



CollabCAD

CollabCAD is a Java based distributed CAD/CAM Software System developed by Computer Aided Design Group of National Informatics Centre, the IT Support professionals from India. CollabCAD is based on well proven Open domain technologies like Java, Java 3D, Java RMI, Open Cascade geometry kernel.

CollabCAD is based on open standards such as XML, STEP, IGES, VRML as the purpose of open standards is to support common agreements that enable communications available to all.

CollabCAD facilitates the conventional CAD/CAM capabilities like design, drafting, surface and solid modeling, feature based modeling, basic NC features, data exchange, scripting etc. It offers both Part Design and Assembly Design.

CollabCAD is a CAD/CAM Solution which is collaborative in nature. It enables multiple designers to work across a network and concurrently access the same design for viewing and modification.

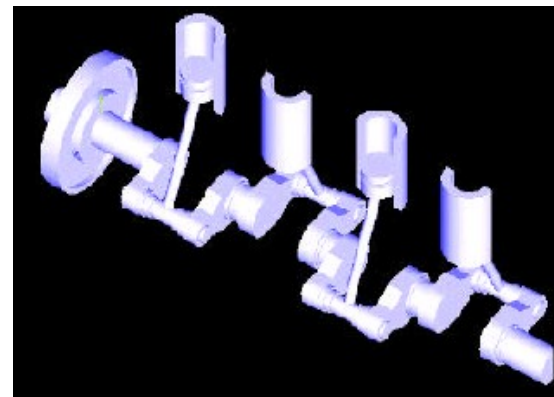
CollabCAD also offers other niche features like reverse engineering to re-create Surfaces and Curves from a point cloud, a standard parts library that can be created and used, stereoscopic viewing and 3D world browsing, reflection line analysis for visual inspection using Zebra Stripes mapping, Bar Code to link the designs to non CAD utilities like MRP, Meshing, Creation and linking of databases etc.

Integrating CAD with PLM, CollabCAD provides an interface to a content repository and incorporates security, locking and versioning of the engineering drawings and documents. It further provides an interface to a workflow system and enables the user to specify, execute, monitor and coordinate the organizations flow of work. CollabCAD also provides an interface to an open source enterprise automation software. solver/analyzer between pre and post processing.

CollabCAD provides an interface to Code_Aster, the Finite Element Solver and its pre/post processor – Salome via IGES.

Advantages

- Economical CAD Solutions
- Collaborative & Comprehensive
- Parametric Modeling
- Feature Based Modeling
- Flexible & Easy to Use Database Connectivity
- Programmable Scripting Interface
- Powerful Reverse Engineering, Slicing/Cross sectioning
- Generating Cross section points
- Reflection Line Analysis
- Customizable User Interface
- Standard Data Exchange Formats
- BAR Code for ERP Solution
- Plot Configurator and BOM
- Visualization Module for VRML 3D worlds
- XML based geometry data storage
- Multiple language support
- Content Management System & Work Flow
- Interface to ERP/ MRP/ SCM Application
- Interface to Finite Element Analysis



