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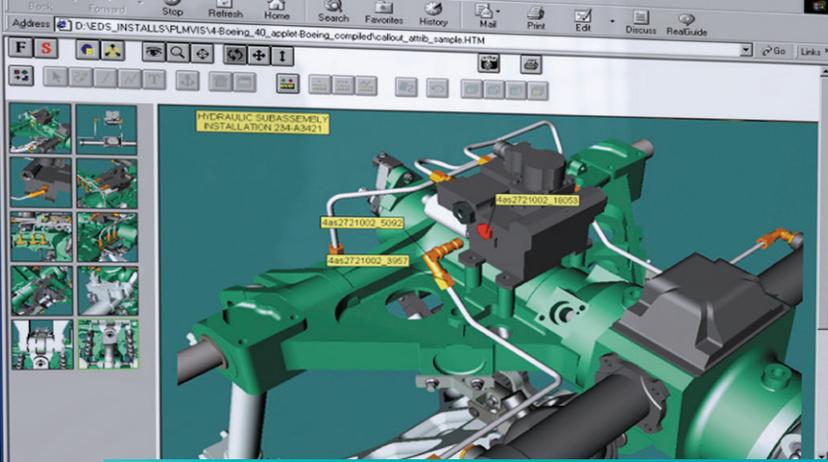
JT Open Program technology

Providing participating members of the JT Open Program with level playing field access to JT technology

Benefits

- Build JT applications, based on the industry standard JT Open Toolkit, that can read and write virtually any JT file ever produced
- Leverage the full content of the JT File Format in a broad range of industry workflows
- Produce JT data complaint with the ISO International Standard JT File Format Specification

Summary

The JT Open Program is a unique community of corporate, academic and individual adopters of JT™ technology committed to the widespread utilization of JT as the lightweight 3D format of choice for visualization, collaboration and data sharing.

All JT Open Program members are provided with equal access to the industry standard JT Open Toolkit (also known as JTTK). The JT Open Toolkit is the single most widely-used application programming interface (API) for developers of JT-enabled software. For more information about JT Open itself, see our JT Open Fact Sheet.

JT Open Program technology

Siemens PLM Software plays a key role in facilitating JT openness by providing a comprehensive JT Open Toolkit, as well as the JT File Format Reference.

The JT Open Toolkit is a read/write toolkit that enables consistent access to JT file content. Any vendor or corporate entity can join the JT Open Program and gain access to the toolkit, as well as the series of executable utility applications provided for immediate use in testing and validating JT implementations and applications.

The JT Open File Format Reference provides a full description of the JT file format. Publication of the reference was made in direct response to a request from JT Open Program members. The File Format Reference is available free of charge, from www.jtopen.com.

The JT File Format Reference was accepted by the International Standard Organization (ISO) in December 2012 as the world's first International Standard (IS) for viewing and sharing lightweight 3D product information in the PLM domain. ISO IS14306:2012 provides a detailed and comprehensive description of the JT data format enabling corporations and software vendors with the ability to further leverage JT in their PLM workflow and software applications. JT acceptance was coordinated through TC 184 / SC4, the ISO body responsible for Industrial Data, through a global ballot process.

www.siemens.com/plmcomponents
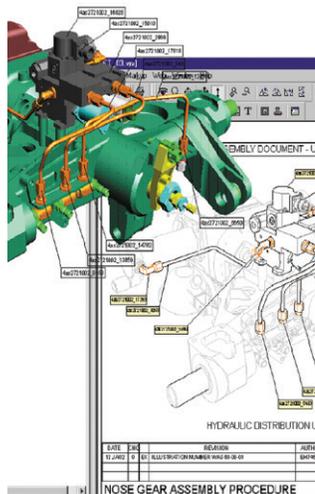
JT Open Program technology

JT Open Toolkit

The JT Open Toolkit (the toolkit) is an object oriented C++ application programming interface. By using JTTK, programmers have full access to all aspects of the JT file for read and write, including the following capabilities.

Reading and writing XT B-rep Data through extended XT B-Rep classes.

The XT B-Rep API allows for the construction of Parasolid® compliant XT topology and geometry that accurately defines solid bodies. XT content is used by the JT toolkit to created tessellated shape data as levels of detail. XT geometry enables precise measurement and associations to product manufacturing information (PMI) in the JT file as well as persistent geometry identifiers (modeling functions require the additional purchase of Parasolid toolkit.)

