

# TECHNICOM REVIEWS PRO/ENGINEER WILDFIRE 4

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## PTC's Wildfire 4 delivers key technologies

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An independent review of PTC Wildfire 4 by Raymond Kurland

### **Introduction**

Recently we had the opportunity to spend some time reviewing the major enhancements to Pro/ENGINEER Wildfire 4. As PTC usually does, Wildfire 4 has been in several pre-production releases, the first one occurring in June 2007 and the second occurring in September 2007. These pre-productions releases are pretty widely distributed.

This release of the Pro/ENGINEER Wildfire 4 has some 300 enhancements and required the services of more than 250 developers. It encompasses 500 requirements documents that were filed by customers and PTC personnel since Wildfire 3, which was originally released in March 2006.

There are four new modules. These require only Pro/ENGINEER Foundation, as a re-requisite. These options and their prices are:

- Tolerance Analysis Extension - \$1,495 Locked, \$3,750 Floating
- Digital Rights Management - \$1,000 License, plus \$500 per named user for Pro/ENGINEER, \$100 per named user for MS Word, Excel, and PDF files.
- ECAD-MCAD Collaboration Extension - \$4,995 (Includes InterComm Expert, ProductView ECAD Compare, ProductView Validate, and InterComm Expert)
- Interface for JT - \$9,995 Locked, \$50,000 Batch License for unattended/server processing

Intimately associated with this release are three other products: MathCAD, IsoDraw and Pro/Toolmaker. Pro/Toolmaker, a Pro/ENGINEER integrated release and an offshoot of the NC Graphics acquisition last year, complements Pro/NC in its support for mold machining, prototyping, and high speed machining and is particularly well suited for the design and manufacturing of mold and die tools.

### **Conclusions**

This is a very impressive release, particularly for existing Pro/ENGINEER users. We only had a chance to review some of the enhancements; from the documentation we saw, there are hundreds of functional additions that will make life easier for Pro/ENGINEER users. Among them are the autoround function, direct surface editing, ability to cleanup imported data directly after importing, many improvements to reverse engineering, and rendering. Autoround alone can save users many hundreds of hours and speed product development; this has been available for some time by PTC competitors.

Substantial new functionality has been added by digital rights management (DRM), 1D tolerance analysis, and ECAD-MCAD collaboration. Controlling IP (intellectual property) content after it leaves one's archive is particularly difficult. PTC's approach of partnering with Adobe makes use of leading edge technology. We are particularly impressed with this comprehensive approach to DRM and believe that it provides industry leading capability. The 1D tolerance analysis looks easy to use and should prove highly productive for users struggling common fit problems. More detailed analyses by specialized systems offer more

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versatility at the expense of ease of use. We are less enamored by the ECAD-MCAD collaboration module, which we believe is tailored to a few specific users with processes already in place that allow electrical and mechanical designers to manipulate the others data. Better to note that a problem exists and let the author of the data make the change. This seems a force fit of its InterComm software. We still look for PTC to make good on its promises of mechatronics.

Overall, Pro/ENGINEER users should be delighted with this release. But, after almost two years between releases we expected more.

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## *A description of the major functionality of Wildfire 4*

**ECAD – MCAD collaboration:** The MCAD/ECAD collaboration and change identification module allows viewing components in either the ECAD or MCAD space. PTC employs the acquired ECAD translation capability of InterComm to communicate between the two disparate environments. By clicking on a component in either the MCAD view or the ECAD view, the component will highlight in the other system. The system is able to compare the newly imported (to MCAD) board design versus previous versions. The user can view changes and accept or reject them. This looks interesting for highly specialized users who operate in this manner. Users would have to organize a process that deals with rejected changes during this design cycle.

**Upgraded interfaces:** Wildfire 4 has upgraded its interfaces. It now allows import and export of NX 3 and NX 4, import and export to and from AutoCAD 2005/2006, and allows exporting to U3D. Wildfire 4 now allows the use of imported exact representations in the .OL format, the data format used by PTC ProductView.

