

Creo® Elements/Direct® Modeling

The world's leading direct 3D system

Creo Elements/Direct Modeling's direct approach to 3D design is ideal for companies that need a lightweight and flexible design strategy to shorten design cycles and quickly create one-off product designs.

Faster design cycles

A direct design approach saves you time because it offers immediate, on-the-fly interaction with your geometry. Plus, this approach captures information economically and embeds it in the model definition, resulting in enhanced development speed. You can use that faster development to add iterations, improve quality in your design, get to market earlier, and extend your product's market life. You decide how it best serves your business needs.

Flexible for unexpected and radical changes

Companies that develop one-off product designs (e.g., one-of-a-kind, new-to-market, or custom design-to-order products) face rapidly changing requirements throughout the design cycle. Creo Elements/Direct Modeling enables you to make unexpected changes faster and more frequently. You are also able to make these changes later into the design process.

Flexible design teams

With Creo Elements/Direct Modeling, any team member can pick up and work on a direct 3D product design in the same way that anyone can pick up and work on a Microsoft® Word® document. As a result, design responsibility is easily reassigned when different engineers, or even engineering teams, become unavailable during the course of a project.

Flexible for working with multi-source CAD data

A direct 3D CAD system excels at the import and modification of multi-source CAD data, benefiting companies working across an extended supply chain for procured components or subcontracted design.

Easiest approach to learn and use 3D CAD

A direct approach is considered by professionals to be the easiest 3D CAD method to learn and use because you interact directly and intuitively with the model geometry.



A direct approach makes 3D design creation and modification fast, easy, and flexible. You can rapidly evolve a product design in unpredictable and new directions when modifications cannot be anticipated in advance.

Key benefits

- Shave time off design cycles by repurposing, or radically transforming existing designs into new and completely different products
- Rapidly iterate product designs to create better opportunities for market-winning products
- Accommodate major, unexpected design changes at any stage of development while keeping the transition to manufacturing on schedule
- Increase engineering productivity by eliminating resource bottlenecks and project delays via flexible design teams
- Directly leverage multi-source CAD data from suppliers and subcontractors in the design process
- Easily move from 2D to 3D and easily switch from other 3D CAD systems. All legacy 2D and 3D CAD data carries forward in Creo Elements/Direct Modeling
- Accelerate your product development process by leveraging seamless integrations to downstream Creo apps and other PTC products for advanced CAE, CAM, enterprise-wide visualization and technical illustrations

Capabilities and specifications

Direct modeling

- Interact intelligently and on-the-fly with geometry
- Easily create and edit 3D product designs using familiar 'copy and paste' and 'drag and drop' interactions
- Real-time direct modeling makes 3D design totally intuitive and predictable
- Use automatic feature recognition to turn any geometry into intelligent features
- Design in a combined part and assembly mode. Design top-down or bottom-up by using a combination of both

Sheet metal design

- Design 3D sheet metal parts
- Create and modify bends and lips, including reliefs
- Design in the flat or in the fold, with bend animations
- Associative 2D flat patterns

Surfacing

- Create sculptured shapes and add more style to designs
- Apply sweep, loft, 3D curves, and helix shapes with ease
- Repair or modify native and imported surfaces quickly

Rendering

- See instant results through real-time rendering
- Create photorealistic images for presentations, design reviews, illustrations, and point-of-sale marketing materials
- Access a complete catalog of real-world materials, light sources, and rendering schemes

Digital prototyping

- Compare similar 3D designs just as you would compare documents in Microsoft Word®
- Apply clash analysis to locate conflicts before you build a physical product
- Use 3D configurations to define part and assembly positions, on/off states, and camera positions
- Micron accuracy (10-6mm geometric resolution)

Large-assembly handling (100,000+ parts)

- Power up to Microsoft Windows® 64-bit Edition. Up to 128 GB RAM available for your largest assemblies
- Preserve system resources for better performance by using light-weight graphics. Models reload in full geometry automatically as you need them (requires Creo Elements/Direct Model Manager)

Machining capabilities

- Integrate machining features into the design
- Output designs directly to CAM
- Transfer machined features automatically to associative drawings

Product manufacturing information

- Work with complete 3D geometric dimensions and tolerances (GD&T), manufacturing symbols, note documentation, and tool containers for parts and assemblies

Associative drawings

- Automatically create standard-compliant drawings
- See 3D design changes update across drawings, associatively
- Automatically generate an accurate Bill-of-Materials (BOM) table on drawings
- Export to downstream manufacturing processes with Autodesk® DWG™, Autodesk DXF™, and 2D IGES

Data exchange

- Use imported designs as if native to Creo Elements/Direct Modeling
- Import structure and geometry from native Creo 3D CAD files
- Export neutral and Granite files to Creo 3D CAD
- Import and export 3D via STEP, 3D IGES, SAT, and Printed Circuit Board IDF
- Native CAD import capabilities and CAD interfaces for a variety of non-PTC CAD systems
- Export 3D as VRML and STL
- Import 2D via Autodesk® DWG™, Autodesk DXF™, and 2D IGES

- Support lightweight publishing and viewing of eDrawings®
- Take advantage of automatic integrity check and repair
- Seamless integration to PTC products extend your product development capabilities for CAE, CAM, collaboration, and technical illustrations

- Export parts and assemblies to GRANITE® file formats for advanced analysis and NC and tooling capabilities in Creo

- Direct integration to Creo View MCAD™ enables you to export parts and assemblies to .pvz files for enterprise wide visualization

- Leverage Creo Elements/Direct data in .pvz format to easily create technical illustrations in PTC Arbortext® IsoDraw®

Platform support and system requirements

Please visit the [PTC support page](#) for the most up-to-date platform support and system requirements.

For more information, visit:

[PTC.com/cad/elements-direct/modeling](https://www.ptc.com/cad/elements-direct/modeling)

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