PTC®

the product development company

Creo™ Elements/Pro™ Enterprise XE

DRIVING ENGINEERING DESIGN OPTIMIZATION

Formerly Pro/ENGINEER®

The Creo Elements/Pro Enterprise XE (Extended Edition) Package is a comprehensive product development solution that enables companies to broaden and drive engineering design optimization.

Today's competitive, global environment requires companies to optimize engineering design and analysis processes to realize the full potential of product performance. For instance, the content that drives product design details, such as engineering calculations, can be leveraged more efficiently early in the design process, speeding time-to-market. Additionally, CAD data and other engineering content created throughout the process can be leveraged in collaboration tasks or used downstream in technical publications, saving time and cost. The Creo Elements/Pro Enterprise XE Package provides broad capabilities for creating engineering content, analyzing and validating designs, and achieving interoperability, data exchange, collaboration, project management, and content and process management. The package also includes specialized software for engineering calculations, tolerance analysis, and protecting valuable design IP.
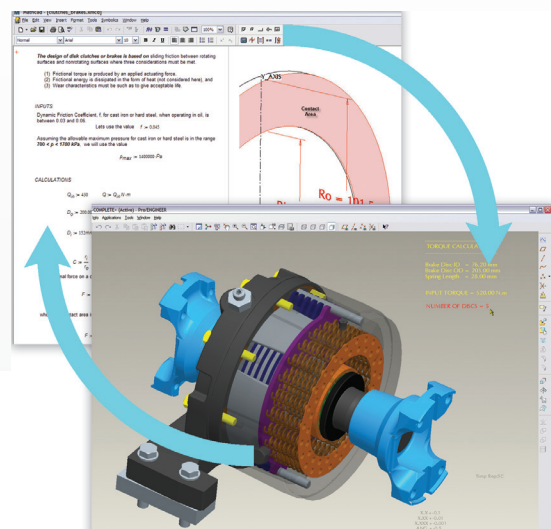
With this broad set of tools, you have the power to improve key product development processes, including concept development, system design, detailed design, variant design and generation, verification and validation, and design outsourcing.

Key Benefits

The Creo Elements/Pro Enterprise XE Package empowers teams to leverage engineering information across the distributed product development environment. This package extends the reach of Creo Elements/Pro solutions to optimize the entire engineering process, giving you

the ability to create and reuse engineering calculations, validate designs, access views, and protect CAD and other product development data. Benefits include the ability to:

- Quickly create high quality designs with the industry's most powerful, integrated 3D CAD/CAM/CAE solution

- Streamline collaboration across the engineering process with enhanced documentation and visualization capabilities

- Drive reuse of engineering and design data for maximum productivity

- Save time and reduce costs with design optimization using Mathcad®, Creo Elements/Pro Behavioral Modeling, and Creo Elements/Pro Mechanica®— all that is fully associative with your Creo Elements/Pro models

- Enable users to quickly come up to speed on engineering, calculation, tolerance analysis, and simulation capabilities

Optimize your design by using Mathcad—a component in the Creo Elements/Pro Enterprise XE package—to predict performance and drive your design.
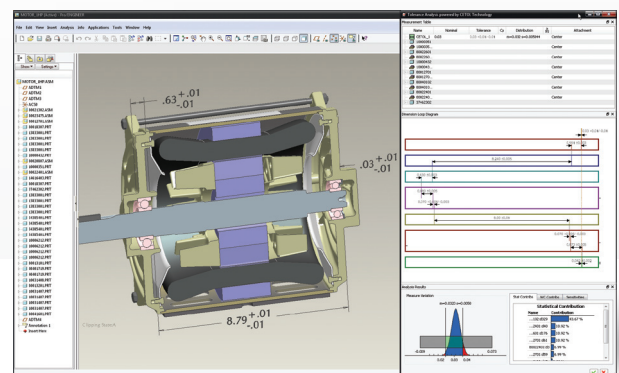
Capabilities & Specifications

