

**LGS 3D 1.2: one more step towards affordable geometric parameterization.**

Novosibirsk, Russia  
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LEDAS Ltd. ([www.ledas.com](http://www.ledas.com)), an independent software provider of computational components for PLM and ERP, releases next version of its affordable 3D geometric solver LGS 3D.

The new 1.2 version is not just an update of LEDAS 3D geometric constraint managing software - it goes far beyond that. With more than 50% performance increase (when running on a reference test base of several thousand industrial scenarios) and functionality that matches and even outranges the industry standards, and with rather affordable pricing, LGS 3D is the choice for everyone who needs 3D geometric constraint functionality.

LGS 3D has advantages in almost all areas of developing such engines: functionality, percentage of successfully solved cases, performance and natural solution. In order to simplify integration of LGS into end-user software, the new modes of measuring constraints on complex objects like circles and cylinders were presented and support of rigid sets, planar angles and white-box equations was improved. Rate of successfully solved big cases including more than hundred constraints has been increased by almost two times. Behavior of the solver on models with complex objects and constraints was tuned to provide most natural solutions from the user's point of view.

LEDAS suggests competitive pricing coupled with high-level customers support and individual attitude to every developer or development team integrating LGS solutions to its applications. Thus, LEDAS continues pursuing its global strategy **to provide constraint managing solution for virtually any geometry-related application which could**

**demand it:** from on-line/off-line 3D viewers to high-end CAD and 3D modeling systems

LGS 3D is a C++ class library that runs under Windows 2000 and XP (versions for Linux, FreeBSD, and AIX platforms are available upon request). It can be integrated (via its API written in C) into a broad range of software applications. A sample test application for LGS 3D called Lege'n'd 3D is also available in the Evaluation version of LGS 3D. It was created with the Open CASCADE open-source framework. The Lege'n'd 3D application can be used to test the entire functionality of the LGS 3D without integrating the solver into other software packages. A set of representative examples for Lege'n'd 3D is also supplied.

LEDAS Geometric Solver LGS 3D supports creation and modification of the geometric models by (explicit or implicit) constraints. Typical geometric objects include points, lines, circles, planes, cylinders, spheres, arbitrary curves, surfaces and swept surfaces. Objects can be fixed in an absolute coordinate system or with respect to each other (the last feature is provided by the so-called rigid sets of objects). Set of geometric constraints includes logical constraints between geometric entities (such as coincidence, parallelism, tangency, etc.), dimensional constraints (that specify the required values for given distances, angles, or radii). LGS 3D moves and rotates objects to positions where all constraints are satisfied trying to perform minimal possible transformations of initial configuration. Other functions are usual for CAD - 'move under constraints' and diagnostics of over- and under-defined parts of a model. Since version 1.0 LGS 3D

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supports advanced features like engineering equations and help points.

LEDAS three-dimensional geometric solver significantly expands the possibilities of applying a computational engine. It supports creation and modification of the 3D geometric models. In general, the three-dimensional solvers are designed for the similar purposes as the two-dimensional ones - they allow the users to define the constraints on the three-dimensional objects and modify 3D models correspondingly. The set of three-dimensional objects and constraints intersect with the analogous set in a two-dimensional case. The three-dimensional objects are represented by points, lines, planes, curves, surfaces and rigid sets constructed from them. The constraints, which could be defined on the objects, include fixation, coincidence, concentricity, distance, angle and planar angle, perpendicularity and parallelism, and tangency. The same is valid for the functions: placing the objects in correspondence to the defined on them constraints, moving and

rotating the objects, identifying the over-defined objects are the same as in a two-dimensional case.

LGS 3D is based on the LEDAS' state-of-the-art engine and provides affordable solution of a strong variational and constraint-based functionality in CAD, modeling, or engineering software. Through the scalable LGS architecture, variational and parametric techniques become available in a wide range of products including desktop CAD and object modeling tools. High-end CAD and CAM systems will also benefit from integration with LGS since it provides a solid foundation for variational modeling, knowledge-based engineering, constraint-based geometry, and mechanical optimization.

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**About LEDAS**

LEDAS Ltd. is an independent software company founded in 1999; it is based in Novosibirsk Scientific Centre (*Akademgorodok*), Siberian Branch of the Russian Academy of Science. A leader in constraint-based technologies, LEDAS is a well-known provider of PLM components: geometric constraint solvers for CAD/CAM/CAE, optimization engines for Project Management, Work Scheduling and Meeting Planning as well as interval technologies for Knowledge-Based Engineering and Collaborative Design. The company also provides services for PLM and ERP markets: software development, consulting, reselling as well as education and training. Detailed information about LEDAS is available on the Internet at: [www.ledas.com](http://www.ledas.com).

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