

Features and Benefits

The New Standard in CAD Productivity

Productivity always has been and always will be a cornerstone in the profitability and viability of any industry that creates, consumes, or manages design information. With the new standard in CAD productivity from Autodesk, you have the tools you need to realize your ideas and ensure maximum speed, power, and efficiency throughout your process.

The new standard began with the AutoCAD® 2004 software release, giving users measurable efficiency gains, like file sizes averaging 52 percent smaller and productivity increases of up to 70 percent.* AutoCAD 2005 software built on the dramatic productivity gains of AutoCAD 2004 with new tools that help you efficiently manage sets of drawings. With AutoCAD 2006 you can now work faster and smarter on a whole range of day to day tasks. From the new Dynamic Blocks capability that allows you to create, manipulate and extract data from blocks quickly and efficiently, to the Dynamic Input features that allow you to focus on your design rather than the software, AutoCAD 2006 is the most efficient and powerful AutoCAD yet.

From creating single drawings, to managing entire sets of drawings, from sharing design information over the web, to creating compelling, graphics-rich presentations that market your work—AutoCAD helps you go further with the new standard in CAD productivity.

This Features and Benefits Guide describes the key features of AutoCAD 2006 by reviewing the problems each feature solves for you and your organization and how solving these problems will drive bottom-line benefits. It is not intended as an exhaustive listing of all of the many new features in AutoCAD 2006. A comprehensive list of new features is available at: www.autodesk.com/autocad-features.

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*Measurement is a preliminary indicator based on automation testing over a controlled network. Results are approximate and are subject to error and change. Product information and specifications are subject to change without notice. Autodesk provides this information "as is," without warranty of any kind, either express or implied. While every effort has been made to make the tests as fair and objective as possible, your results may differ.

Dynamic Blocks

A drawing created in AutoCAD is frequently composed of a series of standard components or blocks used in various places both in a single drawing and in a complete set of drawings. These components can represent such diverse items as doors or desks, nuts and bolts, pipes and fittings. In AutoCAD these standard components are mostly represented by blocks. Blocks save time and help standardized drawings by eliminating the need to redraw standard components over and over again. However, they can be difficult to manage and manipulate. Often thousands of blocks are available to users to find, insert and edit to satisfy their design needs.

AutoCAD 2006 makes blocks dynamic. The new block authoring tools in AutoCAD 2006 allow you to add dynamic behavior to your existing block libraries. This simplifies block complexity and reduces the amount of time spent manipulating blocks inside of a drawing.

Dynamic Blocks are fundamentally different from Objects in an Autodesk® Architectural Desktop drawing. Objects are 3D entities that come with the application and work right out of the box. A Dynamic Block is a way to add additional capabilities to your existing 2D block libraries.

Manipulating Dynamic Blocks

Problem

After insertion a block may need to be scaled, rotated, mirrored or manually snapped to other geometry in order to place it correctly in the drawing.

Solution

The new grips and actions features of dynamic blocks allow you to easily assign actions to your existing blocks such as flipping, rotating, aligning, etc. The new grips allow users to graphically manipulate these blocks after they have been placed in the drawing.

Benefit

Using Dynamic Blocks makes working with blocks faster and more efficient. Drafters can work with blocks in a simple and graphically based manner, allowing them to place and manipulate the blocks correctly the first time they insert them into their drawing. Dynamic Blocks significantly reduces the amount of time required to update blocks that no longer meet your design criteria.

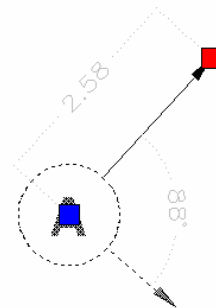


Figure 1: A Dynamic callout block

Variations of Similar Blocks

Problem

Many block libraries consist of minor variations of similar block geometry. For instance, a standard door may come in five different widths, or a flange may come in six different types. There can also be standard variations in a block definition, for instance you can have a two-tube light fixture and a four-tube light fixture.

