PTC®
PRODUCT & SERVICE ADVANTAGE®

PTC® CREO® ENGINEER PACKAGES

3D CAD solutions optimized for your product development tasks

From the smallest product design firm to the largest, manufacturing organizations are under constant pressure to develop more products in less time, without sacrificing innovation or quality.

PTC's 3D product design solution, PTC Creo, provides organizations with the right tools to achieve the highest quality designs in the fastest possible time.

PTC delivers the most scalable range of product development packages on the market today. The PTC Creo Engineer packages are easy to use, competitively priced, and always upgradeable so it meets the varied demands of your engineering design tasks and business requirements.

No matter which package you choose, users will be able to take advantage of a powerful, intuitive, and comprehensive set of 3D CAD capabilities.
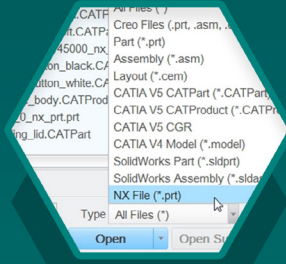
Furthermore, your 3D CAD solution will connect seamlessly to PTC's other industry-leading solutions, including PTC Windchill® for product lifecycle/project management and PTC Mathcad® for engineering calculations.
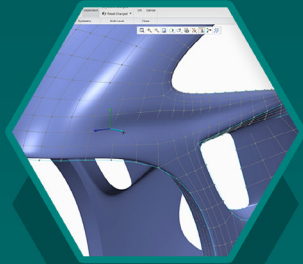
3D Part & Assembly Design
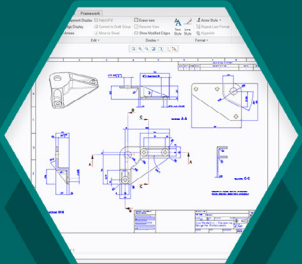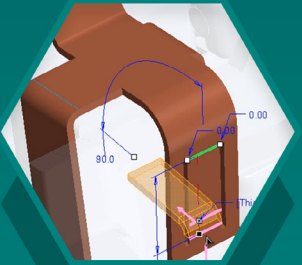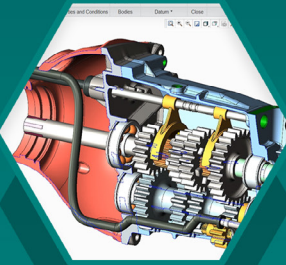
Automated 2D Drawing Creation

Unite Technology

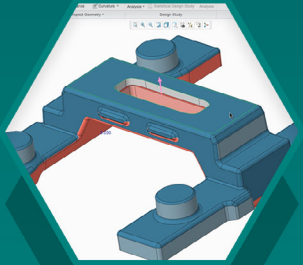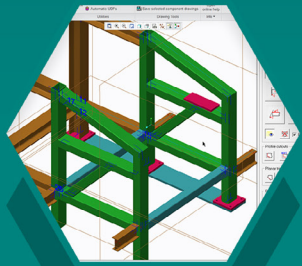Parametric & Freestyle Surfacing

Assembly Performance

Sheetmetal Design
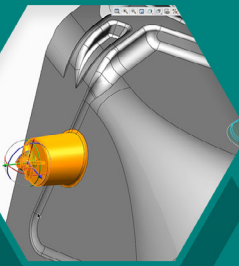
Mechanism Design

Plastic Part Design

Structure Framework & Weld Design
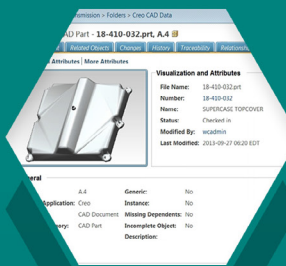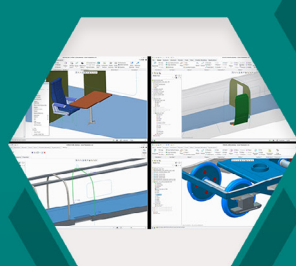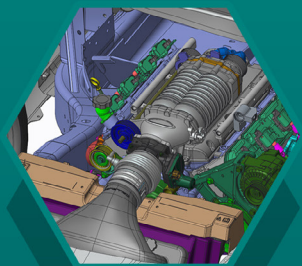
PTC® Creo®
Engineer Packages
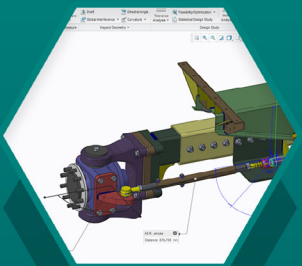
Realistic Rendering

