

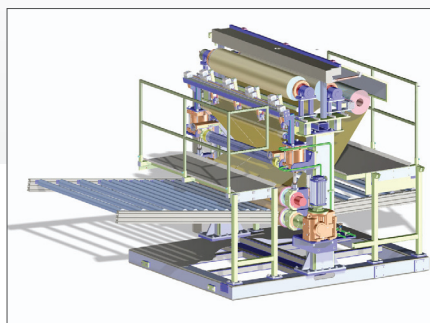
## Creo™ Elements/Direct™

A COMPREHENSIVE ENVIRONMENT FOR YOUR DIRECT APPROACH TO 3D CAD PRODUCT DESIGN.

Formerly CoCreate®

Creo Elements/Direct is for innovative leaders in discrete manufacturing and other industries who are facing intense time-to-market pressure. Many of the world's best-known product development companies depend on Creo Elements/Direct for a direct 3D product development process in order to meet shorter design cycles, create one-off product designs quickly, and respond to unpredictable design requirement changes.

If you are looking for maximum ease and flexibility in creating one-off designs or radically repurposing designs, a "direct modeling" approach to 3D design is the right choice. Most companies add 3D modeling to their product design process to overcome increased pressures in manufacturing, such as shortened time-to-market, customer demand for new products, and increasingly complex customer requirements. Creo Elements/Direct addresses these challenges with direct 3D CAD, CAE and product data management that provide the optimal level of design flexibility.



Creo Elements/Direct is a comprehensive design environment for engineering teams that require a direct modeling approach.

### Lightweight. Flexible. Fast. Connected.

Creo Elements/Direct delivers speed, flexibility and responsiveness-to-change for customers pursuing a lightweight design strategy. As the pioneer and leading provider of direct modeling, PTC and Creo Elements/Direct provide you with unique flexibility throughout your entire product development process.

**Lightweight.** Intuitively design products using direct, on-the-fly interactions with model geometry

Creo Elements/Direct uniquely captures less model definition information, for a genuinely lightweight and flexible product design process. Product designs evolve freely without designers needing to anticipate downstream design changes or maintain embedded design logic such as tangency conditions. As a result, lightweight model geometry is central to the Creo Elements/Direct 3D CAD system. Consequently, your direct modeling files are, on average, one-third the size of parametric modeling files, which makes your models easier to access, modify, archive and share.

**Flexible.** Easily address unexpected and radical product design changes

Since you're creating and modifying model geometry using direct, on-the-fly interactions, you have ultimate flexibility throughout your design process. Therefore, you can easily pick up a design where others left off—much like the way you can open up and immediately continue working on an existing Microsoft Word® document. Creo Elements/Direct Modeling provides flexibility in several other ways, by giving you the ability to, respond to changes in design team composition, or work easily with design data from any 3D or 2D CAD system as if it were native design data.

**Fast.** Easy to learn and intuitive to use, Creo Elements/Direct lets engineers shave weeks—even months—from project schedules

For engineers and designers who need an easy-to-learn user experience, Creo Elements/Direct provides an intuitive, ribbon-based user interface consistent across all Creo applications. It lowers the learning curve for new users while enabling expert designers to be more productive. Additionally, existing 2D designers can transfer their skills and quickly adopt 3D direct modeling in a matter of weeks. Creo Elements/Direct offers the simplicity of 2D with the power of 3D.

**Connected.** Realize more value from product development with PTC's integral Product Development System

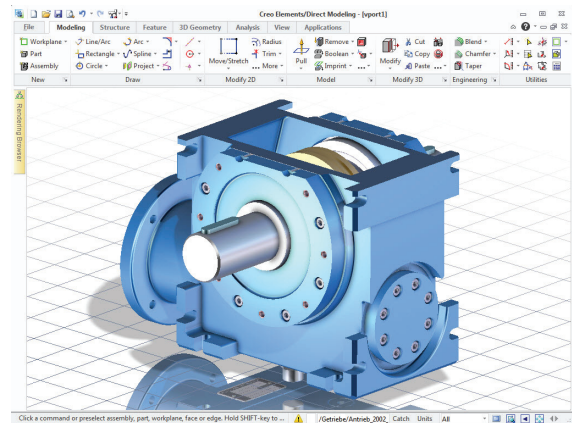
As part of PTC's integral Product Development System (PDS), Creo Elements/Direct gives you a seamless user experience with other PTC product families, including other Creo applications, Arbortext®, Mathcad®, and Windchill.®