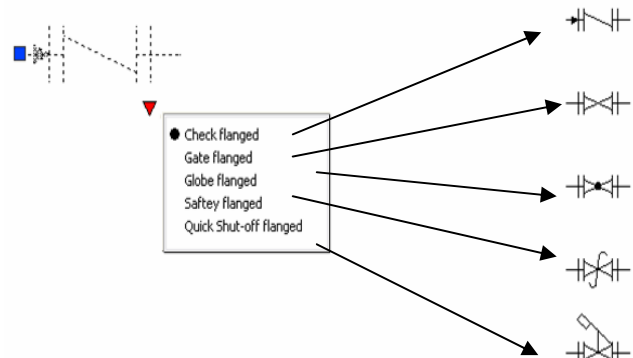


Figure 2: A pipe flange block with multiple versions

AutoCAD® 2006 Features and Benefits**Solution**

The new AutoCAD 2006 Dynamic Block functions enable you to set up a block so that it can be configured to a pre-specified set of shapes and sizes (e.g. a four chair table, or a twelve chair table).

Benefit

By allowing multiple variations of similar blocks to be contained in a single block, the total number of blocks that both the CAD manager and the drafter have to work with is significantly reduced. For the CAD manager this dramatically simplifies the work associated with managing and updating block libraries. For the drafter it is much more efficient to insert a Dynamic Block (such as a garage door) and then select the proper size of door “on the fly”, or as the design changes, without starting over.

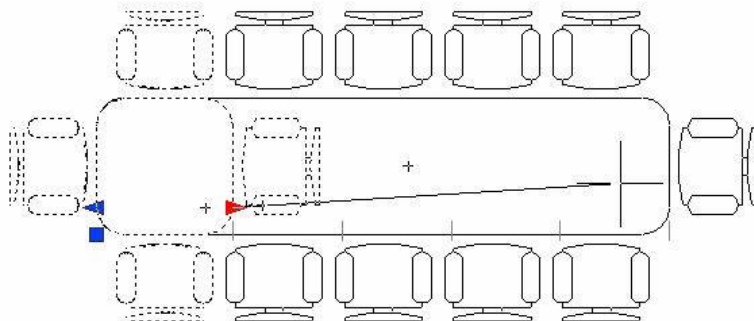


Figure 3: A Dynamic block representing a table and chairs

Creating Dynamic Blocks**Problem**

You have existing blocks that you already use. You do not want to recreate your existing block libraries.

Solution

The new Dynamic Block authoring environment provides an easy, graphical way of creating dynamic blocks from your existing block libraries. It does not require any programming experience. The new authoring palette includes the ability to add in parameters and actions by dragging and dropping directly onto the block. To help you realize the power of Dynamic Blocks, AutoCAD 2006 includes sample Dynamic Blocks with tutorials on how they were created.

Benefit

You can quickly and easily convert your existing block libraries into dynamic blocks. This enables you to transition at your own speed, using the standards and conventions that are appropriate for your own company and work practices.

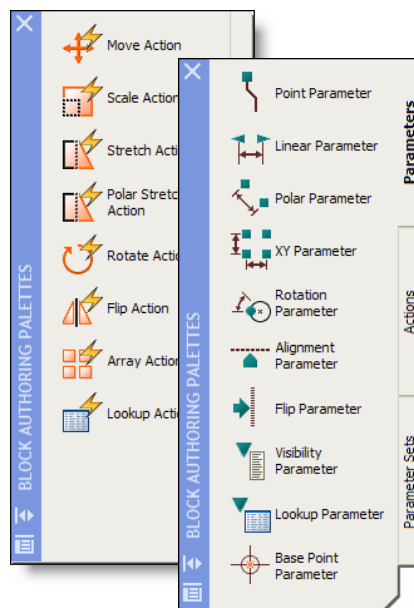


Figure 4: Block authoring palettes for actions and parameters

Creating Tables from Blocks**Problem**

Blocks frequently contain important information that needs to be gathered and documented somewhere on the drawing. For instance, a part number or unit cost can be stored as a block attribute, and when combined with the total number of blocks inserted in a drawing, this information can be used as part of a schedule or cost estimate. Currently AutoCAD can extract this information to an external file, but the information must then be manually re-imported into AutoCAD to create a table or schedule. As designs changes this date often needs to be manually extracted and tables recreated.