Tessellation of individual geometry definitions, bodies or complete parts and assemblies.

The JT tessellation engine helps developers create multiple tessellated data sets or levels of detail (LODs). It can be used to create unique associations that retain connectivity to the geometry that was used to generate the faceted shapes. Applications such as 3D viewers can be used to select facetted faces, edges or vertices to facilitate user interaction. When created as analytic geometry, shapes can be tessellated on the fly through their analytic descriptions in viewing applications. Analytic geometry may also be selected based on their features, such as the centerline of a cylinder. Tessellated data can be used for general measurement of distances between edges and faces and to query analytic parameters like the radius of a circle.

Product Manufacturing Information (PMI).

The JT toolkit API helps users manage PMI in JT files using a comprehensive set of classes. Assembly level PMI as well as part level PMI is supported. With supporting systems such, as NX™

software, JT PMI can be read directly into CAD models as live data. JT PMI content is compliant with the published PLM XML schema for annotation. The PLM XML schema provides full visibility of supported content as XML elements. PMI content in a JT file can be extracted and represented as PLM XML with PMI content. JT files include both semantic data and graphical representations.

Full product structure definition and query

Configuration file support to externally control specific JTTK functions in a deployed application

Extensive property capabilities supporting the creation of properties as named value pairs associated with nearly any data entity available in a JT file

Numerous capabilities that support 3D visualization use cases, including:

- Creation of attributes for defining materials, color, lighting and textures similar to, but not limited to, features of OpenGL

- An API-driven glyph definition capability that enables the creation and storage of CAD specific symbols and fonts in a JT file

- The ability to define image stamps that can be persistently displayed in compliant viewers, such as JT2Go and Teamcenter® software's lifecycle visualization suit, as "watermarks"

- Construction of CAE reporting color bars within the JT file that can be displayed by supporting viewing tools such as the Teamcenter lifecycle visualization suite

Layers and layer filters

Creation of an ultra lightweight precise

(ULP) data segment. ULP is a data segment tessellated on the fly by supporting applications such as Teamcenter® software lifecycle visualization suite and JT2Go. ULP is utilized in specific workflows where extremely small data files are preferred over load performance.

In addition to C++ API for JT files, JT Open Toolkit members receive PLM XML APIs. The PLM XML API provides a class structure defined by the PLM XML schema. Additional functionalities are provided in the PLM XML API to create data adapters and perform convenient XML tasks on content compliant with the schema. An example PLM XML JT Adapter is provided that creates XML output from the properties and product structure in a JT file with URL connections to JT geometry retained in JT format.

The JT Open Toolkit also includes a series of example programs to help programmers get to know the toolkit. Users have reported development times as low as one week to adopt the toolkit (results vary, depending on the level of support planned for a JT application).

In addition to the APIs provided with JT Open Program membership, members have access to JT Utilities, which are command line executable programs provided for supported platforms. These utilities include simple tools for tasks such as setting properties, constructing assemblies and modifying JT file LOD structures, as well as for obtaining information on a JT file's content.

The JT Open Toolkit supports all versions of JT available on the market today. By using the toolkit, companies ensure that their applications will read and write JT files compliant with the JT File Format Specification.

Platform support

Platform	OS	Compiler
Windows 32-bits	Windows 7 (Service Pack 1), Windows 8 or Windows 10	Visual C++ 2013
		Visual C++ 2015
Windows 64 bit	Windows 7 (Service Pack 1), Windows 8 or Windows 10	Visual C++ 2013
		Visual C++ 2015
Linux 64 bit	CentOS Linux 7	gcc 4.8.2
MAC 64 bit Intel	Mac OS X 10.10.5	clang 700.1.81
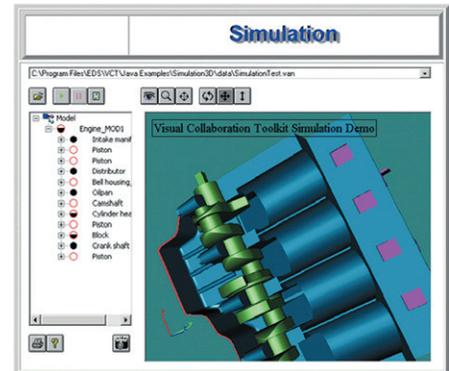
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