

## The PLM Components Newsletter

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Welcome to the fourth edition of *The PLM Components Newsletter*. PLM Components are software tools developed by Siemens PLM Software for product design, manufacture, engineering, simulation, visualization and collaboration. They are licensed to other application developers in the CAD, CAM, CAE and PLM industry. This is the first edition of the newsletter since the acquisition of UGS by Siemens in May 2007 and the subsequent renaming of the division as Siemens PLM Software. Since then it has been 'business as usual' for the PLM Components product line.

More at: [www.plm.automation.siemens.com/open](http://www.plm.automation.siemens.com/open)

### Growing use of PLM Components in AEC applications

PLM Components, such as the Parasolid® modeling kernel and the D-Cubed™ 2D and 3D Dimensional Constraint Managers (DCMs), are well known for their use in mechanical design, analysis and manufacturing applications. Less well known is their extensive and rapidly growing adoption in the AEC (Architectural, Engineering and Construction) market and related fields such as structural and plant design.

One reason for the growth is the general move to more powerful and accurate modeling technologies coupled with parametric design techniques across many geometry-based software applications, not just AEC. Technologies such as Building Information Modeling (BIM) are enabling designs to be configured and reconfigured more rapidly and reliably. Parasolid and the DCM parametric engines frequently provide the foundations for these trends.

For example, Bentley Systems, developers of the well known MicroStation family of products for AEC, plant, structures and civil applications, recently extended their commitment to Parasolid and licensed the D-Cubed 2D DCM, 3D DCM and CDM (Collision Detection Manager).



*Image from MicroStation, a Bentley Systems product based on Parasolid, courtesy of DP Architects*

In addition to Bentley, users of one or more PLM Components in this market include Autodesk (AEC and Civil), CAD Systems (structures), Intergraph (plant, ships and structures), Tekla (structures), TDCI (window/door configurators), Thermwood (furniture) and Vertex Systems (AEC).

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### Business news

**Siemens PLM Software, USA**, released the D-Cubed Profile Geometry Manager (PGM) in the NX CAD system, enhancing the 2D DCM based sketching environment with new profile offsetting capabilities.

**Autodesk, Inc., USA**, released a Parasolid Translator Add-In for Autodesk Inventor and Inventor LT software based on Parasolid Communicator.

**IMSI/Design, USA**, released the 2D DCM in the new IDX Variable Constraint System (beta) which provides sketching functionality for users of Autodesk's AutoCAD.

**Anark Corporation, USA**, a 3D data management and visualization software company, released Parasolid Editor as part of its Anark Core product line.

**FARO Technologies, Inc., USA**, a manufacturer of computerized measuring devices, licensed Parasolid Communicator for use in their CAM2 Q software.

More business news inside.

*"The D-Cubed components are an important part of our strategy to provide advanced parametric design capabilities to our users," said Shaun Sewall, VP of Platform Products and Technology at Bentley Systems. "Our experience with Parasolid, and our strong business relationship with the Siemens PLM Software team over the past 10 years, left us in no doubt that this extension to our partnership was the right choice."*

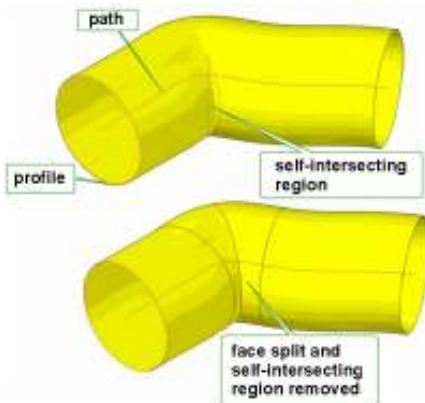
## Parasolid product news

## More business news...

### Parasolid V19.1 released November 2007

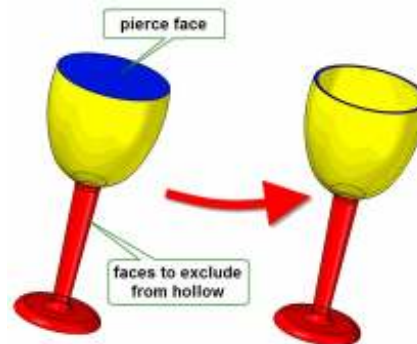
Parasolid V19.1 provides enhancements across a broad range of functional areas with a firm emphasis on support for sophisticated workflow operations where greatest productivity gains can be realized in complex design and manufacturing processes. Some highlights are featured below:

**Self-Intersection.** Auto detection and repair of self-intersecting geometry permits sophisticated sequences of operations to be completed without intervention from the application or end-user when design intent causes self-intersecting configurations as intermediate states.



**Hollowing.** V19.1 enables hollowing operations on a selected portion of a model. This provides applications with greater flexibility and speed, especially when editing large, complex models.

In the example illustrated below, a single operation is performed to hollow out the bowl of a wine glass while leaving the stem unhollowed.



**Metris**, Belgium, a provider of metrology solutions and service to manufacturing industries worldwide has licensed Parasolid Communicator for use in their Camio Studio metrology software. Camio Studio already includes the CDM collision/clearance component.

**Cardiovascular Simulation**, USA, released cvSim, a software application for patient-specific modeling and simulation that utilizes Parasolid Designer to model and simulate the cardiovascular system.

**Punch! Software**, USA, released the 2D DCM in Shark and Shark FX. Developed from the Concepts Unlimited technology, these are a new range of CAD applications for professional users.

**FAST**, Switzerland, released Parasolid Designer and the 3D DCM in the GraphiteOne CAD system. GraphiteOne is one of the few Linux based CAD systems, though also available on the MS Windows platform.

**HAAS Schleifmaschinen**, Germany, manufacturer of the MULTIGRIND® series of high-precision multi-axis grinding machines released a new tool that utilizes Parasolid to import solid model data and to preprocess it for their grinding software.

**Adige**, Italy, released Parasolid Designer in its CAD 3D and CAM applications used to design tubular components and create manufacturing programs.

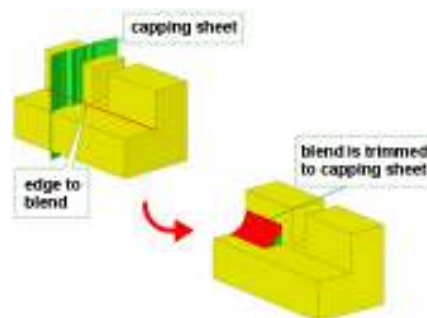
More about Parasolid at [www.plm.automation.siemens.com/parasolid](http://www.plm.automation.siemens.com/parasolid)

**Surface from points.** It is now possible to generate a surface from a sparse set of constraining points, which provides a fast and powerful design tool especially in the context of existing geometry. The figure below shows an example in which a B-surface has been created from a collection of constraining points, with positions and normals as shown.



**Faceting.** The representation of edges has now been enhanced when the improved faceting quality option is selected. When used in conjunction with topology matching (a faceting mode that matches facet vertices across a common edge), a greater number of facet vertices will lie on edge curves of the model, improving their definition.

**Blending.** Various enhancements to blending have been introduced. For example, it is now possible to enquire the underlying faces of constant radius blends. Version 19.1 also enables blends to be trimmed using sheet bodies, as illustrated below.



**Platform Support.** V19.1 is also the first release to support Apple's 64-bit Leopard platform, leveraging the power of 64-bit technology to increase the productivity of the creative process.

**More business news...**

**InterDesign Technologies**, Japan, released the 3D DCM in its Vmech application for accelerating the development of mechatronic systems, especially the control software. The 3D DCM solves constraints that represent joints and linkages in an assembly to enable a kinematic simulation of the mechanisms with which the control software interacts.

**OptiTex**, Israel, released the 2D DCM in the MyLabel product for home based garment designers. MyLabel is distributed by Bernina International, Switzerland, with their sewing machines.

