



## **General Pro/ENGINEER**

### **What is Pro/ENGINEER Wildfire 2.0?**

Pro/ENGINEER Wildfire 2.0 is the latest release of PTC's flagship MCAD solution - Pro/ENGINEER and the product design and development component of PTC's complete Product Development System. (The "Create" in "Create, Collaborate and Control")

### **What's new in this release?**

Pro/ENGINEER Wildfire 2.0 provides 3D drawing capability, in accordance with the recently released ASME Y14.41-2003 standard and the emerging ISO 16792 standard. PTC believes that this capability will create significant process and productivity advances for discrete manufacturers and will likely be widely supported and adopted. Accordingly, PTC is making the capability available to its active maintenance customers as part of the base Pro/ENGINEER package. In comparison, other CAD vendors charge thousands of dollars for similar capabilities, offered as add-ons, thereby slowing adoption.

Also, in this release, PTC has focused on improving CAD data interoperability. Pro/ENGINEER Wildfire 2.0 now has support for all major CAD formats through the introduction of I-DEAS® import capabilities and associative data exchange with UG18/UG NX/CATIA® V5.

And, to improve overall software capability, there are more than 400 additional enhancements ranging across the product's breadth, including the extension of the Pro/ENGINEER Wildfire User Model to sheet metal, simulation and other areas of the solution.

### **What differentiates Pro/ENGINEER Wildfire from competitive solutions?**

Historically, customers had to pick between easy-to-use, but functionally limited CAD tools and broader, more comprehensive, but difficult-to-use CAD tools. Introduced in February 2003, Pro/ENGINEER Wildfire stands apart because it eliminates the need for customers to choose between user friendly and functionally capable. Pro/ENGINEER is comparable in cost to competitive low-end CAD systems and is seamlessly connected to a complete product development system. So scalable is Pro/ENGINEER, that it is a true no compromise solution, applicable to companies of all sizes. This latest release, Pro/ENGINEER Wildfire 2.0, builds on the award winning technology introduced in February 2003, further strengthening the "no compromise" advantage.

### **Please distinguish between Pro/ENGINEER, Pro/ENGINEER Wildfire, and Pro/ENGINEER Wildfire 2.0.**

Pro/ENGINEER is the name of PTC's flagship MCAD product. Pro/ENGINEER Wildfire is the name of the specific release of Pro/ENGINEER, which was introduced in February 2003. Because of the dramatic improvements in that release, the release designator "Wildfire" is appended to Pro/ENGINEER to signify that it represents the new generation of Pro/ENGINEER. Pro/ENGINEER Wildfire 2.0 is the latest release of Pro/ENGINEER.

### **Why should a customer upgrade to Pro/ENGINEER Wildfire 2.0?**

Customers should upgrade to Pro/ENGINEER Wildfire 2.0 because it represents the most recent, easy-to-use and innovative version of the software. Pro/ENGINEER Wildfire 2.0 is available as a free upgrade to maintenance-paying customers. Upgrading ensures customers have access to the latest capabilities and are able to enhance the productivity of individuals, as well as that of the collective product development team. Delaying the upgrading process accrues opportunity costs by preventing the implementation of process improvements.

### **When does Pro/ENGINEER Wildfire 2.0 ship in English? In languages?**

Pro/ENGINEER Wildfire 2.0 is scheduled to ship in late April 2004. English and language versions will ship simultaneously.

### **How has the customer acceptance been for Pro/ENGINEER Wildfire?**

Customer acceptance of Pro/ENGINEER Wildfire is outstanding! Already, over 50% of active Pro/ENGINEER sites have deployed Pro/ENGINEER Wildfire. This represents the fastest adoption of any Pro/ENGINEER release to date and stands

in stark contrast to the adoption rate of some major new releases from other CAD solution providers, some of which have been available for more than six years.

**For customers who have not yet upgraded to Pro/ENGINEER Wildfire, will the release of Pro/E Wildfire 2.0 encourage customers to make the move now?**

Since over 50% of all active Pro/ENGINEER sites have adopted Pro/ENGINEER Wildfire, as noted, we expect that the release of Pro/ENGINEER Wildfire 2.0 will serve to further enhance the appeal to our customers and that adoption will continue at its impressive pace.

