

# The PLM Components Newsletter

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### A new publication from UGS

Welcome to the first edition of *The PLM Components Newsletter*. Many readers will recall *The D-Cubed Newsletter* which this publication has succeeded. Our new format explains how UGS' wide range of open technologies benefit the CAD/CAM/CAE/PLM community.

With PLM Components, UGS makes its own product design, manufacture, simulation, visualisation, and collaboration tools openly available to other application developers. We also promote the adoption of industry standards and provide support to communities that share product information using such standards. These activities bring high levels of functionality and interoperability to CAD/CAM/CAE/PLM applications for the benefit of our mutual customers. Readers that are new to PLM Components will find more information on [www.ugs.com/products/open](http://www.ugs.com/products/open).

### Our winning open approach to PLM

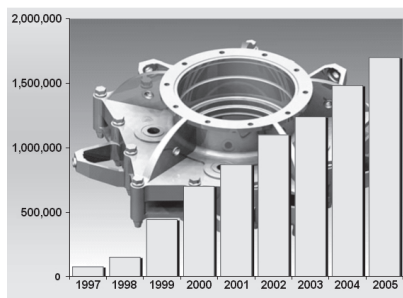
*"One of the company's greatest strengths is its openness strategy" - Daratech on UGS*

This year many Independent Software Vendors (ISVs) and manufacturing companies around the world chose PLM Components to help them bring new applications more quickly to market, whilst focussing resources on their areas of core competency - some recent adopters are listed on page 2. Key to the community embracing our business, PLM Components are supplied on a level playing field business model, where all customers are given equal access to the latest advances in our open technology.

Interoperability amongst diverse applications from different vendors is a fundamental requirement of the PLM marketplace and this year we reached major milestones in addressing this requirement with our leading Parasolid and JT file formats.

### Engineering with Parasolid reaches 1.5 million users

The number of users of systems based on Parasolid® software, our 3D geometric modeling kernel, exceeded 1.5 million this year, making our published Parasolid XT file format one of the most widely used precise product data formats. Parasolid is used in UGS™ applications and in many other systems as a foundation for product design, manufacture, analysis and other applications (*more on page 2*).



Parasolid user growth

### Collaboration with JT approaches 4 million users

With nearly 4 million users, JT is the leading lightweight product data format, used by UGS applications and many other systems to enable enterprise-wide collaboration throughout the product lifecycle. JT Open is a program that provides access to JT to application developers and their customers (*more on page 4*).

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### First anniversary of the D-Cubed acquisition

With the acquisition of D-Cubed on 30 June 2004, UGS became the provider of the most comprehensive portfolio of component solutions in the PLM industry. This enables our customers to build rich applications more quickly than ever, utilising a consistent range of products and services from a single, reliable supplier.

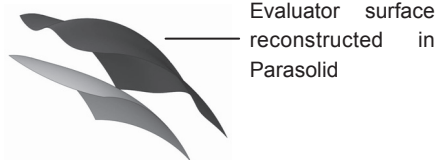
Since acquisition, D-Cubed and its customers have benefited from a smooth transition into UGS. We have fulfilled our commitment to provide the same high level of service to our customer base and to continue our intensive schedule of regular, high quality product releases.

The D-Cubed components, including de facto industry standards such as the Dimensional Constraint Manager (DCM), are the basis of UGS' own sketching and assembly constraint functionality. They are also available to other application developers under our level playing field business model (*more on page 3*).

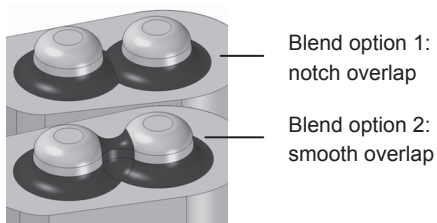
## Parasolid development highlights

Parasolid V17.0, released April 2005, included functional enhancements that address design, manufacturing and productivity requirements from a wide range of users in many key areas. Some of these enhancements are listed below. For further details about Parasolid, please visit [www.ugs.com/parasolid](http://www.ugs.com/parasolid).

