Chapter 1

Introduction to AutoCAD Map 3D 2012



Learning Objectives

In this chapter, you will learn to:

- *Use various terms in this textbook*
- *Start AutoCAD Map 3D 2012*
- *Work with various components*
- *Specify a workspace interface*



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INTRODUCTION

AutoCAD Map 3D 2012 is an upgraded software application developed by Autodesk for Computer Aided Designing and Drafting(CADD) and Geographic Information System(GIS) analysis. This software is very helpful for analyzing geospatial data. Moreover, this software acts as a bridge between geospatial data and AutoCAD drawing data.

Using this software, you can import and analyze GIS dataset in various file formats such as vector data(eg, *.*shp*, *.*sdf)*, raster data(eg, *.*tif*, *.*dem)*, survey data(eg, *.*xyz*, *.*gps, *.*csv)*, LiDAR data(eg, *.*las)*, database file(eg, *.*dbf)*, point data, and topobase data. You can also connect to various types of online geospatial servers by using the tools in this software. After connecting to the servers, you can retrieve data from the servers by applying suitable filters. Then, you can style, edit, and analyze the data retrieved.

You can use various options in this software to convert GIS dataset into AutoCAD drawing data and vice-versa. Also, you can use the simple data analysis tools provided in this software to perform complex geospatial data analysis and obtain accurate results. You can also use various predefined options in this software to export or publish the resulting dataset.

GEOSPATIAL ANALYSIS

Geospatial analysis is an interpretation of the data related to a geographical area. In general, geospatial analysis is used to represent various methods of data interpretation such as analyzing, interpreting, and presenting the GIS dataset using GIS software. This type of data analysis is widely used in urban planning, landscape designing, geographical mapping, utility management, navigation, and so on.

Various types of GIS dataset used in geospatial analyses are vector data, raster data, survey data, LiDAR data, point data, and so on. In addition to using a dataset, you can also convert a dataset in one form to another form by using a particular software. Some of the commonly used forms of GIS data are discussed next.

Vector or Feature Data

A vector or feature dataset is used to represent the spatial information of a geographical location. This type of dataset helps to retain the attributes in a table format attached with a geometry, create and edit dataset, access an existing dataset for analysis, and perform spatial analysis. In general, there are three kinds of feature data used in geospatial analysis. They are point, line, and polygon. These feature data are discussed next.

Point Feature

A point feature represents a spatial point for a specific object, for example, a post box, a street lamp, a historical place, museum, and so on. The point feature can represent only one geographical location.

Line or Polyline Feature

A line or polyline feature is used to represent a linear feature or a streamlined feature data such as roads, transmission lines, streams, fence, boundary, and so on.

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Polygon Feature

A polygon feature (parcel) is a closed polyline object with the attribute or property data attached to it. This feature is used to represent an area feature such as council boundary, building fence area, different zones, and so on.

Raster Data

In GIS, images are considered as raster data consisting of pixels or digits. These data can be in grey color(pixels representing the attribute value by using the hue or saturation colors) or in multi-spectral bands (based on the reflected wavelength). In AutoCAD Map 3D 2012, you can use the enhanced tools to import point files and LiDAR data into the Workspace and then convert them into a raster dataset.

Drawing Object Data

The attribute data and properties attached to a geometry are called drawing object data. These data can be in the form of point, line, polyline, or dotted lines with the attribute or property data attached to them. Some of the terms used in this book, related to drawing objects, are explained next.

Property

The property of a drawing object refers to the display parameters such as color of geometry, line thickness, line pattern, and so on.

Attribute

Attribute refers to the data that is attached to a drawing object and does not provide any information about the display parameters of the drawing object it is attached to. For example, the area and population of a state attached to a closed polyline object (polygon), records of births and deaths pertaining to a geographical place attached to a point object, number of accidents attached to a line or polyline object (roads, streets, highways, and motor ways).

Data Table

Data table is the way of presentation of the property and attribute values in the form of a table. It is attached to an object, a layer, or a feature in a Workspace. Figure 1-1 shows various parts of a data table.

Data Field

In a data table, the data field displays a group of attribute values related to a specific data object.

Attribute Value

Attribute value of a drawing object is the value corresponding to this drawing object in various data fields. For example: attribute value of the **Line object02** drawing object in the **No. of vehicles/hr** data field is **85**, refer to Figure 1-1.

