

# **JT Industrial Application Package**

## **Edition 3**

### **JT file format specification**

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## Introduction

The JT format is an industry focused, high-performance, lightweight, flexible file format for capturing and repurposing 3D product definition data for visualization to enable collaboration and validation throughout the extended enterprise. The JT format is streamable and contains compression for compact and efficient representation.

Some of the highlights of the JT format include:

- built-in support for assemblies, sub-assemblies and part constructs;
- a flexible partitioning scheme, supporting single or multiple files;
- b-rep solid shape representations to provide precision to the light-weight viewing processes;
- product manufacturing information in support of paperless manufacturing initiatives;
- precise and imprecise wireframe shape representations;
- discrete purpose-built levels of detail;
- triangle sets, polygon sets, point sets, line sets and implicit primitive sets (such as cylinder, cone and sphere);
- a full array of visual attributes such as for materials, textures, lights;
- hierarchical bounding box and bounding spheres;
- data compression that allows producers of JT files to fine tune the trade-off between compression ratio and fidelity of the data.

Beyond the data contents description of the JT format, the overall physical structure/organization of the format is also designed to support operations such as:

- offline optimizations of the data contents, i.e. file granularity and flexibility optimized to meet the needs of enterprise data translation solutions;
- asynchronous streaming of content, i.e. viewing optimizations such as view frustum and
- occlusion culling and fixed-framerate display modes;
- layers, and layer filters.

NOTE This document is based on the JT Open version 10.5 specification.

## Remarks with regard to ISO JT (ISO 14306)

JTIAP defines the syntax and semantics of the JT file format and is compatible to the JT file format specification in ISO 14306 (in its version from 2012 and successors) as well as to the essential implementations currently available to the market. Thereby, JTIAP comes along with enhanced functionalities required by the prostep ivip JT Workflow Forum and prostep ivip JT Implementor Forum.

In industry, JT is broadly used e.g. for:

- visualization,
- data exchange between partners and/or CAD systems and
- long-term data retention.

***When implementing ISO 14306, for supporting use cases that require the representation of 3D exact geometry, the usage of XT B-Rep shall be treated as normative and the usage is mandatory.***

Addition: For e.g. complex kinematic simulations or complex assembly structures, the combined application of JT together with STEP AP 242 XML (ISO 10303-242) offers a comprehensive solution. Both formats are harmonized with each other. This especially offers solutions to industrial players which have set up highly complex process chains, and therefore need effective standards.

**Siemens PLM Software  
JT Data Format Reference Patent Clarification Notice**

Siemens Product Lifecycle Management Software Inc. (SPLM) owns or holds exclusive rights to one or more patents covering technology that is disclosed and documented in the JT File Format Specification and in ISO standard 14306 JT file format specification for 3D visualization, version 9.5 and later. SPLM desires to promote the use of JT Data Format for information interchange among diverse products and applications.

Accordingly, the following patents are licensed on a royalty-free, non-exclusive basis for the term of each patent and for the sole purpose of developing software that produces, consumes, and interprets JT Data files that are compliant with the specification, and the distribution and use thereof:

U.S. Patent Number: USA 20110199382, 8019788  
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