Drawings SDK & Drawings in WEB

Supported file formats

Drawings SDK supports **.dwg**, **.dgn**, **.dxf** file formats.

It supports .dwg file versions from AutoCAD 12 (AC1009) through AutoCAD 2025 (AC1032).

Drawings inWEB supports only .dwg /.dxf for now.

Drawings features

Create

Develop and add new content to your .dwg files, including custom entities and complex data structures, with full support for all standard .dwg elements.

Edit

Modify existing .dwg content, including geometry, metadata, and object properties, using a wide range of editing tools tailored for precision and flexibility. Edit .dwg according to a rule or a business scenario.

Save

Save your changes seamlessly to .dwg files, ensuring compatibility across different versions of AutoCAD and other .dwg-compatible applications.

Visualize .dwg, .dxf and .dgn on any platform

Render .dwg and .dgn files seamlessly across platforms with fast performance and a comprehensive feature set. Advanced techniques like spatial filtering ensure smooth rendering, even for large models. Navigate with ease using standard tools like zoom, pan, and 3D rotation. Achieve realistic visuals with customizable materials, lighting effects, and visual styles, including hidden edges and transparency.

Point Cloud Support

Import, visualize, and manipulate large point cloud datasets within .dwg files, facilitating detailed analysis and 3D modeling.

Conversion

Export: .dwg, STL, 2D, PDF, 3D PDF, OBJ, Collada, SVG, Raster
Import: Collada, .dwf, STL, SVG, 2D PDF

Revision Control

Implement version control in your .dwg files, allowing you to track changes, revert to previous versions, and manage file history.

Incremental Saving for .dwg Files

Drawings SDK has an incremental file saving feature for .dwg files that saves only modified data, which is faster than a full save for large files that don't contain a lot of modifications.

Partial and Multithreaded (MT) Loading of .dwg Files:

Supports partial loading, allowing users to load only the necessary parts of large .dwg files to enhance performance. Multithreaded loading further improves speed by utilizing multiple CPU cores for faster access to complex drawings.

Digital Signatures for .dwg Files

Provides functionality for validating and applying digital signatures to .dwg files, ensuring file integrity and authenticity. This feature is essential for maintaining the security of drawing files in professional workflows.

Working with Geo-Data

We provide special classes for working with geo-data as well as access to third-party libraries such as csmap, curl and tinyxml. Sample code is available as well.

Recover/Repair Incorrect Files

Use built-in tools to automatically detect and fix corruption or errors in .dwg files, ensuring data integrity and usability.

Dynamic Blocks Evaluation

Provides full support for dynamic blocks, allowing users to interact with them within DWG files. Modifications can be implemented using our library to recalculate dynamic blocks based on new parameters.

TTF/SHX Fonts Support

Ensures compatibility with both TrueType (TTF) and SHX fonts, accurately rendering text within .dwg files. This includes support for a variety of font styles, ensuring that the appearance of text remains consistent across different platforms.

Native Support for 3D Modeling Operations

Provides built-in support for basic 3D modeling operations within .dwg files. This functionality is developed internally by ODA and offers essential 3D modeling features at no additional cost, but with limited capabilities.

Constraints

Apply and manage geometric and dimensional constraints to maintain relationships between objects, ensuring design accuracy.

Wrappers

Access the functionality of the Drawings SDK not only in cross-platform C++, but also through easy-to-use wrappers for C#, Python and JS, streamlining development processes.

Common Data Access (CDA)

Utilize CDA to abstractly access and manage data from various formats, providing a unified approach to interacting with .dwg and other file types.

Spatial ACIS-Based 3D Modeling Support

Offers advanced 3D modeling operations through integration with the Spatial ACIS library. This option provides a more comprehensive and powerful set of 3D modeling tools, but it requires a paid license for full functionality. This solution is ideal for users who need a broader range of modeling capabilities beyond the native support.

Sample Applications

Here you can find an overview of the Drawings Sample applications available to all ODA Members, including trial users. If you're interested in any of these, links to the documentation will become available immediately after applying for a free trial.

Name	Description
OdCopyEx	Reading a drawing file and saving it as a new .dwg, .dxf, or .dxb file.
OdReadEx	Reading a drawing file and displaying all information about the entities and object types located in the file.
OdWriteEx	Creating a new drawing, populating it with various entities, and saving to a file.
IncrementalSaveEx	Opening a drawing, populating it with additional entities, and incrementally saving it in two different streams.
OdVectorizeEx	Dumping geometry of the active layout to the console.
OdExtractTextEx	Extracting text content from a drawing file to the command prompt window (or redirects to a file).
OdGetGeomEx	Dumping an entity's geometry using vectorization.
OdOpenGL	Module that provides a GLWidget to render drawing context.
ExCommands	Module implementing a number of commands.

ExCustObjs	Custom entities implementation with testing and debugging commands.
jni	C++ native JNI shared library (.so). It is used in OdaAndroidDgnApp to provide Drawings SDK functionality.
OdaAndroidDgnApp	Android specific application illustrating reading and rendering of .dgn files.
ExDgnCellTransform	Creating a .dgn file with transformed cells.
ExDgnCloning	Sample commands to test deep clone and wblock clone functionality.
ExDgnColladaExport	Reading a .dgn file and exports its contents to a Collada (.dae) file.
ExDgnCopy	Simplest cross-platform console application that converts a .dgn file to a specified format and version.
ExDgnCreate	Creating a new drawing, populating it with various elements and saving it to V8 .dgn file.
ExDgnDump	Reading a .dgn file and dumping database contents to the console.
ExDgn.dwgProject	Simple console application for working with .dwg and .dgn files.
ExDgnGripPoints	Sample implementation of the OdDgGripPointsPE interface for .dgn files.
ExDgnMaterials	Creating a new .dgn file with internal materials.