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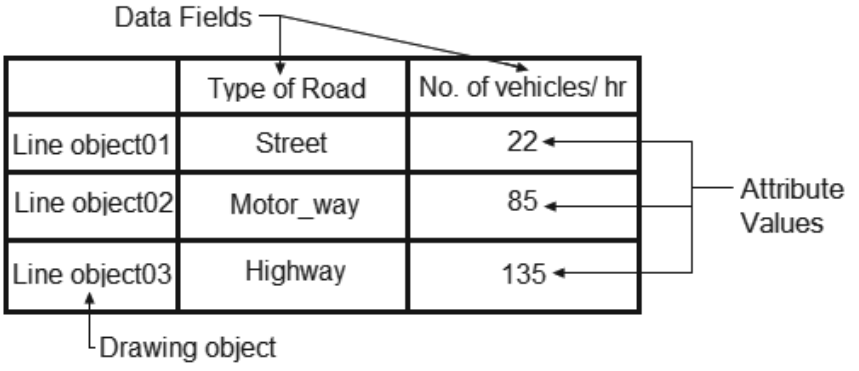

Figure 1-1 *Various parts of a data table*

Survey Data

Survey data is the point data obtained by locating specific survey points on the earth surface. The survey data can be obtained by using survey instruments such as total station, GPS, and so on.

Industry Model Data

Industry Model Data is a new name given to the topobase database. Topobase is the database that includes features, parcels, and attribute data of a geographical location. In AutoCAD Map 3D 2012, industry model data is used as a new terminology for infrastructure project management data. Industry model data includes project settings, privileges, attribute data, coordinate systems, projection systems, and so on related to a project. The projects such as infrastructure project management, utility designing, and facility management extensively use the industry model data for project management.

LAYERS

Layers are the overlays containing specific geometry, property, and attributes. You can transform data from one layer to another based on the file formats of data. In AutoCAD Map 3D, you can use layers in the form of the AutoCAD drawing layer and the vector or feature layer. These two layer types are discussed next.

AutoCAD Layer

AutoCAD layer is a drawing layer that contains drawing objects (text, point, line, and polygon) and their properties. This layer can be generated and modified within a drawing file and it cannot be used as an independent layer in other software. If you want to use AutoCAD layer in another software, then you need to export or save the AutoCAD drawing layer in the file format as per external software requirement.

Vector or Feature Layer

Vector or feature layer is an independent layer that contains all feature data spatially related to a geographical location. Vector or feature layer can be in the SHP or SDF file format. It is easy to transfer feature data from one software to another using these types of layers.

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STARTING AutoCAD Map 3D 2012

When you install AutoCAD Map 3D 2012 on your system, an icon is displayed on the desktop. You can start AutoCAD Map 3D 2012 by double-clicking on this icon. You can also start AutoCAD Map 3D 2012 from the Windows taskbar. To do so, choose the **Start** button at the bottom-left corner of the screen (default position); a menu will be displayed. In this menu, choose **Programs > Autodesk > AutoCAD Map 3D 2012 > AutoCAD Map 3D 2012**, as shown in Figure 1-2; the AutoCAD Map 3D 2012 software will start and the **Workspaces** page will be displayed.

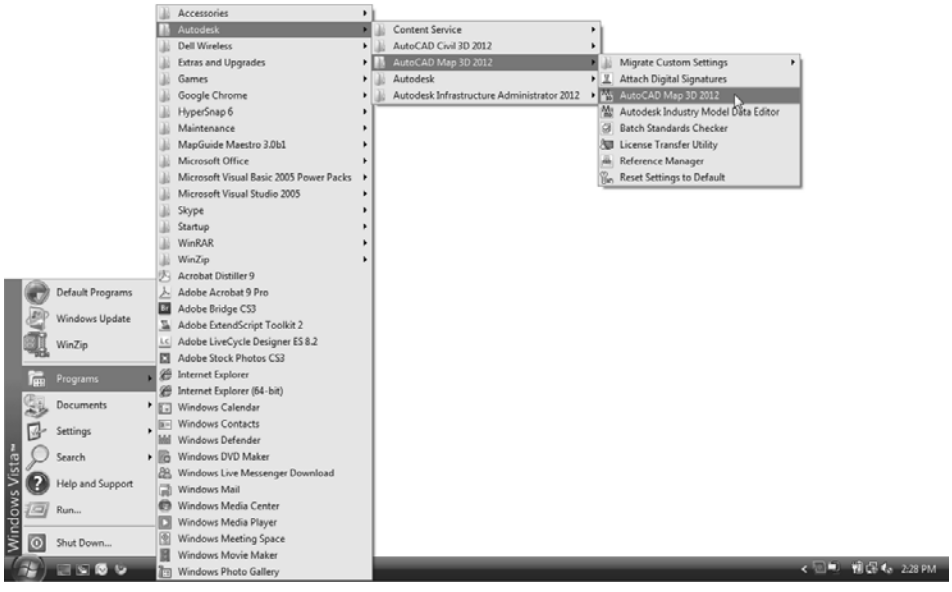

Figure 1-2 *Starting AutoCAD Map 3D 2012 from the* ***taskbar***

WORKSPACE

Workspace is a combination of menus, toolbars, Ribbon, palettes, and control panels. It is used to represent a customized drawing environment based on user requirements. You can also customize a workspace to suit the working environment of a task.

When you start AutoCAD Map 3D 2012 for the first time, the **AutoCAD Map 3D 2012 - Select Your Default Workspace** window will be displayed, as shown in Figure 1-3. In the window, you can read information about the three predefined workspaces in AutoCAD Map 3D 2012. These workspaces are, **Planning and Analysis Workspace**, **Maintenance Workspace**, and **2D Drafting Workspace**.