Authoring Engineering Content

Creo Elements/Pro

- Creo Elements/Pro Solid Modeling

  - Create precise geometry, regardless of model complexity

  - Create standard-compliant 2D and 3D drawings

  - Develop complex surface geometry using sweeps, blends, extends, offsets and a variety of other features

  - Utilize a broad range of sheetmetal, weld and assembly modeling capabilities

  - Use ModelCHECK™ to enforce best practices and ensure compliance with company and industry design standards

  - Create accurate, photorealistic images with real-time photorendering

  - Seamlessly connect to resources with integrated Web capabilities

  - Access predefined parts using the complete library of parts, features, tools and more

- Creo Elements/Pro Advanced Assembly

  - Share and manage assembly design data more efficiently using predefined skeleton model interfaces

  - Define and automate the enforcement of design rules, so that only appropriate relationships are created within the context of the design, making design modifications and reuse easy

  - Develop unique sequence steps to provide models, views and separate BOM listings for each step of the assembly process
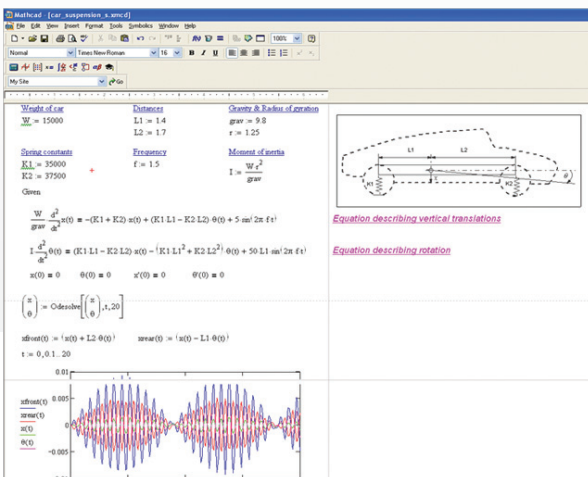
- Creo Elements/Pro Interactive Surface Design

  - Create conceptual designs; work with a unique, four-quadrant modeling window that supports the direct creation, manipulation and control of curves, surfaces and connections; and build or modify complex surfaces by simply dragging curve control points, while maintaining G2 continuity

- Creo Elements/Pro Piping and Cabling

  - Produce all cabling and piping 2D and 3D diagramming in a single solution

  - Calculate mass properties, and automatically generate customizable BOMs, wire lists and flattened harnesses

  - Evaluate pipelines for manufacturability and interference

- Creo Elements/Pro Tolerance Analysis

  - Powered by CETOL Technology

  - Evaluate the impact of tolerances and dimensioning schemes on the feasibility and manufacturability of product designs

  - Enable concurrent engineering to ensure designs meet manufacturing requirements

  - Six Sigma design methodologies can be leveraged to ensure design quality

Creo Elements/Pro Tolerance Analysis Extension powered by CETOL Technology integrates seamlessly into the design environment.

Mathcad®

- Enables unique predictive engineering by using engineering calculations to drive Creo Elements/Pro designs and pass parameters value back to Mathcad for further analysis

- Simultaneously solve and document engineering calculations using an easy-to-use whiteboard interface that leverages intuitive, standard math notation

- Apply a broad range of calculation capabilities with more than 400 built-in functions

- Combine text, live math and graphics for complete documentation

- Provides automated units management

- or drag-and-drop your parts and assemblies just as you would files and folders. Creo Elements/Direct Modeling PE features a single environment for designing within the context of the whole product assembly. Users don't just build parts or assemblies—they build real products.

With Mathcad, you can create and document engineering calculations for building superior products.