**IronCAD**, USA, released the D-Cubed CDM collision/clearance component into their IronCAD application. The new use of the CDM builds upon their current use of Parasolid, the 2D DCM and 3D DCM.

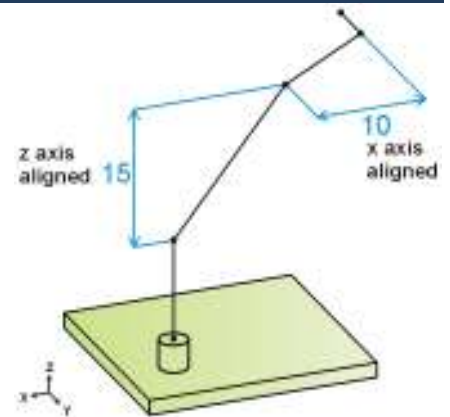
**D-Cubed product news**

**Parametric modeling**

One focus of recent developments in the 3D DCM parametric design component has been in the area of 3D sketching. 3D sketching is increasingly used across a range of CAD markets as a tool for buildings parts, specifying the curves that are the basis for parametric surfaces, and sketching out the centre lines of piping, wiring and cabling routes.

For example, it is now possible to specify aligned versus anti-aligned tangencies between curves. Previously, the 3D DCM would have selected the nearest solution, which if not expected by the user would have required a change to the initial configuration.

*Directed distances* between points were introduced for applying distances along any user supplied vector. This is shown in the figure above right. Previously such distances were always applied along the vector connecting the points.



3D DCM Directed distances

**D-Cubed subsidiary re-named**

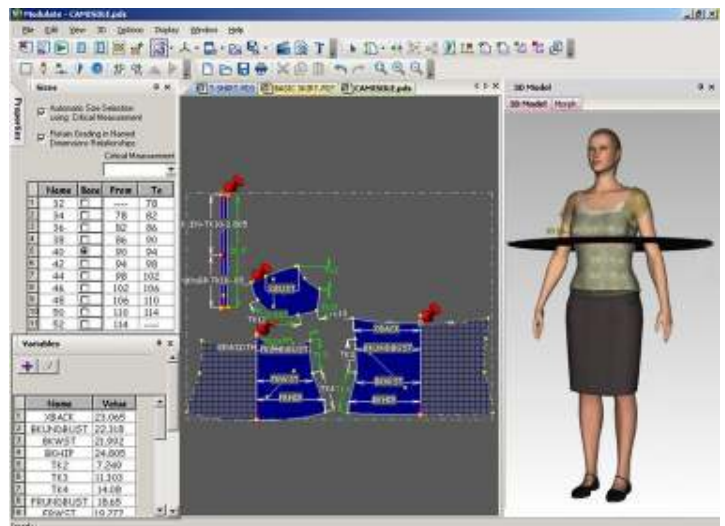
The D-Cubed subsidiary of Siemens PLM Software was re-named in February 2008. We now also refer to ourselves as *Siemens PLM Software*, an abbreviation of the new full legal name. The product line continues to be referred to as the *D-Cubed components*, comprising the D-Cubed 2D DCM, D-Cubed 3D DCM, etc.

More about D-Cubed components at [www.plm.automation.siemens.com/d-cubed](http://www.plm.automation.siemens.com/d-cubed)

**New markets for D-Cubed components**

Mechanical CAD applications have always been, and continue to be, major consumers of the D-Cubed components, as can be seen in the business news items about NX, IMSI/Design, IronCAD and Punch! Software. However, applications continue to be found in new markets, such as mechatronics at InterDesign Technologies.

The DCM parametric components can enhance the productivity of any geometric application that has some design capability. This is illustrated by the new uses of the 2D DCM in OptiTex's garment design applications. The image to the right illustrates the parametric control of the 2D patterns that are the basis for any garment. The technology is so simple to use that it has been packaged in a form that is accessible to home based fashion designers with no expertise in using parametric CAD systems.