Tip: *Apart from the default workspace, you can choose a different workspace after starting AutoCAD Map 3D 2012 by using the* ***Workspace*** *drop-down list in the Quick Access Toolbar.*

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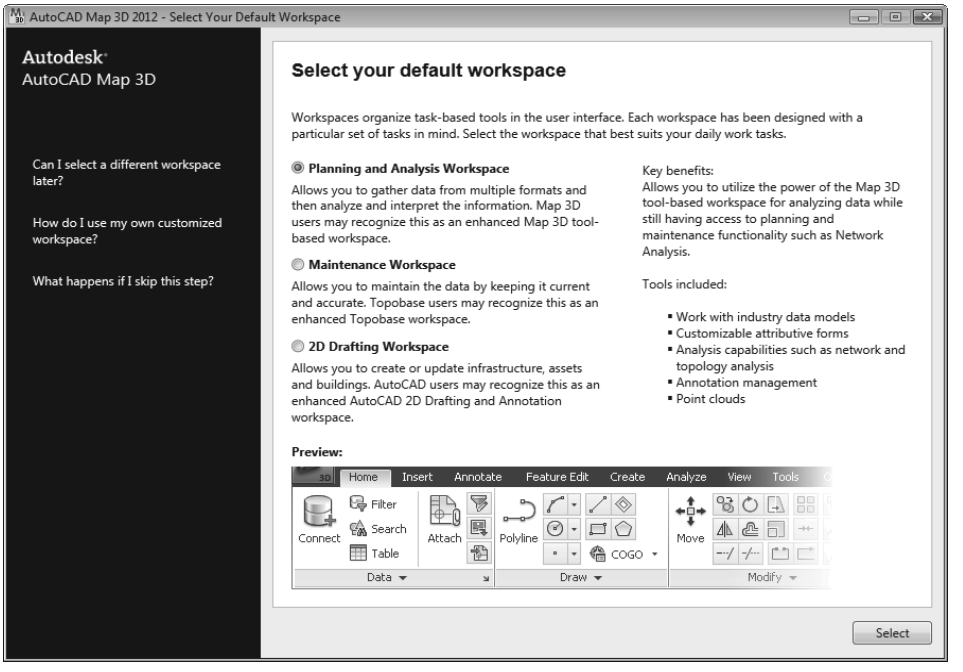

Figure 1-3 *The* ***AutoCAD Map 3D 2012 - Select Your Default Workspace*** *window*

To proceed with the predefined (default) workspace, choose the **Select** button in the **AutoCAD Map 3D 2012 - Select Your Default Workspace** window; the window will be closed and the **AutoCAD Map 3D 2012** screen will be displayed with the **Planning and Analysis Workspace** interface. The three predefined workspaces are discussed next.

Planning and Analysis Workspace

By default, the **Planning and Analysis Workspace** radio button is selected in the **AutoCAD Map 3D 2012 - Select Your Default Workspace** window. As a result, when you choose the **Select** button, the **Planning and Analysis Workspace** is displayed. The **Planning and Analysis Workspace** is an interface in which tools are grouped in different categories based on their use in layout planning and GIS analyses. If AutoCAD Map 3D 2012 is started for the first time, this workspace will be applied by default. Figure 1-4 shows the Ribbon displayed in the **Planning and Analysis Workspace** interface.

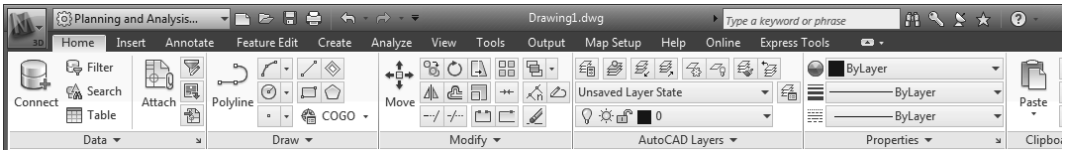

Figure 1-4 *The Ribbon displayed in the* ***Planning and Analysis Workspace*** *interface*



Note

The theory and tutorial sections of all chapters in this textbook are discussed based on the ***Planning and Analysis Workspace*** *Ribbon interface. Hence, it is recommended to retain default settings while using this text book.*

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Maintenance Workspace

The **Maintenance Workspace** interface is a Ribbon interface in which tools are grouped in different panels based on their usage in an industry model or project. The tools in this interface are very useful when you are working with an industry model data, an infrastructure project, or a utility project. Also, it helps to administer an entire project by specifying the required privileges to each member of the team. To invoke this workspace, select the **Maintenance Workspace** radio button in the **AutoCAD Map 3D 2012 - Select Your Default Workspace** window and then choose the **Select** button; the **AutoCAD Map 3D 2012** screen with the **Maintenance Workspace** Ribbon interface will be displayed, as shown in Figure 1-5. You can use various tools in this workspace to maintain an industry model data.

