

SolidWorks

SolidWorks



SolidWorks 2012 displaying a 3D assembly in multiple views.

Developer(s) [Dassault Systèmes](#)

Initial release November 1, 1995; 24 years ago^[1]

Stable release SolidWorks 2019 SP0.0 /
November 16, 2018

Operating system [Microsoft Windows](#)

Available in English

Type [CAD](#) and [CAE](#)

License Proprietary, Term

Website www.solidworks.com

SolidWorks is a [solid modeling computer-aided design](#) (CAD) and [computer-aided engineering](#) (CAE) [computer program](#) that runs primarily on [Microsoft Windows](#). While it is possible to run SolidWorks on MacOS, It is not supported by SolidWorks.^[2] SolidWorks is published by [Dassault Systèmes](#).

According to the publisher, over two million [engineers](#) and designers at more than 165,000 companies were using SolidWorks as of 2013.^[3] Also, according to the company, [fiscal year](#) 2011–12 [revenue](#) for SolidWorks totalled [\\$483 million](#).^[4]

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History

SolidWorks Corporation was founded in December 1993 by [Massachusetts Institute of Technology](#) graduate [Jon Hirschtick](#). Hirschtick used \$1 million he had made while a member of the [MIT Blackjack Team](#) to set up the company.^[5] Initially based in [Waltham, Massachusetts](#), United States, Hirschtick recruited a team of engineers with the goal of building 3D CAD software that was easy-to-use, affordable, and available on the Windows desktop. Operating later from [Concord, Massachusetts](#), SolidWorks released its first product *SolidWorks 95*, in November 1995.^{[6][7]} In 1997 Dassault, best known for its [CATIA](#) CAD software, acquired SolidWorks for \$310 million in stock.^[6] Jon Hirschtick stayed on board for the next 14 years in various roles. Under his leadership, SolidWorks grew to a \$100 million revenue company.^[8]

SolidWorks currently markets several versions of the SolidWorks CAD software in addition to eDrawings, a collaboration tool, and DraftSight, a 2D CAD product.

SolidWorks was headed by John McEleney from 2001 to July 2007 and Jeff Ray from 2007 to January 2011. The current CEO is Gian Paolo Bassi from Jan 2015. Gian Paolo Bassi replaces Bertrand Sicot, who is promoted Vice President Sales of Dassault Systèmes' Value Solutions sales channel.

Release history

Name/Version	Version	Version	Release Date
	Number	History Value	
SolidWorks 95	1	46	November 1995 ^[9]
SolidWorks 96	2	270	Early 1996
SolidWorks 97	3	483	Late 1996
SolidWorks 97Plus	4	629	1997
SolidWorks 98	5	817	1997
SolidWorks 98Plus	6	1008	1998
SolidWorks 99	7	1137	1998
SolidWorks 2000	8	1500	1999
SolidWorks 2001	9	1750	2000
SolidWorks 2001Plus 10		1950	2001

SolidWorks 2003	11	2200	2002
SolidWorks 2004	12	2500	2003
SolidWorks 2005	13	2800	2004
SolidWorks 2006 ^[10]	14	3100	2005
SolidWorks 2007	15	3400	2006
SolidWorks 2008	16	3800	July 1, 2007
SolidWorks 2009	17	4100	January 28, 2008
SolidWorks 2010	18	4400	December 9, 2009
SolidWorks 2011	19	4700	June 17, 2010
SolidWorks 2012	20	5000	September, 2011
SolidWorks 2013	21	6000	September, 2012
SolidWorks 2014	22	7000	October 7, 2013
SolidWorks 2015	23	8000	September 9, 2014
SolidWorks 2016	24	9000	October 1, 2015
SolidWorks 2017	25	10000	September 19, 2016
SolidWorks 2018	26	11000	September 26, 2017
SolidWorks 2019	27	12000	October 9, 2018
SolidWorks 2020	28	13000	September 18, 2019

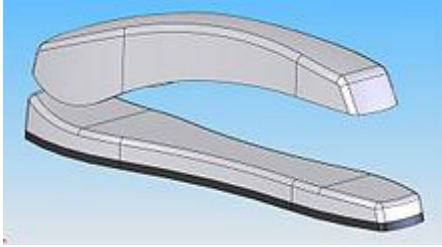
Market

DS Solidworks Corp. has sold over 3.5 million licenses of SolidWorks worldwide.^[11] This includes a large proportion of educational licenses.^[12]

The [Sheffield Telegraph](#) comments that Solidworks is the world's most popular CAD software.^[13]^[better source needed]