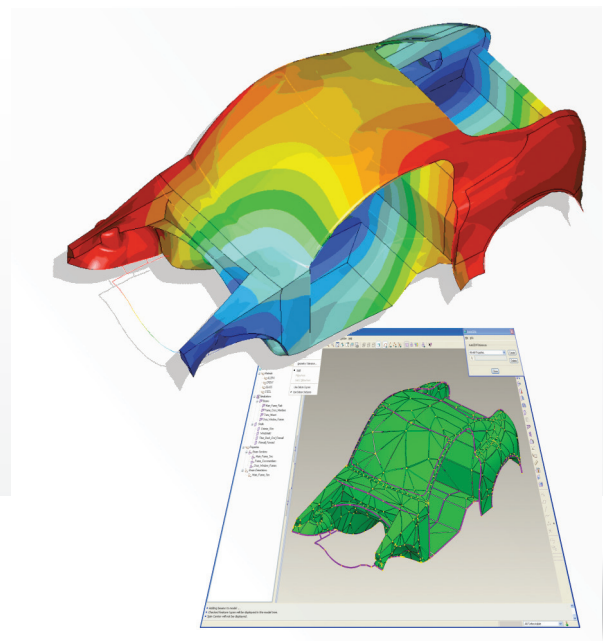## Analyze and Validate Designs

Creo Elements/Pro Mechanica

- Validate the designs driven by Mathcad and modeled in Creo Elements/Pro. Map precisely to underlying CAD geometry using an advanced, adaptive solution for automatic convergence

- Handle any model type, and easily work with all types of geometry, including solids, shells, beams, mixed models— even extracts of mid-surface geometry

- Perform multiple types of analysis, such as static structural (including contact, modal/natural frequency, buckling) and steady state thermal analyses

- Optimize designs by taking advantage of the parametric nature of Creo Elements/Pro. Perform both local and global sensitivity studies, and goal-oriented, multi-discipline optimization studies

Creo Elements/Pro Mechanism Dynamics

- Obtain accurate data of dynamic spring, cam, damping or impact analysis by incorporating the actual inertial masses of components and the forces acting on and between them

Creo Elements/Pro Mechanica enables validation of designs and reduces the number of physical prototypes needed.

- Animate mechanisms in action and see how dynamic forces, acceleration and velocity affect the digital product model using color-coded vector arrows

- Perform various types of analyses including: static/steady state, to find final resting place; dynamic, to compute force vs. time; and force balance, to find the force required to maintain a desired mechanism configuration

Creo Elements/Pro Behavioral Modeling

- Assess model sensitivity to understand the effects of change on design objectives

- Automatically generate a set of feasible solutions for multi-objective design problems

- Integrate your results with Creo Elements/Pro simulation software or other external applications, for the purposes of multi-objective design studies, to better predict design behavior

Interoperability and Data Exchange

Data Interoperability

- Kernel support for ACIS™, Parasolid™, and GRANITE®

- Associative Topology Bus™ enables cross-interoperability with earlier releases of Creo Elements/Pro

- Direct translators for CADDS and AutoCAD® DWG

- Industry-standard translators: AutoCAD® DXF, IGES, STEP, SET, VDA, ECAD, CGM, COSMOS/M, PATRAN®, and SUPERTAB™ geometry files, SLA, JPEG, TIFF, RENDER, VRML

Data Repair

- Dramatically reduce the time and effort required to clean up imported or legacy design data

- Collapse imported geometry, for better surface management, using the constraint manager

Collaboration and Project Management

Windchill® ProjectLink™

- Secure, Web-based, online project workspaces where globally dispersed team members, customers and suppliers can work together on projects

- Online project management that tracks project milestones, deliverables, schedules and resources

- A central repository for all project-related information

- Embedded visualization, with viewing and markup of multiple CAD formats and PDFs

- Template-driven process automation of key business processes, such as New Product Introduction, and quality processes, such as Six Sigma

- Designed to work with familiar, everyday tools, such as multiple CAD packages, Microsoft Office and Microsoft Project

Content and Process Management

Windchill PDMLink™

- Create a single, secure, Web-based source for Creo Elements/Pro data and other product information for the entire enterprise, with vaulting, revisioning, configuration management, search and lifecycle management