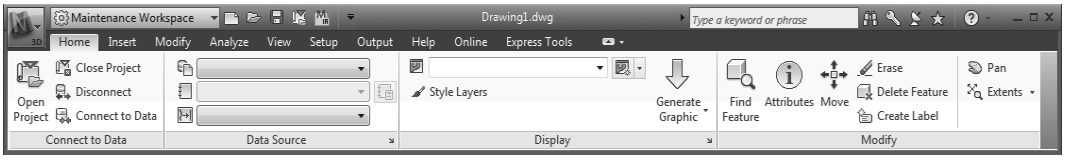

***Figure 1-5** The **Maintenance Workspace** Ribbon interface displayed*

2D Drafting Workspace

The **2D Drafting Workspace** interface is a customized interface for drafters and designers. This workspace is very helpful for those who are familiar with AutoCAD Ribbon and mostly work with the drawing data. In this workspace, the panels are customized based on the use of each tool in drafting. To invoke this workspace, select the **2D Drafting Workspace** radio button in the **AutoCAD Map 3D 2012 - Select Your Default Workspace** window and then choose the **Select** button; the **AutoCAD Map 3D 2012** screen with the **2D Drafting Workspace** Ribbon interface will be displayed. You can use various tools in this workspace to maintain an industry model data.

SWITCHING WORKSPACES



After invoking the **AutoCAD Map 3D 2012**, you can switch from one workspace to a different workspace. To switch from one workspace to another, select the required option from the **Workspace** drop-down list located in the Quick Access Toolbar, refer to Figure 1-6. On doing so, the current workspace will be replaced by another workspace based on the option selected.

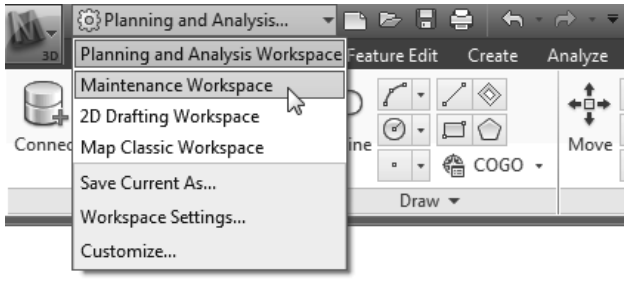

***Figure 1-6** Choosing the **Maintenance Workspace** option from the **Workspace** drop-down list*

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Note

While reading this textbook, it is recommended not to invoke the ***Map Classic Workspace*** *user interface, as the methods for using the tools and performing various operations are different from those explained in this textbook.*

AutoCAD Map 3D 2012 SCREEN COMPONENTS

The components in the initial screen of AutoCAD Map 3D 2012 are drawing area, command line, menu bar, several toolbars, model and layout tabs, and status bar, refer to Figure 1-7. In this screen, a title bar that has the **AutoCAD Map 3D 2012** symbol and the name of the current drawing is displayed in the header section.