**What is PTC doing to help customers make the transition to newer versions of Pro/ENGINEER?**

PTC provides many [useful tools](#) to help customers make their transition. These tools include a Quick Reference Card, tutorials, a menu mapper, and a "Getting Started" guide. Additionally, of particular interest to CAD administrators is the [Pro/ENGINEER Wildfire deployment kit](#).

**Does Pro/ENGINEER Wildfire 2.0 offer any features that aid customers in converting from 2D to 3D?**

Yes. Pro/ENGINEER Wildfire 2.0 adds support for the AutoCAD 2002 format, making it even easier to recapture intellectual property locked into 2D drawings. Plus, there is a rich set of tools (called "AutobuildZ") for converting 2D drawings into parametric 3D solid models, with associated drawings, included as an integral capability of the base package of Pro/ENGINEER.

**Because of the new 3D drawing capability, is PTC abandoning traditional 2D Drawing capabilities?**

No. In fact, with Pro/ENGINEER Wildfire 2.0, PTC greatly simplifies the process of creating 2D drawings. As of this release, all the most common options are available through top-level menus and dialog boxes. The new version streamlines the process of producing fully detailed drawings or partially detailed drawings that may be an interim step when working in conjunction with more thorough annotated 3D models.

**What are industry analysts saying about Pro/ENGINEER?**

Pro/ENGINEER has received very positive coverage from both press and analysts, further validating our strategy and company direction. As John MacKrell of CIMdata states, "During its first year of availability, Pro/E Wildfire has been adopted very rapidly... This rapid acceptance of Pro/E Wildfire in production environments demonstrates that users perceive the product's strengths to help improve their product development efficiency."

Additionally, DH Brown states, "PTC's Pro/ENGINEER Wildfire delivers on its promise to allow organizations to begin the build-out of a full PLM system. The build-out is incremental and value-oriented. More important, it does not force companies to compromise on selecting best-of-breed products or to choose between personal and process productivity."

## **3D Drawings, ASME and ISO Standards**

**What are the ASME (American Society of Mechanical Engineers) Y14.41-2003 and ISO (International Organization for Standardization) 16792 standards and why is it important to comply with them?**

The development of the **ASME Y14.41** National Standard was initiated at the request of U.S. industry and the U.S. Government.

The ASME Y14.41 standard establishes requirements, and references documents applicable to the preparation and revision of digital product definition data, referred to as data sets. Y14.41 defines the exceptions and additional requirements to existing ASME standards for using product definition data sets or drawings in 3D digital format. This standard supports two methods of application: model only, and model and drawing in digital format.

**ISO 16792** is an emerging standard based on ASME Y14.41 that, when available, will be relevant to international companies interested in complying with ISO standards.

PTC believes that the future of design relies heavily on the availability 3D drawing capability and because these standards provide the rules for capturing and communicating 3D annotations, they will create huge process advances for discrete manufacturers; therefore, should be widely supported and adopted.

## **Product First and Product Development System (PDS)**

**How does the usage of Pro/ENGINEER translate into benefits that support Product First?**

Product First® is a philosophy centered on the idea that great products make great companies. When the mission of building and sustaining great products is at the core of everything a company does, significant value is created. Central to this Product First philosophy is a roadmap that helps companies identify and realize value in their product development process. The initial step manufacturers take along this path is the optimization of processes related to Digital Model

Definition, which entails the creation of a single, accurate digital 'master model' representing their product. As the dominant 'language' of product development, the digital product model is increasingly viewed as an invaluable component of a company's intellectual property portfolio.

Modern 3D CAD offers manufacturers the opportunity to ensure that all pertinent design and manufacturing information is contained in a single product model. This approach to design-often referred to as model-centric design-allows for information, such as design requirements, geometric definition manufacturing and assembly process characteristics to be captured in the 3D digital product model. This content can then be easily extracted into engineering deliverables such as inspection information, assembly instructions, and manufacturing tool paths.

The digital model definition-the 3D product model created by designers and engineers using Pro/ENGINEER-is a vital asset around which many product development stakeholders base their work.