AutoCAD® 2006 Features and Benefits**Solution**

The new data extraction wizard features a brand new interface that allows you to quickly and easily select just the block attributes you are interested in extracting for both Dynamic Blocks and existing blocks. The new block preview function allows visual confirmation of which blocks have been selected. The wizard then previews the extracted data and places it in an AutoCAD table. The table can have a predetermined formatting associated with it, and can be easily updated based on criteria that you select. Templates can be created to standardize and automate the process for common schedule or tables. If a design change requires the table to be updated, AutoCAD notifies you that the information is out of date and provides you with a link to update the table with one click.

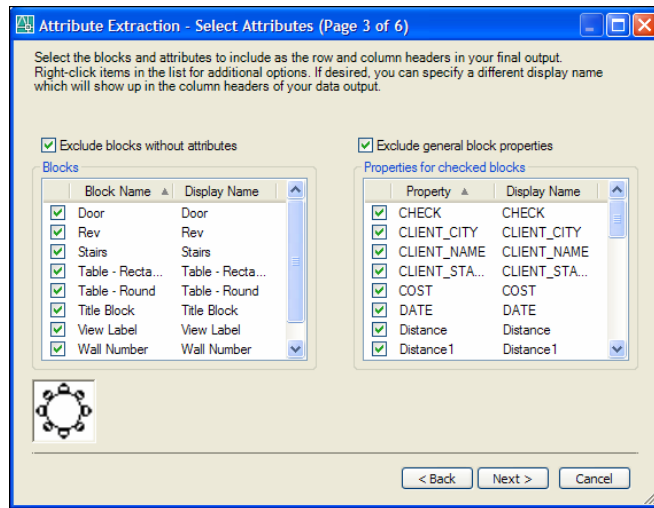


Figure 5: New wizard interface

Benefit

Tables contain information that is critical to the successful design, estimation, and completion of a project. By automating this process, you spend less time, make fewer mistakes, and insure that the information is always current and accurate.

Sheet Set Manager

Problem

Throughout the duration of a project, team members may rotate in and out and drawing file content may change frequently. Such variables can introduce work style inconsistencies. Team members can spend a significant amount of time collating sheet sets, renumbering sheets, and updating sheet index information.

Solution

The Sheet Set Manager, introduced in AutoCAD 2005, allows you to organize multiple drawings within a project. It provides an easy way to collate drawing sheets into logical sets and subsets that you can define by company, project, or other industry standards. You can quickly assemble sheet sets using existing drawings, propagate sheet standards over multiple projects, and provide simultaneous access to sheet sets within your local area network. You can then easily add or remove sheets from a sheet set or any subset by using the Sheet Set Manager tool palette or the context-sensitive menu.

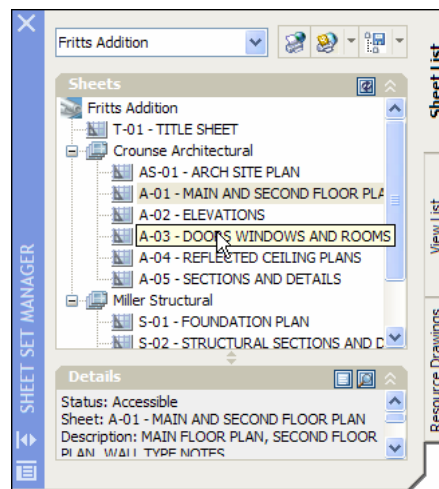


Figure 6: The Sheet Set Manager

AutoCAD® 2006 Features and Benefits**Benefit**

Using the Sheet Set Manager in AutoCAD, organizations can more efficiently manage their sheet sets. Organizations can use sheet sets to quickly communicate current project status or easily retrieve information from an earlier point in the project. The Sheet Set Manager also helps to eliminate confusion and reduce time spent referencing and cross-referencing individual drawings. Adjusting page numbers and sheet index information is now effortless.