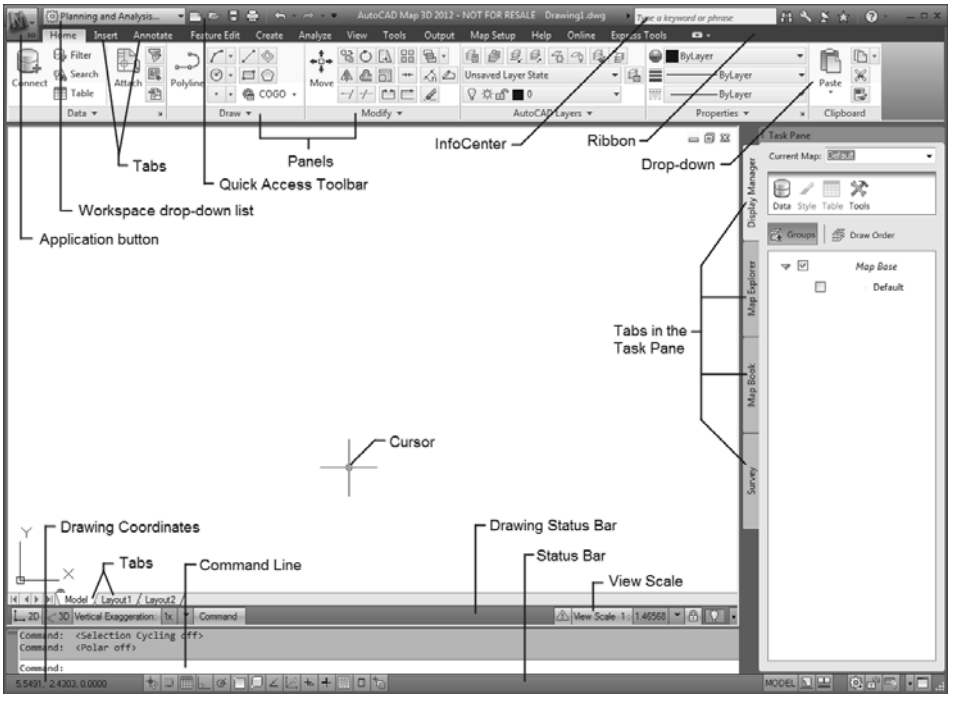

Figure 1-7 *The AutoCAD Map3D 2012 screen components*

Application Menu

The Application Menu is located at the top-left of the AutoCAD Map 3D 2012 screen. To display this menu, choose the **Application** button. It contains some of the tools that are available in the **Standard** toolbar. Click the down arrow on the Application Menu to display the tools, as shown in Figure 1-8. Alternatively, press ALT+F to display the tools in the Application Menu. You can search a command using the search field on the top of the Application Menu. To search a command, enter the complete or partial name of the command in the search field; a list showing all possible commands will appear. You can click on the desired command from the list to activate it.

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Figure 1-8 *The Application Menu*

By default, the **Recent Documents** button is chosen in the Application Menu. As a result, the recently opened drawings will be listed on the right in the Application Menu. If you have opened multiple drawing files, choose the **Open Documents** button; the documents that are opened will be listed in the Application Menu. To set the preferences of the file, choose the **Options** button available at the bottom-right of the Application Menu. To exit AutoCAD Map 3D, choose the **Exit AutoCAD Map 3D 2012** button next to the **Options** button.

Ribbon

In AutoCAD Map 3D, the tools for creating, modifying, and annotating a 2D & 3D design are available in different panels of the Ribbon instead of being spread out in the entire drawing area in different toolbars and menus, refer to Figure 1-4.

When you start the AutoCAD session for the first time, by default the Ribbon is displayed horizontally below the Quick Access Toolbar. The Ribbon consists of various tabs. These tabs have different panels, which in turn have tools arranged in rows. Some of the tools have a small black down arrow. This arrow indicates that the tools having similar functions are

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grouped together. To choose a tool, click on the down arrow next to them; a drop-down will be displayed. Choose the required tool from the drop-down displayed. Note that if you choose a tool from the drop-down, the corresponding command will be invoked and the tool that you have chosen will be displayed in the panel. For example, to draw a circle using the **2-Point** option, click on the down arrow next to the **Center, Radius** tool in the **Draw** panel of the **Home** tab; a drop-down will be displayed. Choose the **2-Point** tool from the drop-down and then draw the circle. You will notice that the **2-Point** tool is displayed in place of the **Center, Radius** tool. In this textbook, the tool selection sequence will be written as choose the **2-Point** tool from **Home > Draw > Circle** drop-down.

To expand a panel, you can choose the down arrow next to it. The panel will be expanded and you will notice that a push-pin is available at its left end. Click on the push-pin to keep the panel in the expanded state. Also, some of the panels have an inclined arrow at the lower-right corner. When you left click on an inclined arrow, a dialog box is displayed. You can define the settings of the corresponding panel in this dialog box.

You can reorder the panels in the tab. To do so, press and hold the left mouse button on the panel to be moved and drag it to the required position. To undock the Ribbon, right-click on the blank space in the Ribbon and choose the **Undock** option. You can move, resize, anchor, and auto-hide the Ribbon using the shortcut menu that will be displayed when you right-click on the heading strip. To anchor the floating Ribbon to the left or right of the drawing area in the vertical position, right-click on the heading strip of the floating Ribbon; a shortcut menu is displayed. Choose the required option from this shortcut menu. The **Auto-hide** option will hide the Ribbon into the heading strip and will display it only when you move the cursor over this strip.

You can also customize the display of tabs and panels in the Ribbon. To customize the Ribbon, right-click on any one of the tools in it; a shortcut menu will be displayed. On moving the cursor over one of the options, a flyout will be displayed with a tick mark before all options. Also, the corresponding tab or panel will be displayed in the Ribbon. Select/clear the appropriate option to display/hide a particular tab or panel.

Drawing Area

The drawing area covers the major portion of the screen. In this area, you can draw objects by using various tools/commands. To draw an object, you need to define coordinate points. You can do so by using your pointing device. The cursor represents the position of the pointing device on the screen. There is a coordinate system icon at the lower-left corner of the drawing area. The window also has the standard Windows buttons such as close, minimize, scroll bar, and so on, on the top right corner. These buttons work in the same way as in any other standard window.

Drawing Status Bar

The **Drawing Status Bar** is displayed between the drawing area and the command window. To display the **Drawing Status Bar**, if it is not displayed, choose the **Application Status Bar Menu** arrow and choose the **Drawing Status Bar** option from the flyout displayed; the **Drawing Status Bar** will be displayed, as shown in Figure 1-9. Turn on the **Drawing Status**

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Bar; the **Annotation Scale**, **Annotation Visibility**, and **Automatically Add Scale** buttons will move automatically to the **Drawing Status Bar**. If you turn off the **Drawing Status Bar**, these buttons will move back to the **Application Status Bar**. Various options in the **Drawing Status Bar** are discussed next.