ExDgnOverruling	Sample overruling implementation for .dgn files.
ExDgnReadWrite	Reading and modifying a .dgn file.
ExDgnTextFormat	OdDgV7FontMapper class usage for .dgn files.
ExDgnToBmp	Converting a .dgn file to a .bmp file.
ExDgnVectorize	Dumping the active layout geometry for .dgn files.
ExDgnViewCreate	Creating a new V8 .dgn file.
ExDgnXRefDump	Working with reference attachment elements.
ExDimensioning	Creating a new .dgn file with dimension type elements.
Ex.dwgXData	Dumping XData linkages.
ExReactors	Database reactors usage sample for .dgn files.
ExSimpleProject	Creating a new V8 .dgn file.
ExSplines	Creating a new V8 .dgn file with splines.
ExTags	Creating a new V8 .dgn file with tags.
ExDeepCloning	Deep clone sample.
ExDimAssoc	Recomputing associative dimensions.
ExDynamicBlocks	Creating and editing dynamic blocks.
ExEntityintersection	OdDbEntityIntersectionPE interface implementation.

ExEvalWatchers	Hatches and dimensions evaluation notification functions.
ExFieldEvaluator	Text fields evaluator.
ExPointCloudHost	OdDbPointCloudHostPE interface implementation.
GeolocationObj	Working with geo-map objects.
GripPoints	OdDbGripPointsPE interface implementation.
ModelerCommands	Working with 3D solids.
OdAveEx	Working with AVE sample.
OdBagFiler	Using the oddbEntGet() function sample.
OdBrEx	Traversing curves in a drawing file.
OdCurveFunctions	OdDbCurvePE interface implementation sample.
OdDbGeoMapPE	Geo-map object protocol extension sample.
OdPC3Read	Dumping a .pc3 file to an .xml file.
OdSheetSet	Reading, dumping and writing a .dst file.
Overruling	Illustrating the overruling feature.
OdColladaExportEx	Exporting a drawing file to a Collada (.dae) file.
OdDwfExportEx	Exporting a drawing file to a .dwf file.
OdPdfExportEx	Exporting a drawing file to a .pdf file.
OdSvgExportEx	Exporting a drawing file to a .svg file.

OdWmfExport	Exporting a drawing file to a .wmf file.
ExDgnImport	Importing a .dgn file to a .dwg file.
OdColladaImportEx	Importing a Collada (.dae) file to a .dwg/.dxf file.
OdDwfImportEx	Importing a .dwf file to a .dwg/.dxf file.
jni	C++ native JNI shared library used to provide ODA Drawings SDK functionality for Android applications.
OdaAndroidApp	An Android specific sample application illustrating reading and rendering .dwg, .dxf, .jpg, .dae and .dwf files.

Difference between Drawings and Drawings inWEB

	Drawings SDK	Drawings inWEB
.dwg, DXF files support	+	+
DGN files support	+	-
Point Cloud support	+	-
2D and 3D .dwg Viewing	+	+
Full creation capabilities	+	+
Zoom, Pan, and Orbit	+	+
Layer Control	+	+
Object Selection and Highlighting	+	+
Annotations and dimensions	+	+
Block and Xref Handling	+	+
Entity and Property Editing	+	+
Text and Attribute Editing	+	+
TTF\SHX fonts support	+	+
Undo and Redo Functionality	+	+
Support for Custom Objects	+	+
Working with Constraints	+	+

Digital signatures for .dwg files	+	-
Incremental saving of .dwg files	+	+
Partial and MT loading of .dwg files	+	+
Export	DWF, STL, 2D PDF, 3D PDF, OBJ Collada, SVG, Raster	-
Imports:	Collada, .dwf, STL, SVG, 2D PDF	-
Working with Geo-Data	+	-
Native support of 3d modelling operations	+	-

Working with Other Formats

Drawings SDK offers a variety of possibilities for importing and exporting other formats to/from .dwg and .dgn.

The following table describes all the supported formats:

Format	**Export**	**Import**
.dgn	yes	yes

.dwf	yes	yes
.pdf	yes	yes
.dae (Collada)	yes	yes
.svg	yes	beta
Raster Formats	yes	no
.stl	yes	yes
.hsf	yes	no

.dwg for Architecture, Civil, Map, and Mechanical

ODA Provides separate products for each of them:

- Architecture SDK is available via a Core Package, so when you subscribe to any membership level - you'll get access both to Drawings and Architecture SDKs. More about that in the pricing section below.
- Civil, Mechanical, Map SDKs are extensions for the respective .dwg formats. Subscription to each of these Extensions requires an additional fee and is available only to Sustaining, Founding, or Corporate members.

Pricing

ODA operates under a membership-based model, where the membership fee is per company, not per developer. You can find all pricing details on our website.

Membership Levels:

- **Commercial:** Ideal for desktop/mobile applications with fewer than 100 copies of the end-user product distributed annually. Only the Core Package is available at this level.
- **Sustaining:** Suitable for unlimited distribution of desktop/mobile applications or web/SaaS solutions. This level allows access to various Extensions in addition to the Core Package.
- **Founding:** Offers access to the source code of the SDKs, along with all the benefits of the Sustaining membership.

Drawings SDK is a part of the Core Package, making it available to all membership levels.

What is the Core Package?
The Core Package includes access to the Visualize, Architecture, IFC, STEP, and Publish SDKs. Please note that individual products from the Core Package cannot be purchased separately.

Extensions are additional products that can be licensed separately:
BimRv: supports .rvt/.rfa formats.
BimNv: supports .nwc, .nwd, .nwf formats.