Annotating and Composing Drawings

An AutoCAD drawing can consist of both text and graphical information. The creation, placement, and editing of textual information (both as notes and in tables) is tedious, time-consuming, and prone to error. Many drawings also use industry-specific hatch patterns to indicate materials or types of objects that must be built or manufactured. As designs change these hatches need to be edited many times and currently these changes are not as easy to make as you may like.

The following sections highlight powerful, new AutoCAD 2006 commands that provide flexibility for inserting and manipulating annotation information.

Better Mtext

Problem

Many drawings contain notes or other long lists of text that provide detailed information about portions of the drawing that cannot be described adequately by the drawing itself.

Formatting the text is critical to conveying the design intent of the drawing. Currently, AutoCAD does not allow true “what you see is what you get” text editing. Much time is spent correctly aligning text after it has been created to insure that it is formatted properly in the drawing. In addition, text created in AutoCAD does not support bullets or numbering, requiring you to manually update a numbered list when anything has changed, or to import the text from another program like Microsoft Word.

Solution

The new Mtext command in AutoCAD 2006 insures that text created in the Mtext editor has exactly the same appearance in the editor as when it is placed on the drawing.

Graphical rulers allow you to align text, easily create number or bulleted notes or quickly change formatting with the text formatting toolbar. Once the notes look just the way you want them to in the editor, a single click places them on the drawing exactly where you want them.

Benefit

AutoCAD 2006 makes it easy create and edit text in AutoCAD. Once the text is created it can be placed in the drawing with the exact format that you prefer. You no longer have to add or delete a note in the middle of a list and have to go back and manually renumber from the beginning.

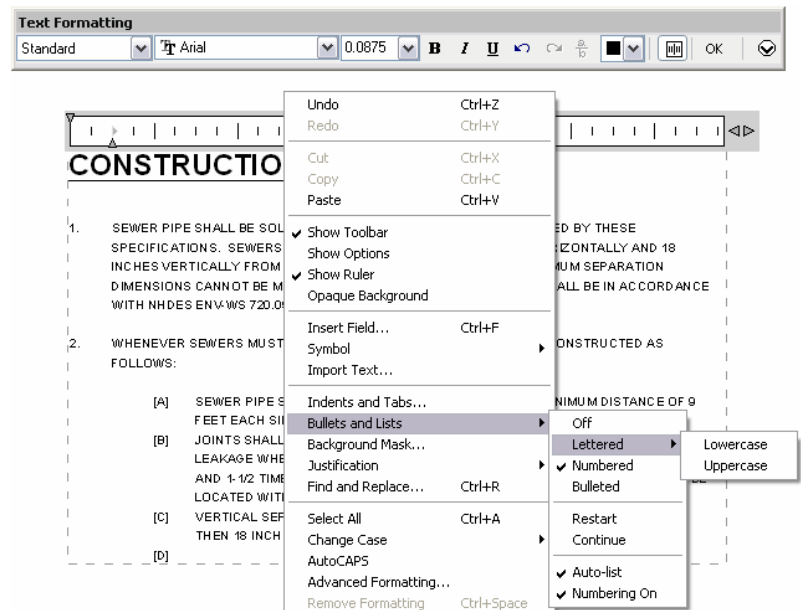


Figure 7: New Mtext rulers

AutoCAD® 2006 Features and Benefits

Enhanced Tables

Problem

AutoCAD 2005 introduced the concept of tables. Tables allow information to be displayed in tabular formats that are common across many different industries. These include tabular formats such as schedules, parts lists, bills of material and costs estimates. In

many cases, this information needs to be summed or totaled to complete the table (e.g. a cost estimate would not only show the cost per unit but also the total cost for the items show on the drawing). AutoCAD 2005 did not support arithmetic expressions in tables; calculations had to done by hand and then entered manually into the table. If the source values were updated, then the calculated values had to be updated manually (a source of both additional work, and possible error).