Its user base ranges from individuals to large corporations, and covers a very wide cross-section of manufacturing market segments. Commercial sales are made through an indirect channel, which includes dealers and partners throughout the world. In the United States, the first reseller of SolidWorks, in 1995, was [Computer Aided Technology, LLC](#), headquartered in Chicago. Directly competitive products to SolidWorks include [PTC Creo Elements/Pro](#), [Solid Edge](#), and [Autodesk Inventor](#). SolidWorks also partners with third party developers to add functionality in niche market applications like finite element analysis, circuit layout, tolerance checking, etc. SolidWorks has also licensed its 3D modeling capabilities to other CAD software vendors, notably ANVIL.^[14]

Modeling technology



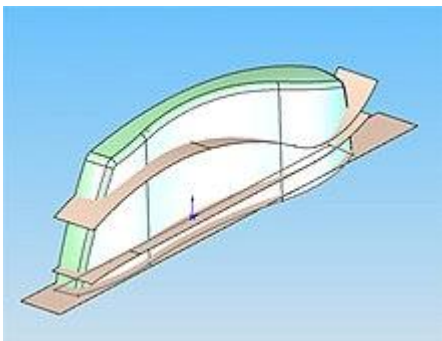
screen shot captured from a SolidWorks top-down design approach.

SolidWorks is a [solid modeler](#), and utilizes a [parametric feature-based](#) approach which was initially developed by PTC (Creo/Pro-Engineer) to create models and assemblies. The software is written on [Parasolid](#)-kernel.

Parameters refer to constraints whose values determine the shape or geometry of the model or assembly. Parameters can be either numeric parameters, such as line lengths or circle diameters, or geometric parameters, such as tangent, parallel, concentric, horizontal or vertical, etc. Numeric parameters can be associated with each other through the use of relations, which allows them to capture design intent.

Design intent is how the creator of the part wants it to respond to changes and updates. For example, you would want the hole at the top of a beverage can to stay at the top surface, regardless of the height or size of the can. SolidWorks allows the user to specify that the hole is a feature on the top surface, and will then honor their design intent no matter what height they later assign to the can.

Features refer to the building blocks of the part. They are the shapes and operations that construct the part. Shape-based features typically begin with a 2D or 3D sketch of shapes such as bosses, holes, slots, etc. This shape is then extruded to add or cut to remove material from the part. Operation-based features are not sketch-based, and include features such as fillets, chamfers, shells, applying draft to the faces of a part, etc.



screen shot captured from a SolidWorks top-down design approach.

Building a model in SolidWorks usually starts with a 2D sketch (although 3D sketches are available for [power users](#)). The sketch consists of geometry such as points, lines, arcs, conics (except the hyperbola), and splines. Dimensions are added to the sketch to define the size and location of the geometry. Relations are used to define attributes such as tangency, parallelism, perpendicularity, and concentricity. The parametric nature of SolidWorks means that the

dimensions and relations drive the geometry, not the other way around. The dimensions in the sketch can be controlled independently, or by relationships to other parameters inside or outside the sketch.

In an assembly, the analog to sketch relations are mates. Just as sketch relations define conditions such as tangency, parallelism, and concentricity with respect to sketch geometry, *assembly mates* define equivalent relations with respect to the individual parts or components, allowing the easy construction of assemblies. SolidWorks also includes additional advanced mating features such as gear and cam follower mates, which allow modeled gear assemblies to accurately reproduce the rotational movement of an actual gear train.

Finally, drawings can be created either from parts or assemblies. Views are automatically generated from the solid model, and notes, dimensions and tolerances can then be easily added to the drawing as needed. The drawing module includes most paper sizes and standards ([ANSI](#), [ISO](#), [DIN](#), [GOST](#), [JIS](#), [BSI](#) and [SAC](#)).

File format

SolidWorks files (previous to version 2015) use the Microsoft [Structured Storage](#) file format. This means that there are various files embedded within each SLDDRW (drawing files), SLDPRT (part files), SLDASM (assembly files) file, including preview bitmaps and metadata sub-files. Various third-party tools (see [COM Structured Storage](#)) can be used to extract these sub-files, although the subfiles in many cases use proprietary binary file formats.

SolidWorks allows saving 3D Model information in *.step format, which lets the model be displayed and modified in other platforms from other vendors.

Associated products

Solidworks has developed also various complementary [add-ins](#), including:

- [PhotoWorks](#) : 3D photorealistic rendering engine.
- [SOLIDWORKS Composer](#) : Content creation software for documentation, technical illustration, catalogs, commercial brochures, training documents, maintenance manuals ... from CAD data with updates of CAD changes.
- 3DEXPERIENCE Marketplace : An add-in allowing users to download 3D parts from an online catalog on make 3D printed parts on-demand ^[15]

See also

- [Comparison of computer-aided design editors](#)