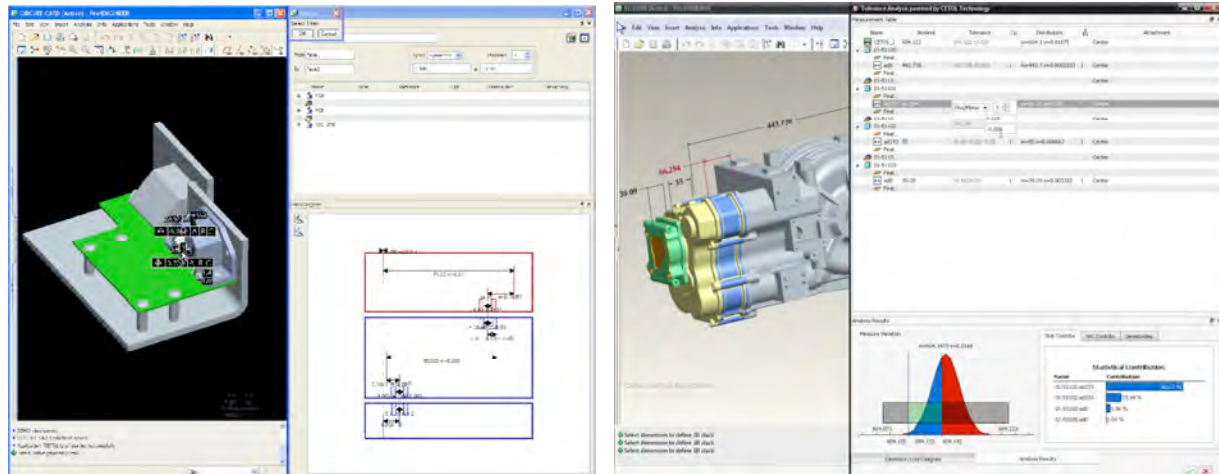
**Digital Rights Management (DRM):** Wildfire 4 now delivers DRM for parts, assemblies, and drawings. The system uses adobe's LiveCycle policy server. This new module digitally encrypts the file and manages the identity of the person accessing the data. Wildfire 4 DRM works with the policy server to control opening, printing, saving, and copying the file. Other capabilities include time dependency control and the ability to work offline for a limited amount of time. The Adobe Digital LiveCycle server allows reporting on how the data is accessed, and who attempted to do what and when. This is a powerful capability and a valuable addition allowing excellent control of data that leaves an enterprise's control.

**Tolerance Analysis Extension (TAX):** Lightweight tolerance analysis, a new module supports 1D (one dimensional) tolerance stack up and analysis. This looks relatively easy to use, with results that are straightforward to interpret. The user begins by selecting faces between the first two components involved in the tolerance analysis, and continuing selecting faces, in order, along the same axis until complete. The system can read in existing model dimensions and tolerances and use those or create its own dimensioning scheme and tolerances. It rapidly produces a sensitivity analysis diagram and statistical bell curve of the tolerance from beginning to end of the model.

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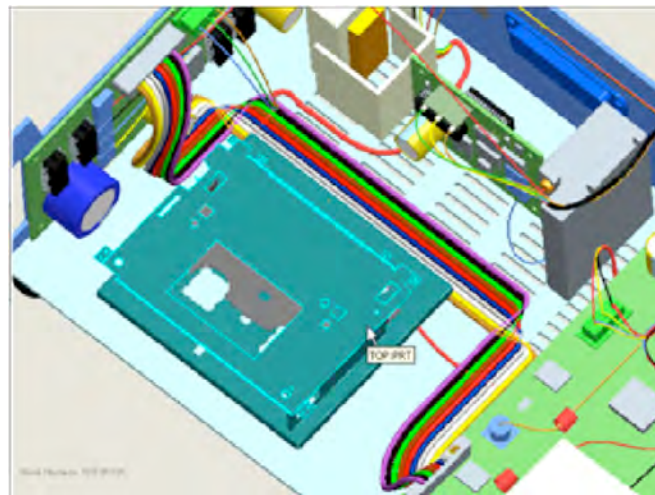
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The images below show the Pro/ENGINEER assembly on the left side with the tolerance analysis interface on the right. The dimensions and tolerances were gathered from the Pro/ENGINEER geometry and automatically added to the statistical stackup on the right.



## Cabling

The image below shows an example of a ribbon cable. Instead of using alternative modeling techniques, Pro/ENGINEER now specifically supports ribbon cabling in Pro/CABLING. Ribbon cables can be folded, bent, split, and have their flat alignment controlled. A very nice feature.