Solution

AutoCAD 2006 offers tables to supported sums, averages and counts across rows and columns, and the addition of standard arithmetic expressions based on cell values. The supported expressions are: addition, subtraction, division, multiplication, exponents and equals (+, -, /, *, ^, and =).

I.E.C.C. COMMERCIAL BUILDING INTERIOR LIGHTING POWER CALCULATIONS			
NOTE: BASED ON 2000 IECC SECTION 805.4			
TOTAL SQUARE FEET OF TENANT AREA		IECC ALLOWABLE WATTS/SQ.FT.	TOTAL AREA WATTS ALLOWED PER IECC
4808	X	2.10	= 10096.800000
FIXTURE TYPE	FIXTURE QUANTITY	WATTS PER FIXTURE	TOTAL FIXTURE WATTS
A	38	X 70	= =86*D6
AA	11	X 70	= 770.000000
B	10	X 75	= 750.000000
C	171	X 30	= 5130.000000
D	1	X 10	= 10.000000
X	2	X 5	= 10.000000
X1	1	X 5	= 5.000000
TOTAL TENANT AREA WATTS			9325.000000
NOTE: FIXTURE "C" IS CALCUALTED BY LINEAR FEET OF FIXTURES ONT QUANTITY OF FIXTURES			
TOTAL TENANT AREA WATTS		TOTAL SQUARE FEET OF TENANT	TOTAL TENANT AREA WATTS/SQ.FT.
9325.000000	/	4808.000000	= 1.939476

Figure 8: Using functions in a table

Benefit

Automatically update table calculations as your designs and documentation progress, helping save time and avoiding costly mistakes.

Improved Hatching

Problem

Hatches in AutoCAD are used in countless ways – to indicate the layout of grass and pavement or the cross section of a concrete or brick structure. Currently, creating and editing hatches requires repeated uses of the hatch dialog. In addition, some basic editing capabilities such as specifying the origin of a hatch, or selecting an area to be hatched can require detailed knowledge of AutoCAD in order to perform them correctly. There is no easy way to calculate the area of a hatch and display it in a drawing for use in cost and material estimates.

Solution

AutoCAD 2006 has an improved hatch feature that allows easy hatching of multiple areas with a single hatch command. The hatch command also makes it easy to add and remove hatch boundaries and adjust the origin of a hatch to improve its appearance in the drawing. You can now easily calculate the area of single or multiple hatches and display the value as a field on the drawing.

AutoCAD® 2006 Features and Benefits

Benefit

Hatches are easier to create, easier to edit, and able to have their areas calculated. Quick area takeoffs can aid in the early stages of design in many cases. This saves time and effort and cuts down on errors caused by current work-arounds.

