



# C3D Labs

C3D Modeler

C3D Solver

C3D Converter

Geometric Kernel for 2D and 3D Software Developers

[www.c3dlabs.com](http://www.c3dlabs.com)

# C3D Kernel

The C3D kernel is a key component in creating CAD (computer-aided design) software and related applications, such as CAE (computer-aided engineering), CAM (computer-aided manufacturing), and process simulation systems. ASCON began development of C3D in 1995 as a component of the company's CAD program, KOMPAS-3D.

In 2013 ASCON made the C3D kernel available for licensing through C3D Labs, the division of ASCON responsible for developing and promoting the kernel.

Third-party developers can use the C3D kernel to improve the product's functional capabilities, to increase the performance and

reliability of their software, to quickly create 3D modelers based on existing 2D design systems, and to reduce the cost of development of their products.

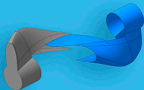
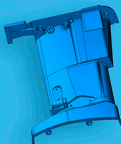
The kernel incorporates three crucial CAD modules: C3D Modeler, C3D Solver, and C3D Converter - which can be licensed individually or as one.

## C3D Modeler

C3D Modeler is the geometric module of the kernel. It offers functions for 3D solid and hybrid modeling, sketching, and 2D drawing.

The key features include the following operations:

- Building splines
- Modeling 3D solids
- Performing Boolean operations
- Creating thin-walled solids
- Filletting and chamfering parts
- Modeling sheetmetal parts
- Designing with direct modeling
- Modeling 3D surfaces
- Modeling 3D wireframe objects
- Surface triangulation
- Performing geometric calculations
- Casting planar projections
- Creating section views
- Calculating mass inertia properties
- Collision detection



## C3D Solver

C3D Solver is the parametric constraints solver of the kernel. It boasts functions for creating and solving parametric constraints on 2D and 3D geometry:

- 2D constraint solver for 2D drawings and 3D sketches
- 3D constraint solver for assemblies and kinematic analyses

The Solver supports the following functionality:

- Coincidence (available in 2D and 3D)
- Align points (2D)
- Angle (2D and 3D)
- Coaxiality (3D)
- Distance (2D and 3D)
- Equal lengths (2D)
- Equal radii (2D)
- Fix geometry (2D and 3D)
- Fix length and direction (2D)
- Fix spline derivatives (2D)
- Incidence (2D)
- Parallelism (2D and 3D)
- Perpendicularity (2D and 3D)
- Radius (2D)
- Tangency (2D and 3D)
- Reflection symmetry (2D and 3D)
- Dragging geometry (2D and 3D)
- Degrees of freedom analysis (2D)
- Clustering to rigid sets (3D)
- Journaling API calls (2D)

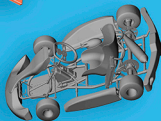
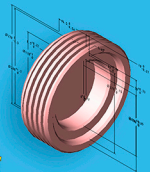
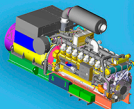


## C3D Converter

C3D Converter is the translator module of the kernel. It reads and writes geometric models in a variety of standard exchange formats.

The formats supported by the converter include the following:

- ACIS
- IGES
- Parasolid
- STEP
- STL
- VRML



## Developer Toolkit

THE DEVELOPMENT PLATFORM RUNS ON THE FOLLOWING OPERATING SYSTEMS:

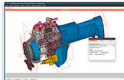
- Linux
- Mac OS X
- Windows XP
- Windows Vista
- Windows 7
- Windows 8

THE DEVELOPMENT ENVIRONMENT OPERATES USING THESE PROGRAMS:

- MS Visual Studio 2005
- MS Visual Studio 2008
- MS Visual Studio 2010
- MS Visual Studio 2012
- MS Visual Studio 2013

TEST APPLICATIONS ARE AVAILABLE IN THE FOLLOWING FORMATS:

- Windows, Mac and Linux versions
- Source files and compiled binaries



THE SUPPORTED PROGRAMMING LANGUAGES INCLUDE:

- C++
- C#



TECHNICAL SUPPORT IS AVAILABLE THROUGH THE FOLLOWING CHANNELS:

- Direct support from the developers
- ServiceDesk online help
- New updates every two weeks
- Online documentation
- Illustrated user manual
- Geometric Modeling book

# Your Ideas Just Run Better on Our Kernel

## ASCON

"C3D-based KOMPAS-3D is the most popular MCAD solution in Russia today. We are proud of the C3D kernel, which we at ASCON created in 1995. Now, ASCON is pleased to make it available to the worldwide CAD components market through our C3D Labs subsidiary."

Maxim Bogdanov, CEO

## KOMPAS-3D

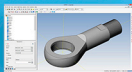


## LO CNITI and RUBIUS

"We found that C3D Lab's level of technical support and speed of response are an order of magnitude better than from what we have experienced from foreign companies. By switching to C3D, we enjoyed additional benefits, such as a flexible pricing policy and assistance provided directly by C3D Labs's software engineers."

Andrey Lovrygin, Director at LO CNITI

## ESPRIT Extra CAD

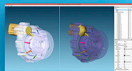


## LEDAS

"We have found that the C3D kernel is a high quality product, one that has proven itself through several generations of KOMPAS-3D users. We find C3D Labs' policy regarding development of C3D-based products very attractive to us, especially when our products are not yet ready for release. In contrast, the vendors of other geometric kernels stick to their stiff licensing schemes."

Alexey Ershov, CEO

## LEDAS Geometry Comparison



## Solar Tech

"When working on our new generation of Quick CAD/CAM, we had an ambitious task that related to the transition from 2D to 3D. For this reason we decided to use the C3D kernel. Our trial operations with C3D showed us that it is a high-performance kernel, with many features that meet the requirements fully of our development team."

Seung-Woo Lee, CEO

## Quick CAD/CAM



## BAZIS-Center

"We conducted a thorough analysis of many geometric kernels on the market, looking for the one with the best balance between functionality, performance, and cost. Our search lasted six months, following which we concluded that our needs were best met by the C3D geometric kernel."

Natalla Bakulina, CEO

## BAZIS



## NTP Truboprovod

"Using C3D as the kernel for our design software demonstrated excellent test results. Now we can easily implement new modeling functions, and then integrate the newly developed features in all of our products. We believe that the availability of a Russian high-tech product such as C3D is a significant event for the industry."

Aleksey Timoshkin, Head of the IT department

## PASSAT



See the full list on <http://c3dlabs.com/en/sources/customers/>

# Why C3D?

- + 3 month free **evaluation**
  - Flexible licensing policy
  - Royalty-free for free and low-cost products
  - Special terms for **startups**
  - Educational** program for universities
- + Strong one-on-one **partnerships** with customers

## Want to Know More?

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