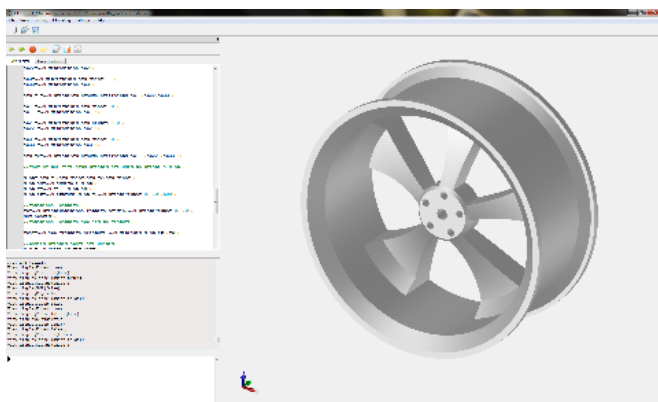# CGM CORE MODELER

DEVELOPING NEXT-GENERATION 3D APPLICATIONS PRESENTS CHALLENGES

- The steep learning curve required for traditional parametric modeling
- Difficulties in the reuse of existing data models with the complex constraints of proprietary CAD systems
- Considerable cost and effort to achieve meaningful prototype results from an initial proof-of-concept

CGM PROVIDES A PLATFORM FOR INNOVATION

- Tighter application data integration resulting from geometric data compatibility with Dassault Systèmes V5 and 3DEXPERIENCE Platforms
- Tolerant Modeling designed in from the beginning to ensure maximum geometric fidelity for natively built and imported models
- The ability to quickly generate prototype results with reusable application code to accelerate development

CGM Core Modeler enables new technical possibilities for independent software vendors, application providers and internal development organizations. The CGM 3D modeling kernel is the core geometry and topology modeler for Dassault Systèmes' V5 and V6 and has been the foundation of V5 products for over twenty years, proven in the most demanding application. CGM is well-suited for next-generation projects in all 3D software domains.

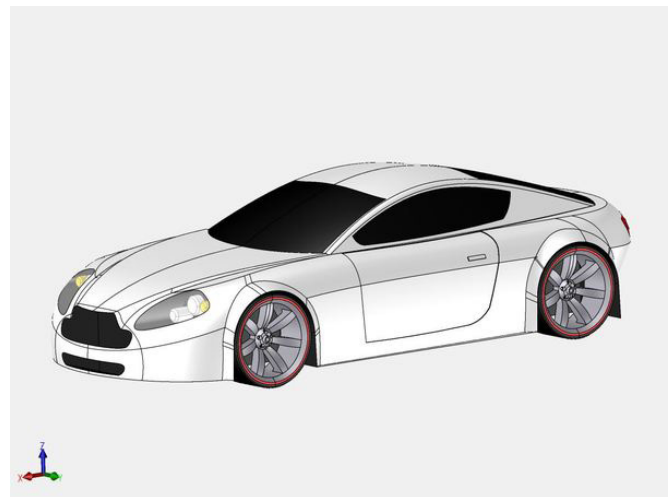## CGM ENABLES EFFICIENT RE-USE OF EXISTING MODELS

Today, designers may begin projects by leveraging existing models and data. CGM Core Modeler is architected to take advantage of this "design-by-redesign" methodology. CGM provides tight integration with 3D InterOp for interoperability with leading CAD formats. Native B-rep interoperability with Dassault Systèmes V5 and 3DEXPERIENCE Platforms preserves full geometric and topological integrity with existing models.

CGM CORE MODELER DELIVERS PRODUCTIVITY

CGM's operators offer advanced capabilities to address the most challenging design and modification requirements. In addition to offering basic functionality common to all modelers for operations like tapering or filleting, CGM provides a smaller set of well defined, powerful operators which provide high-level capabilities for addressing complex geometries and creating results in one step which would require multiple operations in traditional modelers.

CGM CORE MODELER OFFERS TOOLS FOR EARLIER INITIAL RESULTS

CGM incorporates tools and technologies to enable more efficient 3D modeling. This includes the 3DScript, a powerful platform for prototyping and collaboration, which provides a quick, lightweight prototyping alternative so application developers can quickly demonstrate their proof-of-concept. They can then cut-and-paste code into their application to further accelerate their development.

KEY FEATURE	BENEFIT
The High-Quality Geometric Kernel Used in Dassault Systèmes V5 and V6 Products	CGM lets developers build on the quality and compatibility of the geometric kernel tested in the industry's most demanding application. CGM preserves full geometric and topological integrity with the CAD industries most widely used data format.
Full Breadth of Modeling Operations	CGM delivers a suite of the multi-dimensional modeling operators, including specialized operators, needed for application development in workflows involved in the creation and modification of complex geometries.
Native Tolerant Modeling with Tolerant Operators	Designed in from the beginning to ensure precision for natively built and imported models, tolerant modeling within CGM maintains model validity for imported data and through subsequent modeling operations. Whenever possible, operators strive to improve tolerances, resulting in greater precision in the results than specified in the input.
Advanced Surfacing Functionality	CGM includes capabilities such as free-form model design with blending, covering, and sweeping, with behavior which maintains geometry integrity.
Support for Multi-Processing/Multi-Threading	To help deliver optimal application performance, CGM allows developers to take advantage of powerful multi-core platforms.
3D InterOp Integration	3D InterOp, combined with CGM, delivers the highest quality data exchange between CAD formats for maximum quality of results. In addition, 3D InterOp provides an extensible translation platform to enable better data re-use and fewer problems in downstream applications.
3DScript Prototyping Platform	Delivered with the CGM Modeler, 3DScript provides an easy-to-learn scripting environment. Through its powerful scripting interface, users can quickly prototype complex workflows.
Integration with HOOPS Visualize	HOOPS Visualize is the industry's most powerful, portable and complete graphics development component for creating or enhancing 3D applications. HOOPS Visualize helps developers accelerate the development of high-performance 3D applications.

Application Components - CGM Core Modeler-based 3D modeling software development toolkits that target a specific industrial challenge or application workflow

CGM Polyhedra

An add-on to the CGM Core Modeler combining the power of polyhedral and B-rep modeling. Customers can rapidly integrate approximated polyhedral data to their 3D printing, subtractive manufacturing, analysis, and other workflows.

CGM Defeaturing

Defeaturing simplifies the model by removing unnecessary detail, a process typically done manually at a significant cost. Defeaturing provides a flexible interface with feature recognition parameters defining the desired level of detail.

3D Precise Mesh

Generates extremely accurate surface and volume meshes that can be adapted and optimized according to the analysis method for quality and efficient simulations.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 190,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **www.spatial.com**.

3DEXPERIENCE®

DASSAULT SYSTEMES | The **3D**EXPERIENCE® Company

U.S. Spatial Headquarters
310 Interlocken Parkway
Suite 200
Broomfield, Colorado
80021
USA

Spatial EMEA Headquarters
Altenkesseler Str. 17/B6
D-66115
Saarbrücken
Germany

Spatial ASIA Headquarters
c/o Dassault Systemes K.K.
Pier City Shibaura Bldg 10F,
3-18-1 Kaigan,
Minato-ku, Tokyo 108-0022
Japan