CGM POLYHEDRA

OVERVIEW

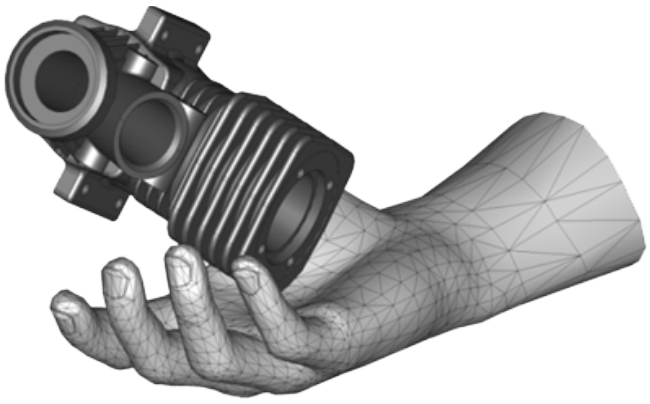
Building upon 30 years of geometric modeling innovation, Spatial has combined the power of precise modeling with polyhedral modeling capabilities. CGM Polyhedra is available as an add-on to both of Spatial's modeling software development toolkits (SDKs), CGM Core Modeler and 3D ACIS Modeler.

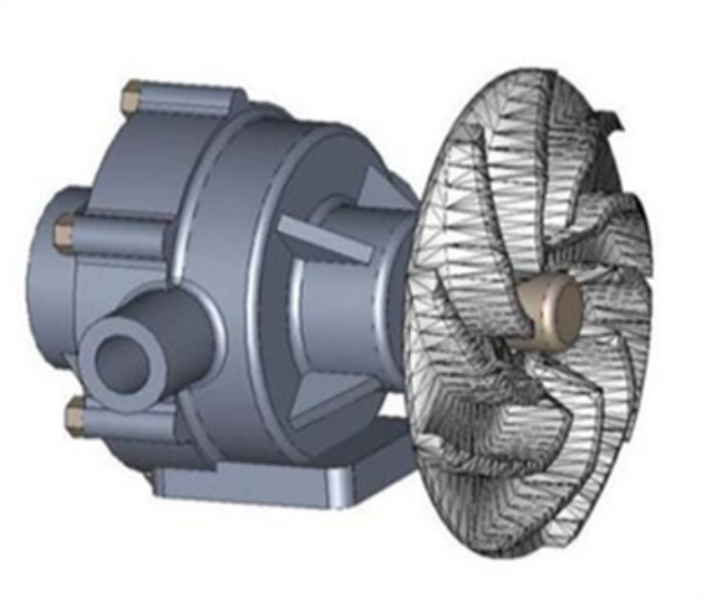
CGM POLYHEDRA: PIONEERING WORKFLOWS

As 3D modeling continues to rapidly advance, polyhedral representation supports new and evolving workflows for Additive Manufacturing (AM), Electronic Design Automation (EDA), Computational Fluid Dynamics (CFD), Building Information Modeling (BIM) and more, with powerful modeling operations. New workflows and solutions, not previously possible are now achievable, enabling new products and markets across these and other industries.

POWERFUL CAPABILITIES

CGM Polyhedra includes robust healing capabilities, automatically repairing models where other solutions fail. With the industry's first Hybrid Modeling capabilities, CGM Polyhedra enables both precise and polygonal representation to be stored and managed in the same integrated 3D model. Spatial's surface recognition capabilities enable you to automatically analyze a triangle mesh and convert planes, toroids, cylinders and spheres into precise entities, which can be manipulated with powerful B-rep modeling tools.





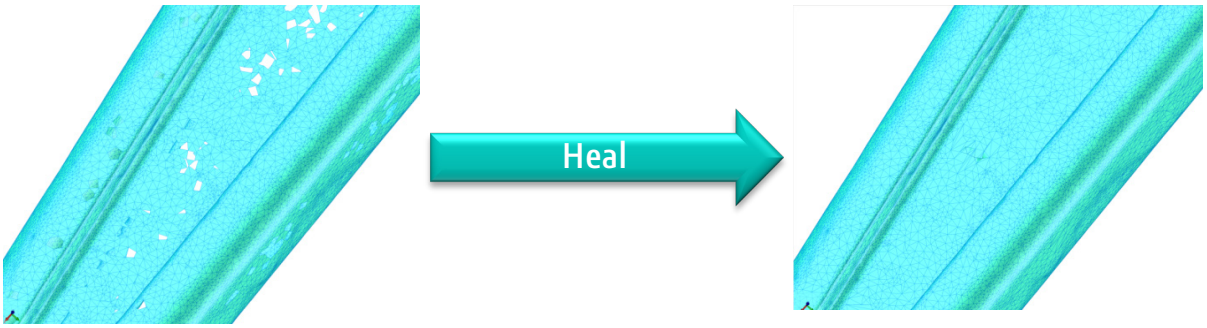
FLEXIBILITY

Spatial's polyhedral solution supports customers' many data sources, including precise models, scanned objects, raw mesh data, and the most popular 3D modeling formats when combined with 3D InterOp.

RAPID INTEGRATION

Unified precise and polyhedral models and operations are available through existing modeler interfaces, enabling extremely rapid integration for existing CGM Core Modeler or 3D ACIS Modeler customers. New customers can leverage robust documentation and industry-proven interfaces to achieve both precise and polygonal modeling through the same interfaces.

Feature	Benefit
Query	CGM Polyhedra provides several query functions to enable you to determine distance between entities, detect clashes, evaluate if the model is water-tight, simulate a vector's path and determine volume, area and mass properties.
Boolean	Boolean modification operations enable users to perform common geometric functions, including unite, subtract, intersect, slice and unhook, supporting input of both precise and polyhedral geometries.
Offset	Offset modification for polyhedral models provide inward, outward and thicken capabilities via a "rolling ball" offset, as well as shelling for a hollow body, enabling your additive manufacturing and other workflows.
Decimation	Decimation enables controlled simplification of large models so that your end users can specify a target percentage for decimation in order to reduce file size and improve performance of downstream operations or workflows.
Checking	Checking capabilities allow your application to assess and identify any issues that may need to be corrected, thereby reducing costs and downstream workflow impacts. Detected anomalies include: duplicate geometries, sliver triangles, inconsistent triangle orientation, self-intersecting edges, self-intersecting triangles and a non-manifold mesh.
Cleanup	Cleanup operations provide critical healing capabilities to the user to minimize time spent modifying geometries to ensure accuracy and manufacturability and include: covering holes, stitching facet edges, repairing facet orientations and removing sliver geometries.



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