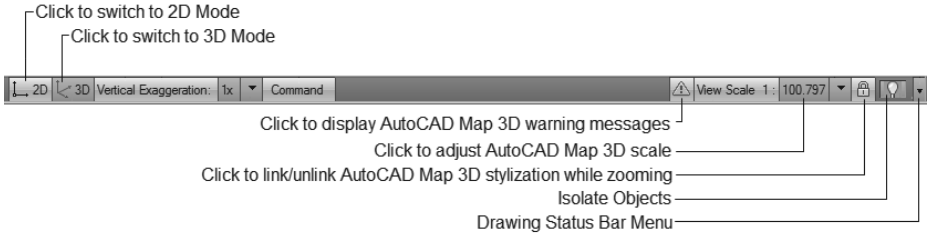

Figure 1-9** The options in the **Drawing Status Bar

2D Button



The **2D** button is used to switch from 3D to 2D working environment. When you apply the *map2d.dwt* template settings to the current drawing, you will enter the 2D drafting and designing environment and the **2D** button will be activated. The *map2d.dwt* is a template file that contains the settings of the 2D drawing environment.

3D Button



The **3D** button is used to switch from 2D to 3D working environment. When you apply the settings from the *map3d.dwt* template file, you will enter the 3D designing environment and the **3D** button will be activated.

Vertical Exaggeration

The **Vertical Exaggeration** option is used to apply a visual enhancement factor for each pixel of the 3D raster image (DEM and DTM). This tool helps to distinguish between the points of different elevation. To specify a factor for display enhancement, left-click on the down-arrow next to the **Vertical Exaggeration** button in the **Drawing Status Bar**; a flyout will be displayed. In this flyout, choose an option; the display of the raster image will be enhanced based on the factor selected. Figure 1-10 shows the view of a raster image at the default vertical exaggeration(**1x**). Figure 1-11 shows an enhanced view of the raster image at vertical exaggeration of **2x**.

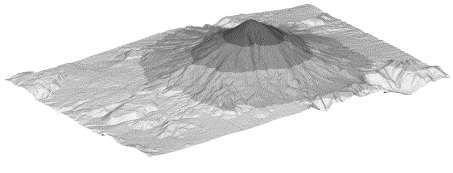

Figure 1-10** Model vertically exaggerated to **1x

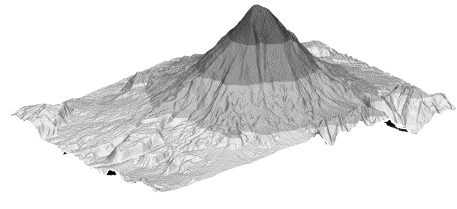

Figure 1-11** Model vertically exaggerated to **2x

You can also specify a value of your choice for vertical exaggeration. To do so, left-click on the

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down-arrow corresponding to the **Vertical Exaggeration** option; a flyout will be displayed. In this flyout, choose the **Custom** option, as shown in Figure 1-12; a window will be displayed. In this window, enter the desired value in the **Enter Exaggeration Value** edit box and then choose the **OK** button; the window will be closed and the raster image will be vertically exaggerated to the specified value.

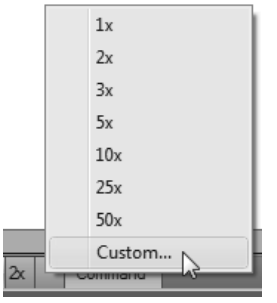

Figure 1-12 *Choosing the* ***Custom*** *option from the flyout*

Command Button



The **Command** button is used to display or hide the **Command Line**. By default, the **Command Line** is displayed. To hide the **Command Line**, choose the **Command** button; the **Command Line--Close Window** message window will be displayed. In this window, choose the **Yes** button; the **Command Line** will be removed from the screen. Choose the **Command** button again to display the **Command Line**. Alternatively, you can press CTRL + 9 to display or hide the **Command Line**.

Warning Button



The **Warning** button is used to display the details of errors that have occurred while performing an action. By default, this button is inactive. When an error occurs, this button becomes active (it will be highlighted in yellow color). To view the description of the error occurred, double-click on the **Warning** button; the **AutoCAD Map Messages** dialog box will be displayed. This dialog box has two areas: **Messages** and **Message details**. Next, select an option in the **Messages** area; the details pertaining to the selected option will be displayed in the **Message details** area. You can use the **Show Log File** button to view additional information about the selected option. On choosing this button, a notepad will be displayed. In this notepad, you can read more information about the error occurred.

Isolate Objects



This button is used to hide or isolate objects from the drawing area. On choosing this button, a flyout will be displayed with two options: **Isolate Objects** and **Hide Objects**. Choose an option from this flyout and then select the objects to hide or isolate. To end isolation or display a hidden object, choose this button again and choose the **End Object Isolation** option.