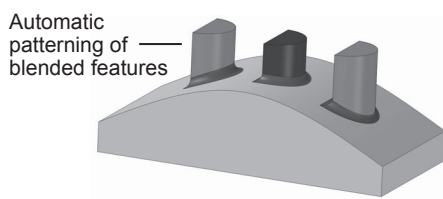
- New techniques in sweeping, lofting and curve and surface reconstruction for enhanced design and representation of free-form shapes.



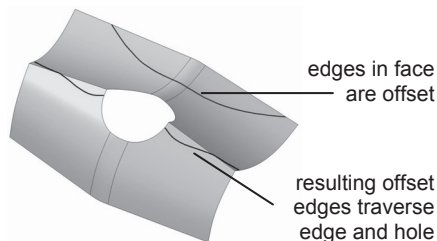
- New ease-of-use features in blend construction, propagation, limiting and overlapping for enhanced filleting across a wide range of configurations. Blend overlapping options are shown opposite.



- Automated patterning of blended features (illustrated opposite) and completion of imprints for accelerating complex Boolean operations.



- Extended controls for tapering, embossing, offsetting, thickening and face editing operations for increased end-user modeling productivity. An example of offsetting edges on a sheet body is illustrated opposite.



### More V17.0 features - Further areas of enhancement included:

- Easy constant conic face blends
- 'No effect' feedback from Boolean operations
- Maximum distance between topology sets
- Creation of non-G1 sp-curves
- Faceting performance
- Tolerance minimisation for edge blends
- Copying model partitions

### Parasolid interoperability tools:

Parasolid Bodyshop V7.0, released February 2005, has enhanced performance and reliability to further improve the quality of data imported into Parasolid.

Parasolid Translators V15.0 are due for release in August 2005, providing high success data exchange between Parasolid and other leading proprietary and standard formats.

## Business news

Here we provide a summary of some of the news involving PLM Components over the past few months:

**Missler Software**, a leading global CAD/CAM/ERP editor, following an exhaustive evaluation of available technologies, extended their wideranging Parasolid license agreements in May 2005, further reinforcing their long-standing relationship with UGS.

**Adige Sala**, Italy, licensed the 2D DCM, 3D DCM and Parasolid in June 2005 to support the development of the next generation of CAM software for their laser tube cutting systems.

**Renishaw Plc**, UK, a leading manufacturer of probes for co-ordinate measuring machines, licensed Parasolid in May 2005 for use in their Productivity+ system. Productivity+ simplifies the off-line generation of probing routines for machine tools, increasing on-machine confidence and efficiency.

**Tekla**, Finland, released the 2D DCM in Tekla Structures in June 2005. Tekla Structures is a comprehensive structural design and engineering building information modelling system. The 2D DCM parametrically extends its steel detailing functionality.

**ABAQUS**, USA, licensed the 2D DCM in December 2004 for use in ABAQUS/CAE, the modeling and visualisation environment for its finite element analysis applications.

**Business news cont'd...**

**IMSI, USA**, released the 2D DCM in TurboCAD in November 2004. The 2D DCM provides variational sketching capabilities, including the ability to autoconstrain a 2D model.

**COMSOL** licensed Parasolid as well as the Parasolid Bodyshop model repair system and several Parasolid translators in March 2005 to enable interoperability in their FEMLAB multiphysics simulation system.

**MTU Aero Engines, Germany**, a manufacturer of commercial and military jet engines and components, licensed Parasolid Designer in March 2005 for use on an internal project.

**CoCreate, Germany**, released the AEM in OneSpace Designer Modeling in February 2005. Designer Modeling has a flexible non-history based approach to 3D mechanical CAD operations called Dynamic Modeling. The AEM enhances its realistic motion simulation capabilities.