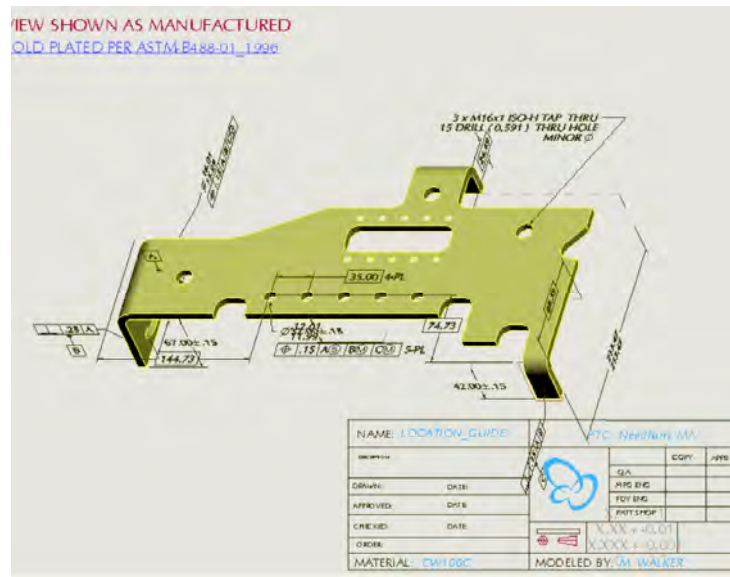


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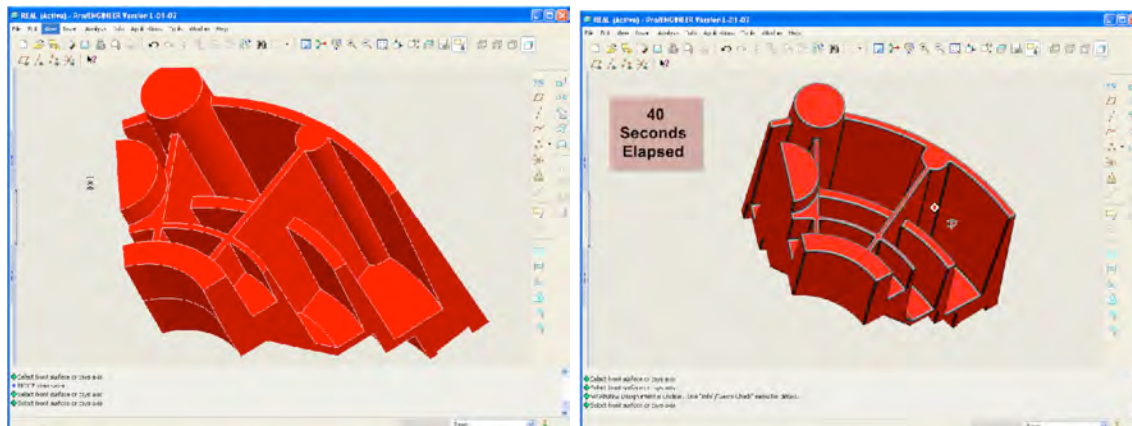
## PMI Data – Dimensions directly on the 3D model

The picture shows a 3D drawing of a component with its 3D PMI data. The functionality has been available since Wildfire 2, but it is much easier to use now. Wildfire 4 gives the ability to “show” dimensions on the 3D model. Prior to this, the only type of dimensions that you could have on a 3D drawing were “created.” The added layering functionality as well as the flexible annotation planes makes it easier to use.



## AutoRound

This picture shows a before and after for the AutoRound. This functionality significantly reduces the amount of time to place rounds on all sharp edges of a part. See the customer’s quote. AutoRound can place all round features into a group. Individual rounds in the group can be modified or deleted. The function creates a set of “features” whose sequence and edge sets are defined according to **internal logic to maximize the number of rounded chains**.

