create tangent and normal boundary conditions

Verification
- Analyze the deviation between individual surfaces and the facets
- Fit new point cloud data to an existing model to implement design changes
- Analyze the deviation between the completed model and the original point cloud

With Pro/ENGINEER Reverse Engineering, you are able to capture valuable data without having the original CAD files. The above image shows the resulting facet model from a scanned point cloud of a hip bone. Verification tools ensure that the resulting CAD model accurately represents the scanned data. Finally, we have our complete model.

Language Support
- English, German, French, Italian, Spanish, Japanese, Chinese (Simplified and Traditional) and Korean

Platform Requirements
- Microsoft Windows (XP, 2000)
- UNIX platforms (Solaris, HP-UX, Linux)
For specific operating system levels, visit: www.ptc.com/partners/hardware/current/support.htm

The Pro/ENGINEER Advantage
With Pro/ENGINEER, you can rest assured that no matter where you make a change in your design, your changes are propagated instantly throughout all downstream deliverables. Pro/ENGINEER modules are seamlessly integrated, which means you can focus on design and analysis of your product - not on wasting your time and energy recreating the model for use in different CAD applications. The value of this integration is realized in Pro/ENGINEER Reverse Engineering, because you can eliminate the pain of having to recreate a model due to the loss of data. Lastly, the integration of all Pro/ENGINEER tools eliminates errors that can be incurred when models are translated or recreated for another program.

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