- Partners and suppliers use the digital model data to ensure that the complementary parts they are designing or manufacturing will satisfy the requirements of the overall design.
- Customers can easily review lightweight (i.e., small byte size), accurate representations of the models to ensure their requirements are being met.
- Internal simulation and analysis groups use the master model to determine whether the product will meet performance, compliance, and safety requirements.
- Sourcing uses the digital data to secure the proper materials for manufacturing of the product.
- Engineering and manufacturing teams work together to troubleshoot design-from the early concepts through to final design-ensuring cost-effective production in a timely manner.
- Manufacturing uses the model to define production and assembly process plans to ultimately build the final product.
- Sales and marketing use the model to test customer acceptance and drive demand for the product through promotional activities. With approximately 70% of a product's costs locked in before the product reaches manufacturing, it is absolutely vital to a company's success that everyone in the value chain listed above work from the same high-quality digital product definition. In this way, changes can be made quickly, easily and cost effectively, resulting in the right product delivered on time.

#### **How does Pro/ENGINEER fit within the PTC Product Development System?**

The PTC Product Development System (PDS) is a configuration of PTC solutions, specifically designed and tested together to give companies the three key capabilities necessary for successful product development:

1. Create detailed and intuitive digital product information.
2. Collaborate to manage critical opportunities and engage project teams, customers, suppliers, and partners.
3. Control processes, such as change management and design review.

The create capability - the ability to develop high fidelity digital product models - is the domain of Pro/ENGINEER, a key component and critical starting point of the entire PDS.

#### **What are the benefits of Pro/ENGINEER Wildfire 2.0 to users and product development managers?**

Simple. Powerful. Connected.

As the only true no compromise MCAD solution available today, Pro/ENGINEER drives the productivity of individuals and teams - in companies of all sizes -- through being simple, powerful, and connected.

##### Simple

- Decreases time spent modeling, navigating menus; increases time spent designing, analyzing, optimizing designs
- Facilitates greater exploration of ideas/design variants within the same amount of time/less time
- Fosters achievement of cycle time goals, increases individual efficiencies; lessens cost of using seasoned users to mentor casual/new users; allows more efficient allocation of resources onto high-value activities; allows for labor savings to be realized, and enables quick response to rapidly changing customer requirements

##### Powerful

- Improves information exchange, reduces interpretation errors, rework, confusion
- Reduces time wasted transferring/healing geometry across CAD systems (ITI estimates translation/data healing alone can impose a "tax" of 20-50% of the time spent)

- Allows better ability for design partners, suppliers, down-tier value chain members to fulfill demand and grow business through greater CAD fluency and ability to handle more tasks involving greater CAD file format diversity
- Increases ability to make use of legacy 2D intellectual property
- Fosters greater ability to achieve CAD standardization within company's/division's installations (especially, those that have grown to acquire disparate CAD systems through mergers/industry consolidations or who use disparate CAE systems for analysis)

#### Connected

- Reduces travel expense for design reviews
- Increases inter-company/extra-company information sharing, reducing interpretation errors and driving convergence on product development issues earlier and with more expansive consensus
- Allows better part re-use with higher integrity data entering the data management system; better quality data yields fewer manufacturing problems and reduces production costs, rework and scrap, engineering time, labor cost, and improves profitability.

#### **How is Pro/ENGINEER Wildfire 2.0 able to help improve a manufacturer's growth and profitability?**

Profitability improvements often result from streamlined operations and cost efficiencies. Paramount to this goal is an improved development process. Greater usability, faster time to market, greater exploration in same amount of time and simulation/optimization capabilities helps optimize product design (e.g. reducing material cost, warranty expense).

Growth improvements, in particular can be realized through capturing new markets and addressing a greater volume of business by being better able to fulfill demand. This is a key way in which to differentiate product, extend brands and appeal to new markets. The ability to interactively, easily create stunning product concepts and designs is a core strength of Pro/ENGINEER. Evidence suggests aesthetics matter not just for consumer goods, but for industrial products as well.

## Technical

#### **What are the key enhancements in Concept and Industrial Design?**

Within Pro/ENGINEER Concept solutions there are several key areas of enhancement in the warp feature, reverse engineering, and interactive surface design. These include:

- The additions of sculpt and a spline tool to the warp capabilities enable the inflation and deflation of geometry and character line reshaping to create complex surfaces.
- With reverse engineering, there's now automatic surfacing for a simple, progressive means to create surfaces.
- And interactive surface design features new curve connections and surface creation capability with new loft and blend surfaces for an additional and powerful tool set for creating complex forms.