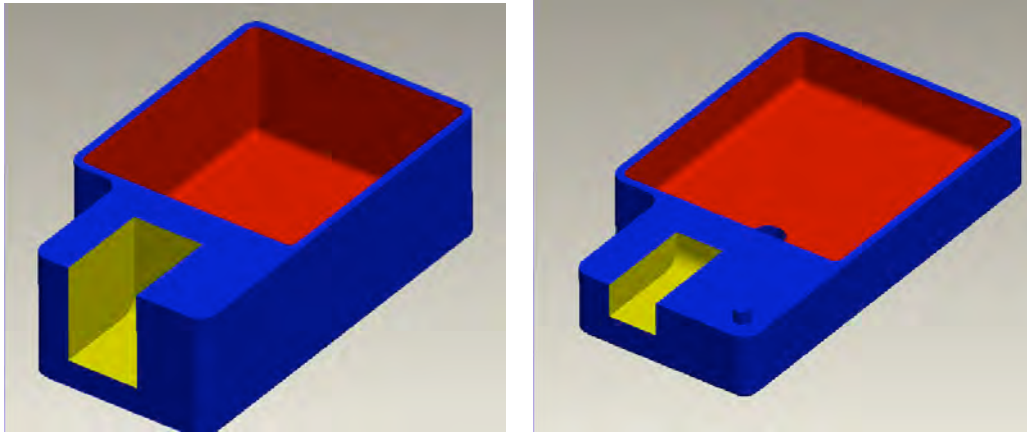


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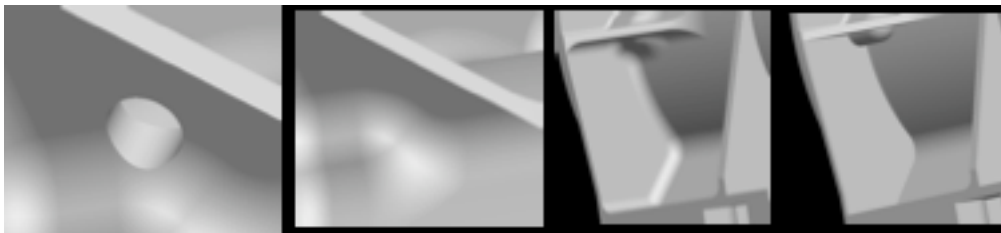
## Working with imported data

A repair mode allows healing small gaps and slivers. Imported surfaces can be replaced, moved, and modified. Such repairs are best used with prismatic surfaces. The picture on the upper left shows the original model imported from another CAD tool. The picture on the lower right shows how the imported model was modified using the new Import Data Doctor (IDD). The yellow slot was widened, the round protrusion removed, and the overall part thickness changed using direct modeling techniques.



## New feature recognition tool

Wildfire 4 has a new feature recognition tool, which allows replacing imported geometry with its corresponding parametric feature. As discussed above, Wildfire 4 can remove geometry directly from imported data. Holes, protrusions, and rounds can easily be excluded from a model imported from other CAD tools. The first two pictures (above) show the removal of a hole passing through complex rounds. The second pair of pictures shows the removal of complex rounds from the same imported model.



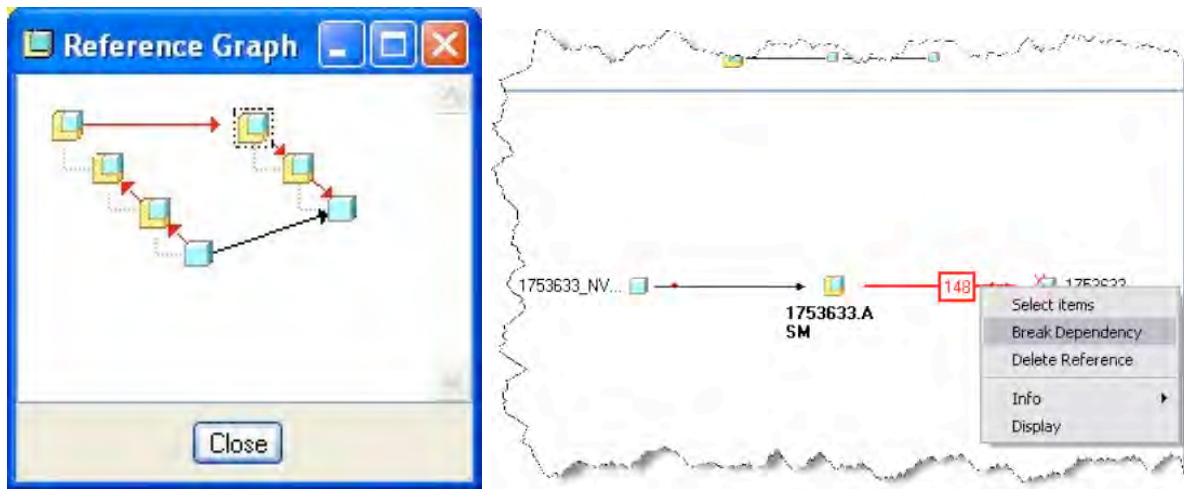


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## Global reference manager

This very impressive diagnostic capability will simplify the job of understanding complex references and eliminating potential problems during model rebuild. Complex model structure can now easily be understood. In addition, this tool should make it much easier for users to re-use existing models because they are now easier to modify and understand their references and dependencies. The images below depict the graphical interface for the Reference Viewer. This viewer is helpful in showing parents and children in a feature-based model and to break unwanted dependencies.



## Direct surface editing

Direct Surface Editing in Wildfire 4, provides added function to ISDX. The UV grid can be displayed, adjusted for fine or coarse edits, and directly adjusted by moving the UV mesh nodes. Such UV adjustments show up as part of a model tree inside of the ISDX feature, and thus could be modified at any time. The Surface Edit tool inside the Style feature can directly pull and push on a surface, using a control mesh. You can edit a surface multiple times at different mesh resolutions and all edits are managed during model regeneration. When the underlying surface changes, the surface edit is reapplied during regeneration.

**This is important when you need a subtle surface change to smooth out a small ripple or add more loft to a surface.** This tool is also useful for general surface modeling, eliminating the need to construct internal curves. The image below displays a UV grid of the underlying surface. The nodes of the grid control the surface being generated.