- Embedded visualization for viewing and marking up Creo Elements/Pro parts and assemblies, in multiple CAD formats and PDFs

- Robust data management for Creo Elements/Pro data and Arbortext authored content, as well as other engineering documents

- Optional data management capabilities for multiple mechanical and electrical CAD tools and software source code and documents

- Out-of-the-box change management support for both full-track and fast-track changes

- Configuration management of product information over the life of the product

- Robust integration with ERP and other business systems, with optional Windchill Enterprise Systems Integration (ESI) module

- Flexible deployment options for on-premise and On Demand hosted solutions
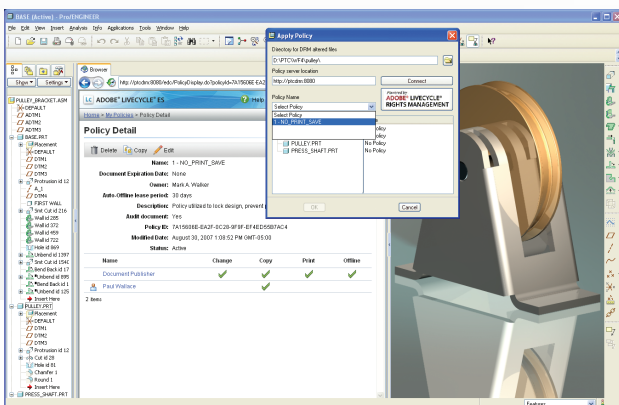
Pro/INTRALINK™

- Provides rich, mature, and reliable Creo Elements/Pro data management on a modern Windchill architecture

- Supports concurrent engineering

- Provides vaulting tools (check-in, check-out, baselines) and reporting tools

- Offers continued support for multi-site deployments with Pro/INTRALINK replication tools

- As a subset of Windchill PDMLink, provides a growth path to more comprehensive data management and process control capabilities

Digital Rights Management
Creo Elements/Pro Rights Management Extension

- Protect design IP persistently and dynamically

- Supports Creo Elements/Pro parts, assemblies and drawings, as well as PDF, Microsoft Word and Microsoft Excel files

- Enable or revoke access even after the file or data has been distributed outside a secure PDM/PLM system

- Create, monitor and manage data access policies using Adobe Livecycle Rights Management Server

Creo Elements/Pro Rights Management Extension helps you protect your CAD data persistently and dynamically.

The Right Solution–Without Compromise

Creo Elements/Pro is simple to learn and use, and is available in a variety of packages designed to meet your company's specific needs. Whether you need a cost-effective 3D CAD system that contains all the basic design capabilities, or a comprehensive Product Development System that seamlessly connects your extended supply chain, you'll find exactly what you need in a single, fully scalable solution.

Choose the package that fits your needs today. As your needs change and grow, you can easily upgrade to the package that is right for you tomorrow which leverages the same powerful platform—this means no data translation and a consistent user experience.

The Creo Elements/Pro Advantage

The Creo Elements/Pro family of integrated 3D CAD/CAM/CAE solutions delivers a distinct advantage for engineers and designers because Cre Elements/Pro is fully associative. That means any change made to the design is automatically reflected in all downstream deliverables—without any translation of model information. By eliminating data translation, you not only save time, but you also avoid the possibility of translation errors in your design. Creo Elements/Pro packages are the first choice of engineers and designers because no other product development package offers more power and speed in one scalable platform.

Language, Platform Support, and System Requirements

Mathcad is supported on Windows only (Vista, XP and 2000). Creo Elements/Pro Mechanica, Creo Elements/Pro Rights Management Extension, and the Adobe Livecycle Rights Management server are supported in the following languages: English, French, German and Japanese. For more information and system requirements, visit:
www.ptc.com/partners/hardware/current/support.htm

For more information, visit http://www.ptc.com/go/creo-elements-pro/packages/