2D DCM based patterns and their 3D representation using the garment design applications from OptiTex

*“The 2D DCM empowers users of Modulate and My Label to take a parametrically defined garment pattern and automatically create the equivalent article in many different sizes,” said Ran Machtinger, president and CEO of OptiTex. “Without the 2D DCM, the development cost and time-scale for deploying such a capability in these applications was prohibitive.”*

## Growth in JT Open membership

JT is a lightweight data format used in a range of MultiCAD, visualization and virtual prototyping applications. Siemens PLM Software encourages the use of JT through the JT Open Program, a global organization consisting of leading manufacturers, software vendors and academic institutions working to establish an open standard for digitally representing 3D product data.

The JT Open Program continues to grow, with newer members including TATA Motors (India), Suzuki Motors and Nissan (Japan), Space Solutions (Korea), ICIDO (Germany), and Magna International (Canada). The most recent meeting of the Technical Review Board was held in Gothenburg, Sweden, hosted by Opticore, and the Management Review Board in Nuremberg, Germany, hosted by Siemens. The JT Open membership is addressing far reaching issues, such as long term data retention, amongst many others. For further information please call Mark Matousek on +1-858-254-9562. More about JT Open at [www.jtopen.com](http://www.jtopen.com).

## Enhanced productivity for CAM/CAD applications

PLM Components are used in many CAM/CAD systems, including machine tool controllers. Customers include Adige, Amada, CNC Software, Makino, Missler, Mori Seiki, Planit Group (Pathtrace, Licom and Radan) and Vero, as well as Siemens PLM. One attraction is being able to exchange data via Parasolid, the format in which up to 40% of the world's 3D designs are stored. Another is being able to create or modify models, for example, removing unnecessary detail for roughing, editing geometry to optimise toolpaths, simulating in-process material removal and eliminating clashing and gouging.

Adige, Italy, develop tube design and laser based cutting technology, creating an automatic system that takes the product from initial bundle to finished part. The process includes their Lasertube CAM/CAD application family, based on Parasolid.

Parasolid provides the modeling for designing and preparing tubular parts for manufacture using the company's advanced Lasertube cutting machines.

Use of the 3D DCM is planned later to deliver constraint-based assembly modeling capabilities to accelerate the design process.



*Designing and assembling a tube based structure prior to manufacture using Adige's machine tools*

***"Adige selected Siemens PLM based on its ability to supply and support a broad portfolio of high quality components under its open business model, enabling us to develop a comprehensive new application rapidly for the benefit of our Lasertube customers," said Lucia Lubich, Laser applied research manager at Adige.***

## PLM Vis enhancements

PLM Vis provides highly customisable 2D and 3D visualization and markup tools. It is used by software vendors to enhance their applications and by end-users to enrich current, and develop new, business processes. Examples include Boeing, Caterpillar, John Deere, LG, Sikorsky and Visiprise.

PLM Vis is available in a range of service levels, each one building upon the capabilities of the preceding configurations:

Mockup	<ul style="list-style-type: none"> <li>• Closest approach</li> <li>• 3D alignment</li> <li>• Outline</li> </ul>
Pro	<ul style="list-style-type: none"> <li>• 3D measure and markup, properties, appearance</li> <li>• Animation, cross-section, PMI, conferencing</li> </ul>
Standard	<ul style="list-style-type: none"> <li>• 3D viewing, part selection, rubber-banding</li> <li>• Save/load sessions, navigation</li> </ul>
Base	<ul style="list-style-type: none"> <li>• 2D navigation, image capture/export</li> <li>• 2D viewing; 3D simple viewing</li> </ul>

The recently introduced PLM Vis Mockup adds advanced capabilities, such as closest approach and 3D alignment, to the comprehensive view/markup tools that are already offered under Base, Standard and Pro.

More about PLM Vis at [www.plmvis.com](http://www.plmvis.com)

### Contact details

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