#### **What are the key enhancements in Detailed Design?**

Within the Pro/ENGINEER Design Solutions there are exciting enhancements to the core modeling, assembly, and kinematics capability as well as significant user interface progress. Specifically, the enhancements are as follows:

- New 3D drawings capability that supports the recent ASME Y14.41 digital product model definition standard and enabling annotation features to be placed directly on the 3D product model.
- General undo and redo for feature and component operations, drawing mode, sheetmetal design and relation and regeneration changes. In addition, separate sketcher is complete with the ability to use both an internal and new external sketch capability.
- Pattern features around an axis or in any direction, regardless of how the original pattern was created (previously, a Make Datum feature was required for axial patterns to incorporate the angular dimension for patterning). In Assembly mode, packaged components can be kinematically dragged at any time based on existing placement constraints. Also, there's new flexibility such that when assembling a component using drag-and-drop operations, part flexibility can be specified without having to redefine the component later.
- In sheetmetal, the flange and flat wall features are consolidated into a modern, graphical user interface to simplify the creation of extruded, swept, hem and flat walls
- Improvements to the ModelCHECK configuration interface, and reporting capability, with the added benefit of having ModelCHECK act as a gatekeeper to Windchill to verify that models meets company specifications prior to check-in

#### **What are the key enhancements in Simulation?**

Within the Pro/ENGINEER Simulation Solutions there are exciting enhancements to mechanism simulation, analysis with

dynamic load transfer, friction and bolt loading, as well as significant user interface progress. Specifically, the enhancements are as follows:

- The user interface is further simplified with top-level menu commands, dialog and menu consolidation, as well as workflow and process enhancements.
- Joint Axis and Slot Friction will provide the ability to specify static and kinetic friction coefficients on rotation and translational joint axes.
- New bolt connections define bolt fasteners in assemblies simply by selecting the holes that will be held together by the fastener, and specifying a material and bolt diameter. Advanced fasteners may have their stiffness specified by spring properties, as well as a bolt pre-load value.
- Dynamic Load Transfer to Pro/ENGINEER Structure and Thermal (formerly Pro/MECHANICA) integrates dynamic motion simulation with structural analysis

#### **What are the key enhancements in Routed Systems?**

Within the Pro/ENGINEER Routed Systems solutions there are enhancements to usability and pipe calculations. Specifically, the enhancements are as follows:

- Improved Piping usability with enhanced pipe and fitting weight calculations for more pipe and fitting weights. Updated JIS & ANSI libraries to take advantage of user defined fittings and migrated flexible hosing to spec-driven mode to better control the routing from 2D schematic data (RSD).
- Improved usability in cable and harness by introducing RSDesigner Import & Export Menu pick, enabling the flattening of complex loops to improve harness manufacture by flattening only significant locations, reducing size of flattened harness assembly to increase performance and stability

#### **What are the key enhancements in Production?**

Within the Pro/ENGINEER Production solutions there are exciting enhancements in toolpath simulation, process and template reuse, and STL geometry machining capability. Specifically, the enhancements are as follows:

- Improved usability and toolpath simulation with shaded tool display while allowing dynamic rotation and zooming during simulation. Also, automatically perform line removal on the tool path motions for better visualization.
- New NC operations manager enables viewing of any manufacturing file created with Pro/ENGINEER in a table environment to define custom views and display specific information about your NC process, such as coordinate system, retract planes and cutting time.
- Manufacturing "start part" enables the programmer to start a new NC session from an existing environment that includes components for the fixture, operations, machine tools, tooling, and more. Directly machine an STL model or a combination of STL, surfaces, and solids, using three toolpath types: roughing, re-roughing, and finishing.

#### **What are the key enhancements in Interoperability?**

Within interoperability or data exchange there is significant new import and export capability. Specifically, the enhancements are as follows:

- Expanded support for AutoCAD includes the export and import AutoCAD DWG and DXF files from AutoCAD 2002 (file version 2000). You can export and import AutoCAD data in DXF and DWG formats
- Import of CATIA V5 R6 through R10 parts and assemblies via the patented Pro/ENGINEER Associative Topology Bus (ATB)
- Unigraphics interoperability for parts, assemblies, and multi body structures with the ability to read up to UG NX and write UG 18 or UG NX files via the patented Pro/ENGINEER Associative Topology Bus (ATB)
- Also, new is the ability to import I-DEAS parts, assemblies, and multi body structures up to release V10

## **Quality**

#### **What was the reaction of Pro/ENGINEER Wildfire 2.0 pre-production customers?**

Here are some initial comments from customers using Pro/ENGINEER Wildfire 2.0:

"Pro/E Wildfire 2.0 possesses some key capabilities, such as the new manufacturing start parts and NC operations manager which will take our skill in executing rapid product refinement to a whole new level."