Click to link/unlink AutoCAD Map 3D stylization while zooming



After a style has been applied to a vector data, you can use this button to link or unlink the AutoCAD Map 3D stylization while zooming (you will learn about applying a style to a vector data in Chapter 5). If the lock in this button is closed, the style applied to the vector layer will be displayed at different zooming scales (stylization linked). If the lock in this button is open, the style applied to a vector layer will not be displayed (stylization is not linked).

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Command Line

The **Command Line** is located at the bottom of the drawing area, where you can enter commands to execute an action. It also displays the subsequent prompt sequences and messages. You can change the size of the **Command Line** by placing the cursor on its top edge (double line bar known as the grab bar) and then dragging it. This way you can increase its size to see all the previously used commands. By default, the command window displays only three lines. You can also press the F2 key to display the **AutoCAD Text window**, which displays the previous commands and prompts.

Status Bar

The Status Bar is displayed at the bottom of the screen and it is called Application Status Bar. It contains tools and buttons that are used to perform various AutoCAD Map 3D functions, refer to Figure 1-13. You can toggle most of the options on or off by choosing them. These options are discussed next.

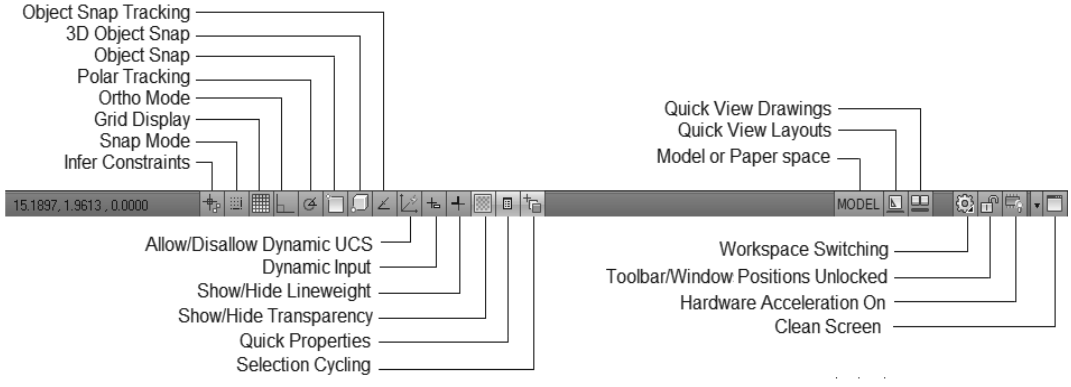

Figure 1-13 *The options in the Status Bar*

Drawing Coordinates

The information about the coordinates is displayed on the left side of the Status Bar. You can choose the coordinate button to toggle between the on and off states. The **COORDS** system variable controls the display type of coordinates. If the value of the **COORDS** variable is set to 0, the coordinate display will be static, which means that the coordinate values displayed in the Status Bar will change only when a point is specified. If the value of the **COORDS** variable is set to 1 or 2, the coordinate display will be dynamic. If the variable is set to 1, AutoCAD Map 3D constantly displays the absolute coordinates of the graphics cursor with respect to the UCS origin.



Note

When you assign a global coordinate system to the Workspace, the coordinates of a spatial point with reference to the assigned coordinate system will be displayed in the ***Drawing Coordinates*** *area.*

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Infer Constraints



If this button is chosen, some of the geometric constraints will automatically be applied to a sketch while it is being drawn.

Snap Mode



If the **Snap Mode** button is chosen, the snap mode will be on. As a result, you can move the cursor in fixed increments. The F9 key acts as a toggle key to turn the snap mode off or on.

Grid Display



The grid lines are used as reference lines to draw objects in AutoCAD Map 3D. If the **Grid Display** button is chosen, the grid display is turned on and the grid lines are displayed on the screen. The F7 function key is used to turn the grid display on or off.

Ortho Mode



If the **Ortho Mode** button is chosen, you can draw lines at right angles only. You can use the F8 function key to turn this mode on or off.

Polar Tracking



If you turn the polar tracking on, the movement of the cursor is restricted along a path determined by the angle set as the polar angle. Choose the **Polar Tracking** button to turn the polar tracking on. You can also use the F10 function key to turn this option on. Note that turning the polar tracking on automatically turns off the ortho mode.

Object Snap



When the **Object Snap** button is chosen, you can use the running object snaps to snap on to a point. You can also use the F3 function key to turn the object snap on or off. Note that the status of **OSNAP** (off or on) does not prevent you from using the immediate mode object snaps.

3D Object Snap



When this button is chosen, you can snap the key point on a solid or a surface. You can also use the F4 function key to turn on or off the 3D object snap.

Object Snap Tracking



When you choose this button, the inferencing lines will be displayed. Inferencing lines are dashed lines that are displayed automatically when you select a sketching tool and track a particular keypoint on the screen. Choosing this button turns the object snap tracking on or off.

Allow/Disallow Dynamic UCS



On choosing this button, you are allowed or disallowed the use of dynamic UCS. Allowing the dynamic UCS ensures that the XY plane of the UCS is dynamically aligned with the selected face of the model. You can also use the F6 function key to turn the **DUCS** button on or off.