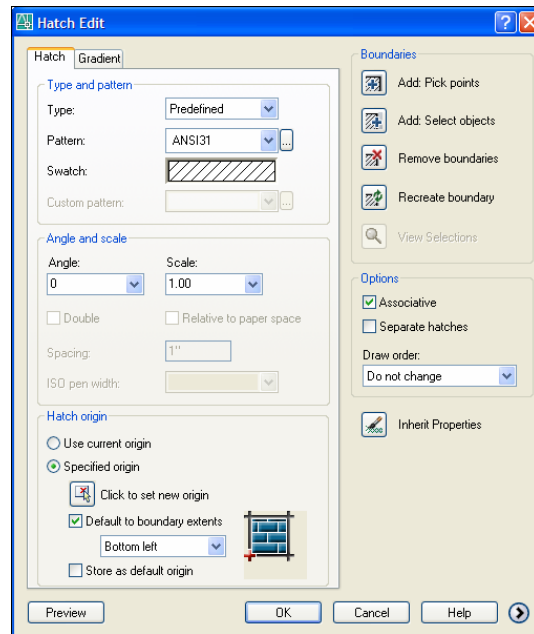


Figure 9: Improved hatching menu

Enhanced User Interface

AutoCAD has always been an extremely flexible tool, allowing users who were very familiar with its capabilities to perform a large variety of tasks quickly and efficiently. This power though, came at a price. It required extensive training and experience before a designer could fully utilize it. This can lead to several types of problems. One is that experienced users learn to always pay attention to what is being displayed in the command line. They learn to shift their focus from the area of the drawing they are working in down to the command line at then back again. While this practice means that they don't miss any of the prompts for information, it can also be a difficult work habit for a new or casual user to develop. In addition, the non-graphical nature of many commands means that even experience, users may not be aware of some of the less frequently used options that are available. Whole areas of the product that could make an experienced user even more productive, or help solve a particular design issue, may go unnoticed and unused.

With AutoCAD 2006, the basic command user interface has been enhanced. This gives the power of the command line at the graphics cursor, so that both new and experienced users can be more efficient with less training time, and fully utilize the features available in AutoCAD.

Dynamic Input

Problem

AutoCAD requires designers to enter dimensional and command option information at the command line, in a format that does not give graphical feedback on the required entries. This makes it difficult for new and casual users to correct mistakes and work efficiently, and conceals infrequently used options from even experienced users.

AutoCAD® 2006 Features and Benefits

Solution

In AutoCAD 2006, dimensions are dynamically displayed on geometry as it is created or edited. New values can be entered directly at the graphics cursor, and the revised values are displayed instantly in the drawing geometry, giving immediate feedback on the information that is entered.

Command options are also displayed at the graphics cursor, reminding the experienced designer of what alternative methods are available (such as being able to both circumscribe and inscribe a polygon around a circle), while not slowing down the input of standard command information.

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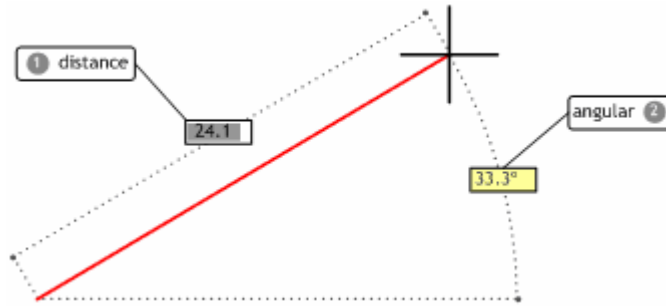


Figure 10: Dynamic Dimensioning

Benefit

Everyday drafting tasks are made more efficient. Basic tasks are easier to learn and easier to use, both for new and experienced designers. By having the information available where the work is being done, you can limit the amount of disruption you experience while performing repetitive tasks.

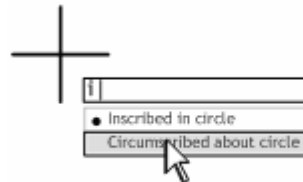


Figure 11: Pointer Input

Graphical Calculator

Problem

The CAL command in AutoCAD is a powerful tool for performing basic and advanced mathematical calculations, units' conversion, and distance and length calculations based on objects selected in a drawing. Unfortunately, many people using AutoCAD don't even know that this feature exists, since it is a command line feature only, with no toolbar or menu support.