**DataSolid, Germany**, licensed the HLM in November 2005 for use in their CADdy++ mechanical design system. CADdy++ is a 3D parametric, feature based application.

**UGS and Autodesk** announced a strategic alliance in February 2005 to extend collaboration across the supply chain with interoperability between JT and Autodesk's DWF format. This will enable design, engineering and manufacturing data to be shared between applications using the two formats.

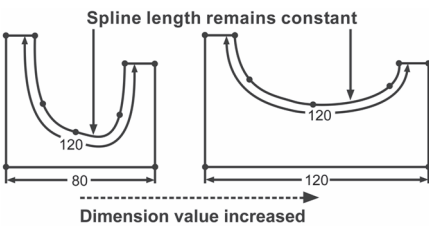
**D-Cubed development highlights**

D-Cubed develops components that contribute specific functionality to product design, manufacturing, analysis and simulation software. This section highlights some recent developments. For further details visit [www.ugs.com/d-cubed](http://www.ugs.com/d-cubed).

**D-Cubed 2D DCM** *Solves geometric dimensions and constraints to enable highly productive sketching*  
V47, Jan 05

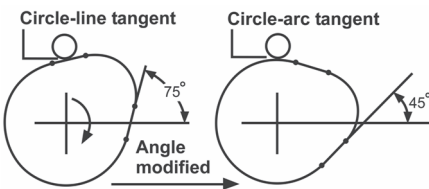
**New curve length constraint** - for splines, ellipses and parametric geometry (example opposite).

**More spline tools** - constraints to interpolation and control points on the same curve.



**D-Cubed PGM** *Performs high-level operations on 2D profiles, including advanced offsetting*  
V3, Jan 05

**New loop constraints** - the PGM now enables constraints to loops of edges. Opposite, a tangent constraint is automatically transferred from one edge to the next as the cam rotates.



**D-Cubed 3D DCM** *Solves 3D constraints for part-positioning, 3D sketching, part modification and kinematics*  
V30 Oct 04 & V31 May 05

**3D spline improvements** - constraints to interpolation and control points on the same curve. Also less numerical solving to improve performance.

**New midpoint constraint** - for specifying that a point is equidistant from two other points in 3D space, useful for 3D sketching applications.

**D-Cubed CDM** *Detects collisions and measures part clearances at interactive speeds in assembly environments*  
V32 Oct 04 & V33 May 05

**Faster computation** - new boxing algorithms designed to improve collision detection speeds on parametric faces in close proximity.

**Multi-CAD support** - applications can now combine different model formats in the same collision detection environment more easily.

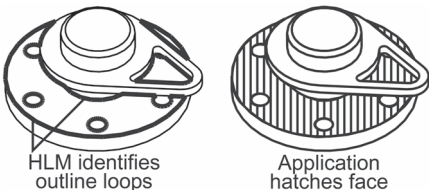
**D-Cubed AEM** *Simulates assembly motion interactively, with accurate 3D contact behaviour between parts*  
V16 Oct 04 & V17 May 05

**More sophisticated 3D contact solving** - improves simulation accuracy when parts come into contact in complex configurations.

**Improved performance** - new pre-processing to identify and remove non-relevant assembly parts from the simulation computations.

**D-Cubed HLM** *Computes fast hidden line views on accurate or faceted models for visualisation and drawing*  
V32 Oct 04 & V33 May 05

**Face outlines** - the HLM now identifies loops that bound the visible and invisible regions on a face, providing support for hatching and shading applications.



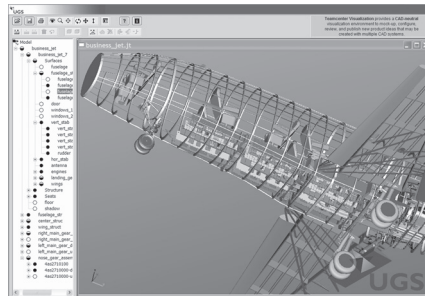
## JT ...continued from page 1

JT data can be lightweight, using streamlined facets for visualisation applications, or it can be richer, with precise geometry, product structures, and product manufacturing information. Highly flexible and widely used, JT is a major asset to many PLM software applications.