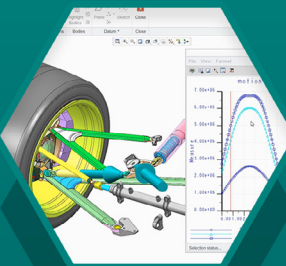Direct Modeling

Product Lifecycle Management
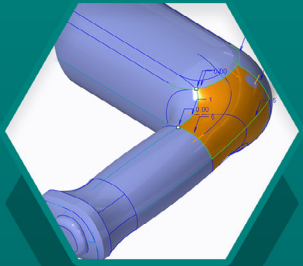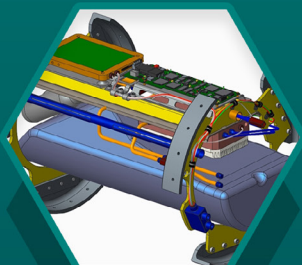
Concurrent Engineering Capabilities

Top Down Design Tools

Design Optimization

Motion Analysis

Interactive Surface Design

Piping & Cabling Design
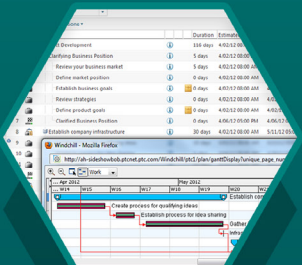
Project Management
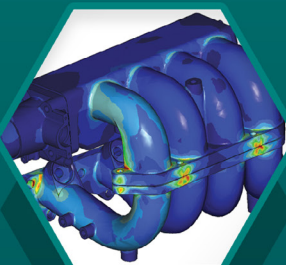
Simulation
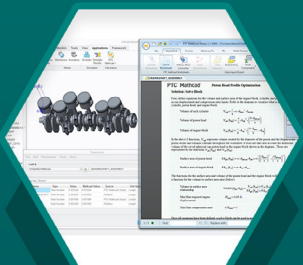
Engineering Notebook

PTC Creo Engineer Packages – At a Glance

	Engineer I	Engineer II*	Engineer III	Engineer IV
Core 3D CAD Capabilities	✓	✓	✓	✓
Direct Modeling Capabilities	✓	✓	✓	✓
Product Lifecycle Management		✓	✓	✓
Concurrent Engineering/Top Down Design Capabilities		*	✓	✓
Design Optimization		*	✓	✓
Motion Analysis		*	✓	✓
Interactive Surface Design			✓	✓
Piping and Cabling Design			✓	✓
Project Management			✓	✓
Simulation				✓
Engineering Notebook				✓

*PTC Creo Engineer II users can choose one of the following: Concurrent Engineering/Top Down Design Capabilities, Design Optimization, or Motion Analysis

Core 3D CAD Capabilities

3D Parts and Assembly Design:

- Create precise geometry, regardless of model complexity
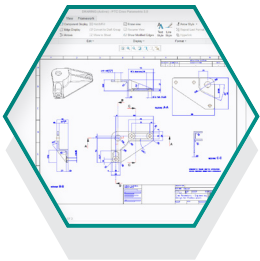- Quickly build robust engineering features such as rounds, chamfers, holes, and more
- Create design variants using family tables
- Smarter, faster assembly modeling performance
- Static and dynamic interference detection

Automated 2D Drawing Creation & Update:

- Create 2D and 3D drawings according to international standards, including ASME, ISO, and JIS
- Automate the creation of drawings with templates
- Automatically create associative bill of materials (BOM) with balloon notes
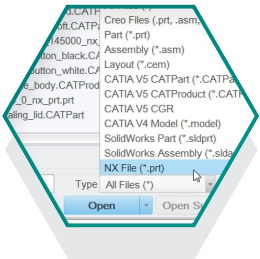
Breakthrough Multi-CAD Data Exchange:

- Work with a number of standard file formats including STEP, IGES, DXF, STL, VRML, AutoCAD®, DWG, DXF (import of 3D with associated 2D), ACIS import/export, Parasolid® import/export
- Using Unite™ technology, convert data from other CAD systems including: CATIA®, Siemens® NX™, SolidWorks®, Autodesk Inventor®, and Solid Edge®
- Incorporate non-PTC Creo data directly into your designs without creating additional business objects or files to manage
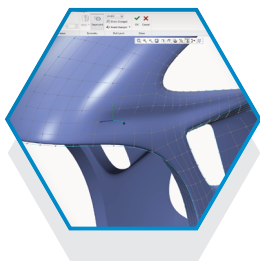
Parametric and Freestyle Surfacing:

- Develop complex surface geometry using sweeps, blends, extends, offsets, and a variety of other specialized features
- Quickly create freeform shapes and surfaces using sub-divisional modeling capabilities
- Multilevel sub-divisional modeling for more control over the surface, enabling finer detailing without altering the existing shape
- Parametrically control freestyle geometry by aligning to existing curves or edges with tangency control

Assembly Management and Performance Tools:

- Load large assemblies quickly using lightweight representations
- Create simplified representations 'on-the-fly'
- Share lightweight yet fully accurate model representations using the unique Shrinkwrap™ tool
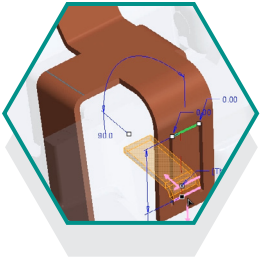
Sheet Metal Design:

- Easily create walls, bends, punches walls, bends, punches, flanges, forms, and reliefs using the streamlined user interface
- Automatically generate flat patterns from 3D geometry
- Dynamically preview formed and flattened sheet metal designs simultaneously
- Easily convert solid parts to sheet metal
- Simply define sheet metal design parameters (e.g., bend allowances)
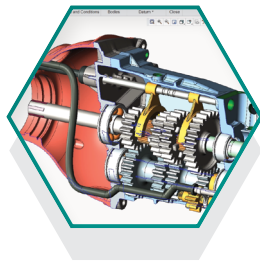
Mechanism Design:

- Create mechanical connections
- Validate the kinematic motion of your design
- Establish motion envelopes to detect and avoid interferences
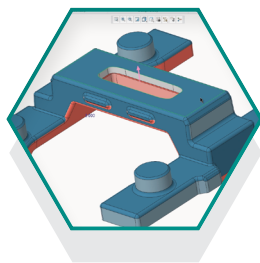
Plastic Part Design:

- Comprehensive analysis tools including draft and 3D thickness evaluation
- Mold filling simulation capabilities
- Integrated measurement tools
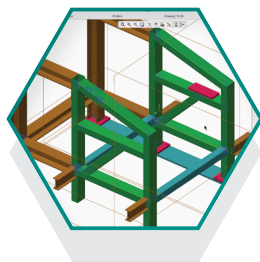
Structural Framework and Weld Design:

- Optimized user interface for the structural framework design process
- Extract valuable information from the model (e.g., mass properties, clearances, interferences, cost data)
- Easily produce complete 2D weld documentation

Realistic Rendering and 3D Animation:

- Create accurate, photorealistic images of products quickly, while rendering even the largest assemblies
- Shade with reflections for displaying different material classes such as metal, glass, paint, and plastic
- Create assembly/disassembly animations directly from the modeling environment
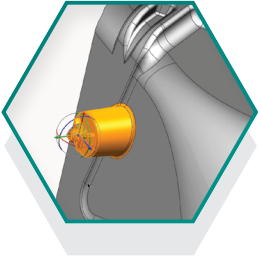
Direct Modeling Capabilities
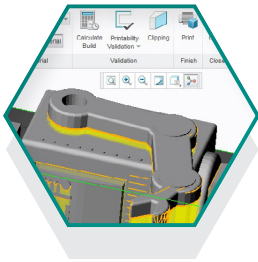
- Make changes to PTC Creo data regardless of design intent
- Modify non-PTC Creo data regardless of origin (Solidworks, STEP, etc.)
- Quickly select and edit complex geometry
- Move, remove, attach, round, etc.
- Recognize rounds, chamfers, patterns, and symmetry
- Record edits as features
- Create or recreate design intent

Design for Additive Manufacturing

- Define settings for multiple 3D printers
- Position, scale and show a clipped view of the 3D model and support material on the printer tray
- Quickly perform 3D printability checks and easily correct identified issues
- Print parts and assemblies, define surface finishes, materials, colors and calculate build and support material directly from PTC Creo using a Stratasys Connex printer

Product Lifecycle Management:

- Product information control
  - Global access to all product data

- Product development process control
  - Robust workflow engine enables repeatable and predictable processes
  - "Out-of-the-box" change control process

- Enterprise-wide access to product information
 - Browser-based user interface allows anywhere access to product information
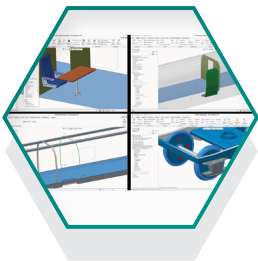
Concurrent Engineering Capabilities:

- Establish and enforce design criteria to support concurrent engineering efforts
- Manage and control assembly references and unwanted relationships
- View graphical representation of dependencies to understand component relations and change propagation
- Enhanced capabilities to work with assembly data and manage system performance
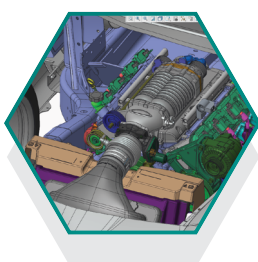
Top Down Design Tools:

- Plan assembly structure and manage assembly design process
- Define configuration rules and automate the creation of design-to-order products
- Specialized capabilities to streamline the creation of assembly process planning documentation
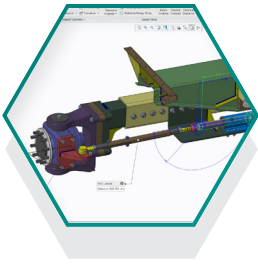
Design Optimization:

- Optimize your product for weight, cost, quality, performance or other design criteria
- Improve innovation by easily exploring numerous scenarios that meet your design criteria
- Save significant time by automating the manual 'trial and error' approach typically involved with iterative analysis
- Seamlessly incorporate results from other PTC analysis tools into your design optimization process
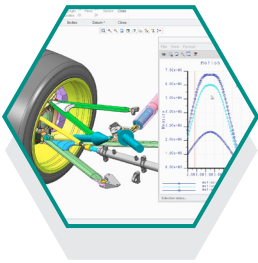
Motion Analysis:

- Comprehensive capabilities including: gravity, friction, impact, spring/dampers, gears reaction, bushing and external loads, forces, torques
- Calculate joint reaction forces based on velocities and acceleration, and design mass properties
- Easily interrogate and visualize results
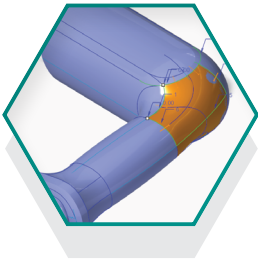
Interactive Surface Design:

- Integrated tool for industrial styling and mechanical design
- Design precise curves and surfaces to achieve highly engineered, manufacturable products
- Unique integration between freeform and parametric curves/surfaces
- View dynamic curve and surface analysis
- Intuitive four view user interface provides real-time feedback
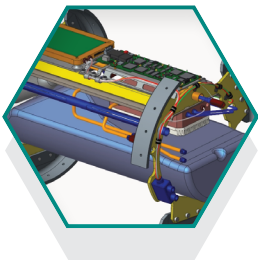
Piping and Cabling Design:

- Full routing capabilities including: automated ribbon cabling and specification-driven design and auto-routing, speeds design and adheres to design rules and schematic logic
- Customizable library of standard fittings and connectors
- Manufacturability and interference checking
- Associative harness manufacturing capabilities includes automatic development of flat patterns
- Automatic creation of supporting documentation including isometric drawings, bend tables, nail board drawing, associative wire lengths, bills of material
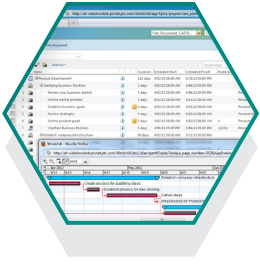
Project Management:

- Global access to all project-related product data including designs, models, etc.
- Web-based project portal with embedded 3D visualization and search
- Self-administration project management
- Access project data anywhere through intuitive browser-based user interface
- Integration with data authoring applications
- Bi-directional Microsoft® Project® integration
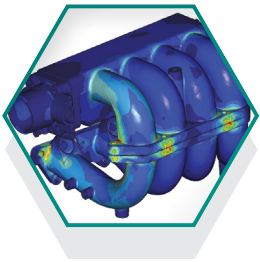
Simulation:

- Conduct static, thermal, modal, buckling, dynamic, and pre-stress analysis
- Easy to use for designers and engineers:
    - Common user interface
    - Comprehensive customizable materials library
    - Create boundary conditions directly on the CAD model
    - Fast, automatic meshing and solution convergence
    - Rich reporting tools to easily understand and communicate areas for improvement

Engineering Notebook:

- Embedded PTC Mathcad worksheet fully integrated within PTC Creo
- Multi-document, task-oriented UI
- WYSIWYG document editing
- Comprehensive support for units:
    - Mixed units in matrices
    - Full units-support in plots
    - Labels to distinguish units/variables/constants
- Rich numeric function library
- X-Y, polar, and contour plots
- Spec tables for variable organization
- Worksheet included & caching
- Legacy worksheet converter