### Creo Elements/Direct Modeling—the world's #1 direct 3D CAD system

Creo Elements/Direct Modeling™ is the easiest 3D CAD system to learn and use. Creo Elements/Direct provides a lightweight 3D design approach that can help you advance many of your engineering processes, including:

- Concept development
- Verification and validation
- System design
- Design outsourcing
- Detailed design

Creo Elements/Direct Modeling, makes creating and modifying 3D designs fast, easy and flexible. Creo Elements/Direct Modeling is packed with an extensive list of features for innovative customers who demand speed, flexibility and responsiveness-to-change.



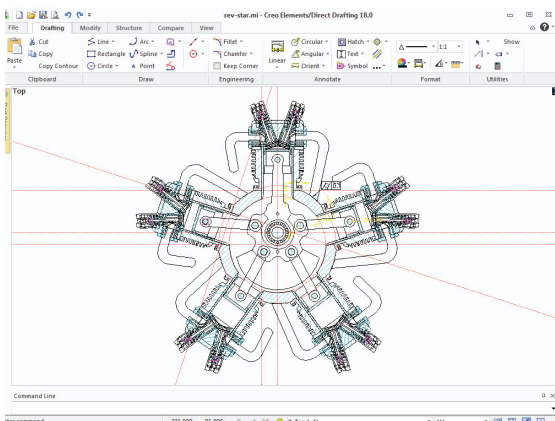
A direct approach to 3D CAD design makes creation and modification of 3D designs fast, easy, and flexible. You can rapidly evolve a product design in unpredictable and new directions when modifications cannot be anticipated in advance.

### Key benefits of Creo Elements/Direct Modeling

- Optimize concept development, detailed design, and system design processes
  - Quickly create and modify 3D parts and assemblies
  - Shave time off design cycles by repurposing – or radically transforming – existing designs into new and completely different 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 and better support for design outsourcing processes
- 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, confident in knowing that all legacy 2D and 3D CAD data carries forward in Creo Elements/Direct Modeling
- Broaden your design possibilities by using downstream Creo applications such as Creo Parametric, Creo Simulate, and Creo View MCAD

## Creo Elements/Direct Drafting –for professional 2D CAD design and drafting

Companies that use a 2D CAD system for conceptual, visual and detailed design processes can leverage Creo Elements/Direct Drafting. Exclusively developed for mechanical engineers and designers, Creo Elements/Direct Drafting helps you achieve new levels of productivity with innovative part and assembly capabilities and powerful 2D commands.



Creo Elements/Direct Drafting is a complete 2D CAD system tuned to the specialized needs of mechanical engineers and designers.

### Key benefits of Creo Elements/Direct Drafting

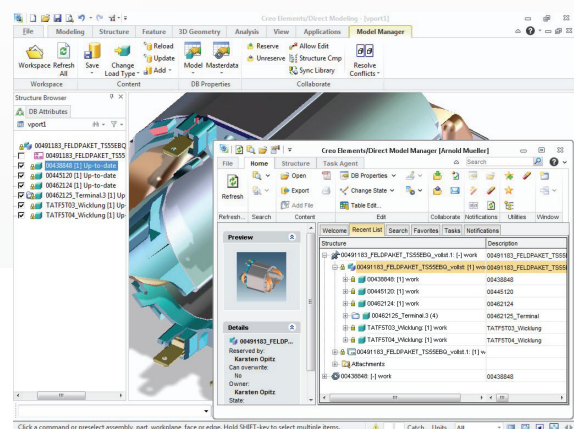
- Satisfies the 2D needs of designers and mechanical engineers in product development
- Applies an innovative part and assembly structure that matches how engineers design and manufacture products—making 2D product development fast and easy
- Automates development processes and is customizable and programmable, so it can be tailored to fit company-specific needs
- Offers an easy migration path to Creo Elements/Direct Modeling, the industry's #1 direct 3D modeling software

## Creo Elements/Direct Model Manager and Drawing Manager—integrated 3D and 2D product data management

Integrating your 3D and 2D product data management (PDM) is simple with Creo Elements/Direct Model Manager and Creo Elements/Direct Drawing Manager. You can effectively orchestrate team design processes and manage associated product design data within a central database. Plus, with a fast, intuitive installation, you can immediately benefit from a preconfigured, best-practice data management solution.