Solution

AutoCAD 2006 provides a new graphical user interface for the existing CAL command, and allows access to this powerful in-product calculator through both menu and toolbar selection. The calculator is available within individual commands (where calculated data is required) and within other areas of the product (such as the properties palette). It provides standard mathematical expressions, units' conversion, shortcut functions and acquisition of points and intersections. It saves and restores constants for future calculations and has a memory function.

Benefit

The new user interface for the calculator allows new and experienced users to access the analysis capabilities in AutoCAD. By providing this functionality within AutoCAD, specific interactions with the most commonly used commands can be streamlined. For example, you can calculate an expression and drop it into the properties palette to change the properties of an object.

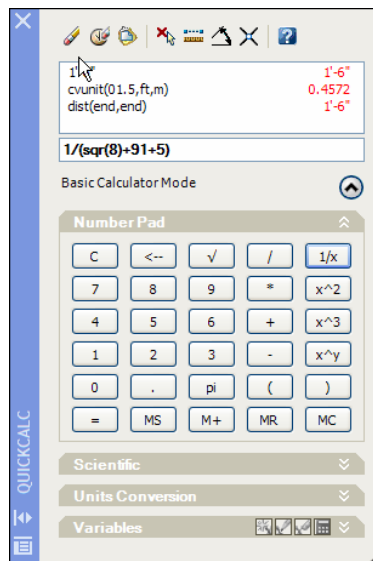


Figure 12: QuickCalc interface

AutoCAD® 2006 Features and Benefits

Enhanced Tool Palettes

Problem

Most AutoCAD users have invested time customizing their software for industry-, business-, or project-specific needs. Some organizations have created toolbars as a way to make custom functionality accessible to staff. However, this toolbar customization takes time and expertise to perform, and takes up a large amount of screen area.

Solution

AutoCAD makes use of the flexibility of tool palettes; now you can assign any type of content—including commands, macros, and calls to LISP and ARX routines—to a tool palette. You can take full advantage of toolbar customization work,

thereby eliminating the need to maintain and manage toolbars. AutoCAD supports any number of tool palettes and makes it easy to organize them into logical groups for efficient access.

Benefit

Standardize drawing content and store customized commands on space-saving, project-specific tool palettes that you can distribute to the entire team.

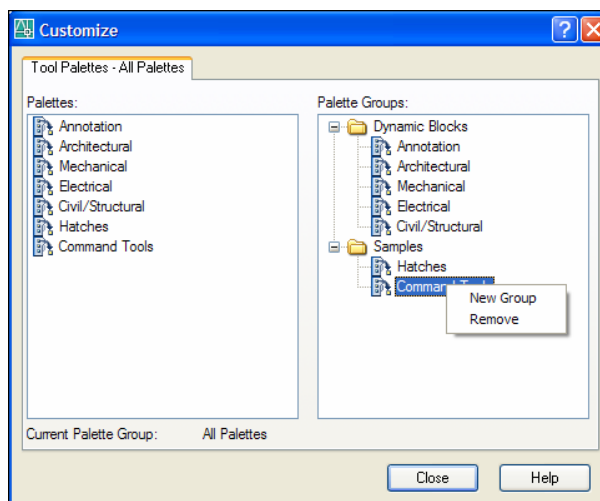


Figure 13: Customize and organize your tool palettes

Migration Tools

Autodesk realizes that you need to be able to quickly and easily integrate any new release of AutoCAD with the tools and customizations you have created to work with your current version of AutoCAD. With that in mind, AutoCAD 2006 was developed to be smoothly integrated with your current work practices, and your current customizations.

AutoCAD 2006 maintains the same DWG file format as AutoCAD 2005 and AutoCAD 2004. This means that there is no need to “save back” to an older file format if you, or a client or subcontractor, are working with one of these versions of AutoCAD. New entities introduced in AutoCAD 2006 (such as a Dynamic Block) look the same when opened in 2004 or 2005 and, as long as they have not been edited in the older version, they will maintain all their capabilities when opened again in 2006. Applications written or purchased for AutoCAD 2004 or 2005 will work without change with AutoCAD 2006.