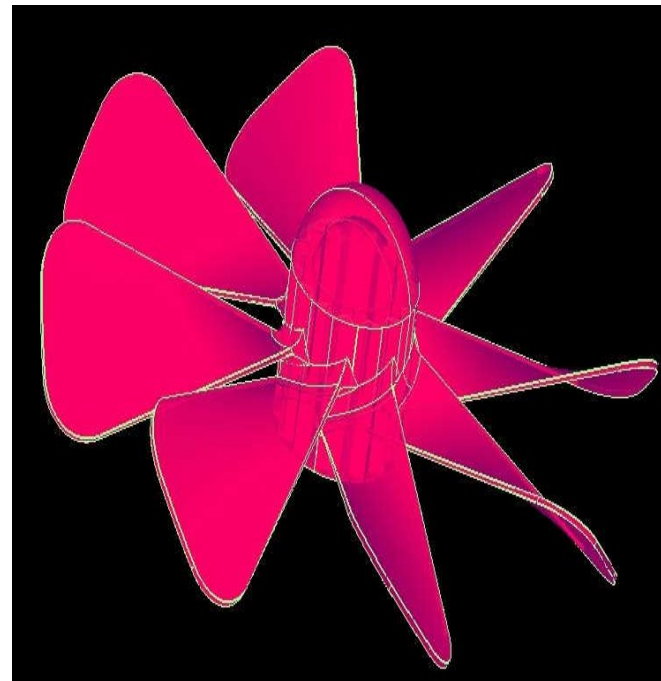
Solid Model of A Crank Shaft

CollabCAD Features

Basic	<ul style="list-style-type: none">• Design & Drafting• Surface & Solid Modeling• Basic NC• Toolpalette Customization• Collaborative Design• Database Connectivity• Jython Scripting• Data Exchange• Visualization• Toolpalette Customization• Collaborative Design• Database Connectivity• Jython Scripting• Data Exchange
Re-Engineering	<ul style="list-style-type: none">• Surface re-construction• Styling, Diagnostics and Geometry Repair
Constraint Manager	<ul style="list-style-type: none">• Sketcher
Features	<ul style="list-style-type: none">• Pre-defined design features• User defined design features• Standard Components with link to Design Tables from database
Assembly	<ul style="list-style-type: none">• Integrated Assembly Manager

Modeling Philosophy

CollabCAD is based on the "Open Cascade" Geometry Kernel, which is a 3D Kernel. That is, the point in Open Cascade is a 3D point and so are all the other entities like Lines, arcs etc. Therefore the basic Modeling Philosophy followed in CollabCAD is 3D unlike in other Solutions where the start is 2D and then it gets into 3D Mode. In CollabCAD, one always see the 3D Work Space and starts with 3D Work Space. In CollabCAD, Work Space always refers to 3D space.



Propeller Model

Design & Drafting

CollabCAD provides facilities to build and edit entities in virtual 3D space using basic geometry such as lines, arcs, and conic sections. 2D profile and free hand sketching is also available. In addition detailed dimensioning, tolerances, symbols etc. are also available.

Surface Modeling

CollabCAD supports the creation and modification of surface entities ranging from planes to more complicated geometric entities such as B-Spline, Bezier, Surface of Revolution, etc. Easy-to-use interfaces are provided for creation of each of these surfaces. It also provides the facility for trimming and lofting of Surfaces. Surface Diagnostics are also available. CollabCAD also provides reflection line analysis for visual inspection using Zebra Stripes mapping. The Zebra stripes mapping is a surface evaluation method for checking surface continuity.

Reverse Engineering: CollabCAD can generate complex surfaces and curves from a set of points obtained from raw/scanned data. The cross section slicing feature of CollabCAD enables the user to obtain the point data on the intersected curves.

Solid Modeling

CollabCAD offers the Modeling of Solids primitives (Cone, Cylinder, Sphere, Box), Slab, Revolution Solid, Sweep Solid, Thin Solid etc. It supports boolean operations, mass and section property calculations, sectioning, slicing. It provides the facility for blending of Edges and Vertices of Solids. It also offers excellent shading and transparency features using different color combinations for presentations, conceptualization and visualization. **Constraint based parametric profile editing and assembly modeling are also available.**

Feature Based Part Modeling: CollabCAD offers form features (depressions or protrusions) like hole, rib, slot, prism, pipe and revolve features.

Assembly

CollabCAD offers an Assembly Design Module that allows assembly and sub-assembly of components based on a robust 3D Constraint Solver.

Basic NC Operations

CollabCAD offers the basic NC operations like lathe roughing, lathe contouring, lathe drilling, lathe threading, 3-Axis Surface Milling and Point –to –Point Milling. It facilitates the user to generate the tool path and see the machining process through simulation of tool motion along the tool path. It supports ISO Standard Tool library.

Data Exchange

CollabCAD enables CAD data exchange using international standards
Import – IGES/STEP/STL
Export - IGES/STEP/VRML/STL

Collaborative Design

CollabCAD enables dynamic sharing of designs across the network. The interactive design environment enables multiple designers to work across a network and concurrently access the same design for viewing and modification. Audio and video conferencing enables on-line communication between participating designers.