-Tim Cindric, President, Penske Racing, Inc.

"The extension of the improved Pro/E Wildfire user interface into Pro/E Wildfire 2.0 and new capabilities now provide a compelling toolset for our engineers. We expect to see a huge decrease the amount of time it takes to produce sheet metal based designs. We look forward to deploying Pro/E Wildfire 2.0."

-Ed Stevenson, Sr. CAE Tools Engineer, Pelco

"Pro/E Wildfire 2.0 is the best we have seen from PTC. The advances in meshing, Mechanism and ISDX [interactive surfacing] will allow us to further push the envelope of what we can design, at the same time get our product to market faster than previously possible and with more confidence in the final design."

-David Earle, Engineering Director, Santa Cruz Bicycles

"With Pro/E Wildfire 2.0, we see even greater capability and communication with a variety of CAD products that we use. In fact, we're confident that regardless of what CAD format, we'll be able to communicate effectively."

-Nick Goozée, Managing Director, Penske Cars, Ltd

## Competitive

### How will Pro/E Wildfire 2.0 help PTC compete in the low and mid-range market?

Pro/ENGINEER Wildfire 2.0 builds on all the great things accomplished with the release of Pro/ENGINEER Wildfire with robust data exchange additions further boosting what was already world-class interoperability. So by progressing the "Simple" UI throughout Pro/ENGINEER, adding more "Powerful" packages and capability, becoming more "Connected" through interoperability with Windchill, the Web and Multi-CAD platforms, AND offering affordable pricing in great packages-Pro/ENGINEER Wildfire 2.0 offers the right capability at the right price. It is the right choice-the no compromise choice-for those considering mid-range CAD solutions.

### How will Pro/E Wildfire 2.0 help PTC compete in the high-end market?

Pro/ENGINEER Wildfire 2.0 is the cornerstone of a complete product development solution that will help PTC compete effectively in the high-end market. In doing so, PTC is providing customers a single product development environment that includes the most comprehensive MCAD capabilities (e.g. dynamics analysis, advanced assembly management, behavioral modeling for optimization, interactive surface design, piping and cabling design), working together with PTC Windchill solutions within an integral, pure Internet and interoperable architecture. Thus, customers can deploy a low risk, high ROI solution for effective product development.

From globalized supply chains to increasing customer demands, the process of developing a winning product is more challenging than ever. In today's distributed manufacturing environment, our customers' success is found in the ability to effectively manage complexity and variability. Therefore, it's critical that a Product Lifecycle Management (PLM) [<http://www.ptc.com/products/plm.htm>] solution offers a combination of flexibility and control. This is where PTC's approach to PLM is unique. Our Product Development System (PDS) is a configuration of PTC solutions, specifically designed and tested together to give companies the three key capabilities necessary for successful product development:

1. Create detailed and intuitive digital product information.
2. Collaborate to manage critical opportunities and engage project teams, customers, suppliers, and partners.
3. Control processes, such as change management and design review.

These three elements of the PTC PDS are specifically offered with our high-end CAD package - Flex3C. In addition to the rich MCAD functionality mentioned earlier, this package also includes the ability to collaborate on designs and control product data and product development process with Windchill solutions. Fundamental process capabilities supported include enterprise data management, Pro/ENGINEER workgroup data management, change management, configuration management, product development collaboration, and project management and execution

## Pricing/Packaging

### How much does Pro/ENGINEER Wildfire 2.0 cost? How is it packaged?

Pro/ENGINEER Wildfire 2.0 is available free of charge automatically to all active, maintenance-paying Pro/ENGINEER customers. If the customer is new to Pro/ENGINEER, there are several packages available to suit varying requirements, from entry level to enterprise. The packages are:

- Foundation Advantage Package. An entry level offering providing the cornerstone of a scalable product development platform
- FlexAdvantage Package. For robust digital product design with a choice of performance options

- Flex3C Package. The most complete product development system offering everything you need to deliver winning products.