In addition to these basic file and software compatibilities, AutoCAD 2006 has also been allowed to bring across customized menus and toolbars from older versions of AutoCAD to AutoCAD 2006. When installed side by side with an older version, AutoCAD 2006 allows you to quickly and easily migrate the tools you choose from your old version of AutoCAD.

AutoCAD® 2006 Features and Benefits

New Customization for Menus and Toolbars

Problem

Migration of customized menus and toolbars can be a very labor intensive and error prone operation. It is difficult to keep your company and project specific menus and toolbars from being over-written when installing a new version of AutoCAD. It is easy to lose track of your custom toolbars, and the text based files used to manage your customizations frequently need to be edited by hand to make them work with the latest version of AutoCAD.

Solution

An automated method of reading in your existing customized menus and toolbars is being introduced in AutoCAD 2006. This tool will read in old customized files from versions of the software as far back as AutoCAD 2000. In addition, moving forward to a prospective release of AutoCAD (after AutoCAD 2006) will be an entirely automated process, and you will no longer need to “hand edit” files. Customizing AutoCAD is now easier with the new interface that enables you to customize AutoCAD menus and toolbars in an intuitive “drag and drop” manner.

Benefit

The new AutoCAD 2006 migration tools make moving from an old version of AutoCAD to a new version quick and efficient. It migrates the workspace that you worked so hard to get just right, into the latest version. The new customization interface means customizing AutoCAD menus and toolbars for your company, project, or group is now easier than ever.

Conclusion

Continuously innovating for 20 releases, AutoCAD 2006 gives you out of the box productivity. Migration is easy, deployment is simple, and intuitive new features make learning a snap. New drafting and annotation tools such as Dynamic Blocks and enhanced hatching eliminate the need for time consuming workarounds. These new features in conjunction with powerful existing tools like the Sheet Set Manager and tool palettes offer a complete set of tools to manage everything from simple to complex projects. AutoCAD 2006 works the way you’ve always wanted and brings a new level of productivity and effectiveness to your everyday tasks

Productivity directly impacts your company's profitability and position in the marketplace. AutoCAD 2006—the new standard in CAD productivity—keeps you competitive no matter what industry you work in, giving you maximum speed, power, and efficiency throughout your design process.

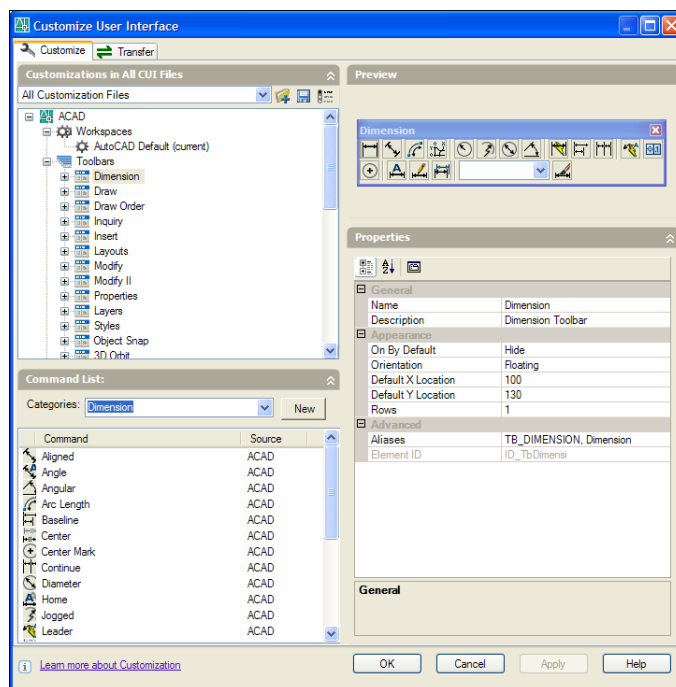


Figure 14:
Customization interface

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