Database Link

CollabCAD offers facility for the creation of Standard Tables and Databases. It allows users to attach properties from DB tables to geometric entities. It can also display the attached entities in tabulated form.

Standard Parts Library

The component library framework allows the user to create and store Standard Parts/Components. This library can be distributed to other users based on access rights.

Visualization

3D Stereoscopic viewing is enabled in CollabCAD. It can be invoked on stereo enabled systems. CollabCAD also allows browsing for 3D worlds and objects using VRML on other systems.

Customization

CollabCAD facilitates 3D CAD Modeling using Scripting. CollabCAD creates a journal file which can be used for re-generation of the model.

CollabCAD provides XML based Tool Palette that facilitates User Customization.

Content Management System

CollabCAD provides an interface to a content repository facility to archive/retrieve the designs and engineering documents. Access and Authorization Control (security & locking) of the CollabCAD part files in the repository is also available. The content manager also provides the facility for versioning of the designs and engineering documents.

Work Flow

CollabCAD provides an interface to a Workflow System designated to specify, execute, monitor and coordinate the organisations flow of work. It provides a comprehensive set of integrated graphical tools for performing process conception and definition, instantiation of process, control of this process, interaction with the users and interaction with other applications. A messaging service is also enabled with the workflow through which the participants of the project are informed of the pending activities.

Enterprise Automation

CollabCAD is also integrated with an enterprise automation application suite comprising of MRP/ ERP/ CRM/ SCM/ E-Commerce applications. CollabCAD is integrated with Neogia, an implementation of OFBiz, via the Bill Of Material (BOM). The BOM from CollabCAD is written into a XML file, which can be directly read by Neogia with the BOM and Product table being updated with the product data. This can be deployed using either Open Source database such as Postgresql and other commercial softwares such as Oracle.

FEA Module

CollabCAD has been interfaced with Salome, an open source CAE software to support interoperability between CAD modeling and Computation software (CAD-CAE link). Salome provides a pre and post processor for Meshing, Modifying and Analyzing Geometrical Structures.

Code-Aster is the Finite Element Solver interfaced with CollabCAD/Salome and it offers a full range of multiphysics analysis and modeling methods go well beyond thermo-mechanical calculations, applicable for linear as well as non-linear structures. It has well build user Interactive Interface, serves as a solver/analyzer between pre and post processing.

Open Domain Libraries

Java™ Java 3D™	SUN Microsystems (http://www.java.sun.com)
Open CASCADE™	Geometry Kernel (http://www.opencascade.org)
Ptolemy Plot	2D Data plotter (http://www.ptolemy.eecs.berkeley.edu/java/ptplot/body.htm)
Cassowary	Constraint Solver (http://www.cs.washington.edu/research/constraints/cassowary/)
Jython	Scripting Interface (http://www.jython.org)
PostgreSQL	Relational Database System (http://www.postgresql.com)
VRweb	Multi-System VRML Viewer (http://www2.iicm.edu/vrweb)
Jakarta Slide	Content Management System (http://jakarta.apache.org/slide)
DAV Explorer	WebDAV Client (http://www.ics.uci.edu/~webdav/)
Bonita	Workflow Management System (http://bonita.objectweb.org)
JOnAS	Application Server (http://jonas.objectweb.org)
Neogia	ERP & CRM suite based on OFBiz (http://www.neogia.org)
OFBiz	Enterprise Automation Software Project (http://www.ofbiz.org)
Salome	Integrated Platform for Numerical Simulation (http://www.salome-platform.org)
Code Aster	A Finite Element Solver (http://www.code-aster.or)
Blender	A software for 3D Graphics Creation (http://www.blender.org)

System Requirement

RAM	1 GB (Preferred 2 GB)
Free Disk Space	2 GB (For CollabCAD along with PLM, CAE, FEA)
Virtual Memory	800 MB to 1 GB
Graphics Card	Open GL Supported Hardware Accelerated Graphics Adapter with 64 MB VRAM: Graphics Card based on Nvidia Chip set: Example- Asus
System	Intel and AMD Based Systems
Camera	Webcam
Operating System	Windows NT/2000 (Server, Professional) / XP, Linux



<http://www.collabcad.gov.in>

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