### Key benefits for 3D and 2D product data management

- **Speed development and cut costs** – Cut engineering time and drive down manufacturing costs by managing multiple product configurations with high cross-leverage and by reusing shared parts and assemblies across product platforms.
- **System of record** – Use Creo Elements/Direct Model Manager as your centralized workgroup database and share released design data with other enterprise systems (such as ERP). This flexibility can support a broad range of enterprise data management strategies and systems.
- **Data management you will not outgrow** – Creo Elements/Direct Model Manager scales from the global enterprise down to the single-person shop. Any size company can easily move into an orchestrated 3D product development and lifecycle management process. With support for Web Services and a web-based client access, extended teams and users can take advantage of the product content as the system of record.



Stay up-to-date with integrated Creo Elements/Direct Model Manager status and revision notifications from inside the Creo Elements/Direct Modeling structure browser.

- **Streamline processes** – Eliminate the time and expense of manual data management processes. Ensure design integrity and work with up-to-date revisions of design data across the development team, with safeguards against accidental data loss. Connect to Windchill, PTC's leading PLM solution, for deep support of product development processes across the enterprise.

#### Extended capabilities for 3D CAD productivity

The Creo Elements/Direct design solution provides key 3D productivity-enhancing capabilities for users in specific lines of business and industries. Easily extend the use of 3D throughout your design projects and organization with these fully integrated capabilities, as you quickly develop products from concept to manufacturing.

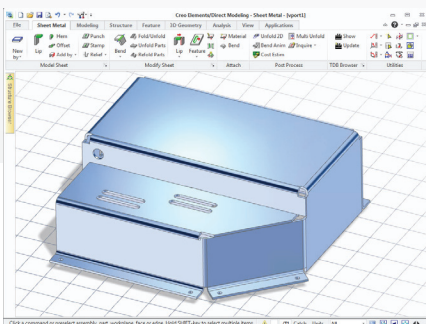
- **Cable and harness design** – Create cables, harnesses and bill-of-materials documentation with Creo Elements/Direct Cabling, including drawings for electrical cables, harness routes, and nail boards.
- **Mold base design** – Creo Elements/Direct Mold Base reduces the effort of designing plastic injection molds through its highly interactive and intelligent tooling.
- **Sheet metal design** – With Creo Elements/Direct Sheet Metal, build design and manufacturing advice into sheet metal parts and simulate design and manufacturing behaviors.
- **Industrial design** – Designed for companies and industrial designers who want to create appealing and ergonomic products, Creo Elements/Direct Surfacing provides the perfect combination of freeform surfacing and solid modeling in one environment.
- **Plastic design** – Speed up the design of plastic parts by using streamlined, parameter-driven features and core and cavity commands. Automatically create mold cavities and cores, and use digital prototyping to detect undercuts and constant wall thickness.
- **Structural and thermal analysis** – With the simulation and digital prototyping capabilities of Creo Elements/Direct Finite Element Analysis, you can validate your product designs to meet your customers' physical demands and streamline your verification and validation processes.
- **Advanced Analysis** – Fully evaluate and optimize your design, improving product quality while reducing physical prototyping expense, with Creo Simulate Advanced Extension.

For the most up-to-date platform support information, visit:  
[PTC.com/partners/hardware/current/support.htm](http://PTC.com/partners/hardware/current/support.htm)

For more information, visit:  
[PTC.com/products/creo-elements-direct](http://PTC.com/products/creo-elements-direct)

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The Creo Elements/Direct Sheet Metal knowledge database, with its manufacturing tools, ensures the manufacturability of the design.