### JT2Go

Supporting the proliferation of JT, UGS launched JT2Go in January 2005. JT2Go is a free 3D viewing product that enables companies to share detailed 3D product and manufacturing data using JT in Internet Explorer or Microsoft Office.

JT2Go can be used to connect manufacturers, suppliers, business partners and customers to the 3D product data. This brings collaborative participation to product lifecycle processes such as design reviews and manufacturing planning. For more details visit [www.jt2go.com](http://www.jt2go.com).



*Visualising a JT model and accessing product structure information in JT2Go*

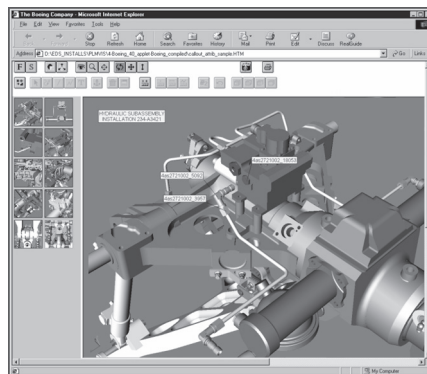
### JT Open

JT is supported by **JT Open**, an initiative organised by UGS at the request of its customers to establish JT as a common standard for sharing product data. **Siemens** joined JT Open in 2005, underscoring the leading role the JT format plays in the representation of 3D model data. Siemens intends to use its JT-based Common Engineering Collaboration Platform to enhance design and manufacturing collaboration across its various groups and partners. JT Open membership is available to end user corporations, ISVs, academic institutions and non-profit organizations. Corporate customers include General Motors, Ford, DaimlerChrysler and Caterpillar and ISVs include PTC, Bentley, Actify, Spicer and Theorem Solutions. For further details visit [www.jtopen.com](http://www.jtopen.com).

## PLM Vis

Based on the same core technology as UGS' market leading Teamcenter, PLM Vis enables fast, functional and memory efficient view/markup capabilities to be rapidly added to new and existing applications. It supports all popular 2D file formats as well as 3D formats that include XT, JT, VRML, NX and Solid Edge.

Available as both ActiveX Controls and JavaBeans, PLM Vis has a minimal footprint. This makes it an ideal solution for creating plugins that allow view and markup functionality within an internet browser window. Further details at [www.ugs.com/plmvis](http://www.ugs.com/plmvis).



*PLM Vis enables custom viewing in Internet Explorer on the shop floor*

## PLM XML

PLM XML is UGS' flexible and extensible XML-based mechanism for efficiently exchanging structured product information and related data between applications. Consistent with our open approach, the schema definitions are publicly available and a software developers kit assists developers when building PLM XML into their applications. For further details visit [www.ugs.com/plmxml](http://www.ugs.com/plmxml).

## Partner Program

UGS' proven and rapidly expanding Partner Program complements the PLM Components. Of interest to those software application developers that need to interact with the UGS PLM applications themselves, a range of sophisticated application programming interfaces enable extension of the functionality of the base product set for the benefit of our mutual clients. More at [www.ugs.com/partners](http://www.ugs.com/partners).

## Contact details

Contact details for each technology covered in the newsletter can be found on the website listed in the relevant section. Alternatively, please use the contact details below and your enquiry will be forwarded to the appropriate recipient:

D-Cubed,  
(A wholly owned subsidiary of UGS)  
Park House, Castle Park,  
Cambridge, CB3 0DU,  
England.

Tel: +44-1223-722600

Fax: +44-1223-722601

Email: [d-cubed.sales@ugs.com](mailto:d-cubed.sales@ugs.com)

Web: [www.ugs.com/products/open/](http://www.ugs.com/products/open/)

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