#### **What do I get if I have the Foundation Advantage Package (and pay maintenance)?**

The key enhancements in the Foundation Advantage Package are too numerous to list, but the highlights include enhancements to core modeling, detailed drawings, mechanism kinematics, design animation, imported data doctor, assembly performance, advanced technical surfacing, 2D to 3D data conversion, ModelCHECK, 3D drawings, and much more.

#### **What do I get if I have the Flex3C Package (and pay maintenance)?**

Key enhancements in Flex3C for Pro/ENGINEER are in the following areas: dynamics analysis, advanced assembly, behavioral modeling for optimization, interactive surface design, piping and cabling design, and peer-to-peer design conferencing. This package also includes the ability to collaborate and control with Windchill solutions in the following areas: enterprise data management, Pro/ENGINEER workgroup data management, change management, configuration management, product development collaboration, and project management and execution.

#### **Are there any new packages?**

Yes, PTC has recently released a brand new Pro/ENGINEER package based on the needs of our customers. The FlexAdvantage Package contains advanced capabilities for detailed design, and large assembly management, and offers a choice of dynamics analysis, or structural/thermal simulation, or interactive surface design depending upon which best suits the customer need.

#### **What new modules are available?**

There are 3 new modules being introduced with Pro/ENGINEER Wildfire 2.0:

- CATIA V5 ATB (associative topology bus)
- UG NX and UG18 ATB
- I-DEAS import up to V10

Additionally, the design conferencing participant, or DCP was released earlier this year and should prove very valuable to customers who need to collaborate in real-time on Pro/ENGINEER data with non-Pro/ENGINEER users (e.g. brand managers).

Other Pro/ENGINEER modules available separately for purchase independent of specific packaging include advanced assembly, cabling and piping design, interactive surface design, concept design, reverse engineering, and advanced rendering. For manufacturing, production machining, prismatic machining, complete machining, tool design, mold base design, framework design. In simulation, mold flow analysis, entry level and advanced structural and thermal simulation, dynamics analysis, behavioral modeling, and fatigue analysis.

## **Services**

#### **What are the new education services?**

There are several new education services offered with Pro/ENGINEER Wildfire 2.0, as follows:

- Fast track to Pro/ENGINEER Wildfire 2.0
  - Many new classes such as advanced assembly management, sheetmetal design, mold design, surface modeling, and structural and thermal simulation
- Pro/ENGINEER Wildfire 2.0 Update (from Pro/ENGINEER Wildfire and Pro/ENGINEER 2001 releases)
- Pro/INTRALINK 3.3, Workgroup data management with Pro/INTRALINK 3.3 and Administering Pro/INTRALINK 3.3

#### **What are the new consulting services?**

The new consulting services offered with the introduction of Pro/ENGINEER Wildfire 2.0 are intended to aid PTC customers efficiently deploy PTC's create solutions:

- Pro/ENGINEER Wildfire 2.0 Quick Start: This offering helps define and implement standards to support modeling best practices, helping customers become production-ready in the shortest period of time.
- Pro/ENGINEER Wildfire 2.0 ModelCHECK Install and Setup: This offering provides a configured system to enforce company modeling standards and check designs for problems that could affect reusability or manufacturability.

## Software and Platform Requirements

### What are the supported operating systems?

In general, Pro/ENGINEER Wildfire 2.0 supports Windows®, Linux®, and Unix® operating systems. For more detailed and up to date information please visit the [ptc.com website here](http://ptc.com).

### What are the system requirements?

For detailed and up to date information please visit the [ptc.com website here](http://ptc.com).

### With what versions of Pro/INTRALINK and Windchill PDMLink does Pro/ENGINEER Wildfire 2.0 work?

Pro/ENGINEER Wildfire 2.0 works with Pro/INTRALINK 3.3 M021 and higher and with Windchill PDMLink 6.2.6 and higher.

### With which PDS will Pro/ENGINEER Wildfire 2.0 be qualified?

Pro/ENGINEER Wildfire 2.0 is scheduled to be qualified in PDS 5.0, planned for late Summer 2004.

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