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Dynamic Input



The **Dynamic Input** button is used to turn the **Dynamic Input** on or off. Turning it on facilitates the heads-up design approach because all commands, prompts, and dimensional inputs will now be displayed in the drawing area and you do not need to look at the Command prompt all the time. This saves the design time and also increases the efficiency of the user. If the **Dynamic Input** mode is turned on, you will be allowed to enter the commands through the **Pointer Input** boxes and the numerical values through the **Dimensional Input** boxes. You will also be allowed to select the command options through the **Dynamic Prompt** options in the graphics window. To turn the **Dynamic Input** on or off, use the CTRL+D keys.

Show/Hide Lineweight



Choose this button to turn on or off the display of lineweights in the drawing. If this button is not chosen, the display of lineweight will be turned off.

Show/Hide Transparency



This button is used to turn on or off the transparency set for a drawing. You can set the transparency in the **Properties** panel or in the layer in which the sketch is drawn.

Quick Properties



If you select a sketched entity when this button is chosen in the Status Bar, the properties of the selected entity will be displayed in a panel.

Selection Cycling



If this button is chosen, you can cycle through the objects to be selected provided they are overlapping or close to other entities. On selecting an entity when this button is chosen, the **Selection** list box will be displayed with a list of the entities that can be selected will be displayed.

Model or Paper source



The **Model or Paper source** button is used to toggle between the modelspace and paper source drawing environment. By default, the **MODEL** button is displayed. As a result, you are prompted to work in the modelspace to create drawings. To create or edit the drawing in layouts, choose the **MODEL** button; this button will change to the **PAPER** button and the **Layout1** tab (paper space) will be invoked for creating drawing views.

Quick View Layouts



On choosing this button, thumbnails of the active layout are displayed. When you place the cursor over the thumbnails, they are enlarged and you can choose the layout you need to invoke.

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Quick View Drawings



On choosing this button, thumbnails of the active drawings are displayed. When you place the cursor over the thumbnails, they are enlarged and you can choose the drawing that you need to invoke.

Annotation Scale



The **Annotation Scale** button has a drop-down list that displays all annotation scales available for the current drawing. The annotation scale is used to control the size and display of the annotative objects in the model space.

Annotation Visibility



This button is used to control the visibility of annotative objects that do not support the current annotation scale in the drawing area.

Automatically Add Scale



If this button is chosen, all annotation scales, which are set current to all the annotative objects present in the drawing, are added.

Toolbar/Window Positions Unlocked



The **Toolbar/Window Positions Unlocked** button is used to lock and unlock the positions of toolbars and windows. When you choose this button, a shortcut menu is displayed. Choosing the **Floating Toolbars/Panels** option allows you to lock the current position of the floating toolbars. Also, a check mark is displayed against those toolbars in the shortcut menu that are currently locked. Choosing the **Docked Toolbars/Panels** option from the shortcut menu allows you to lock the current position of all the docked toolbars. Similarly, you can lock or unlock the position of floating and docked windows such as the **Properties** window or the **Tool Palettes**. If you move the cursor on the **All** option, a cascading menu is displayed that provides the option to lock and unlock all the toolbars and windows.



Note

The LOCKUI system variable is used for the locking and unlocking of the toolbars and windows. The following are the values of the system variable:

Lockui<0> No toolbar or window locked
Lockui<1> Locks all docked toolbars
Lockui<2> Locks all docked windows
Lockui<4> Locks all floating toolbars
Lockui<8> Locks all floating windows

Hardware Acceleration On



This button is used to set the performance of the software at an acceptable level.

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Task Pane

The **Task Pane** is displayed on the right of the **AutoCAD Map 3D 2012** screen, as shown in Figure 1-14. You will find alternative options to the Ribbon interface in the **Task Pane**. In the **Task Pane**, there are four tabs: **Display Manager**, **Map Explorer**, **Map Book**, and **Survey**. These tabs are explained next.

Display Manager Tab

The options in the **Display Manager** tab are used to connect and display feature layers and then perform various types of analyses on these feature layers.

Map Explorer Tab

The options in the **Map Explorer** tab are used to assign the rights of a drawing to a user, attach new drawings to the current drawing, define queries, and so on.

Map Book Tab

The options in the **Map Book** tab are used to create a map and to customize an existing map book.

Survey Tab

The options in the **Survey** tab are used to import and export the survey data, and create a data store.

Navigation Bar

In AutoCAD Map 3D 2012, the navigation tools are grouped together and are available in the drawing area, as shown in Figure 1-15. The tools in the **Navigation Bar** are discussed next.

SteeringWheels

The SteeringWheels has a set of navigation tools such as pan, zoom, and so on. You can use any of these options to set the view of a drawing in the Drawing Window.

Pan

This tool allows you to view the portion of the drawing that is outside the current display area. To view the outside portion, choose this tool, press and hold the left mouse button, and then drag the drawing area. Press ESC to exit this tool.

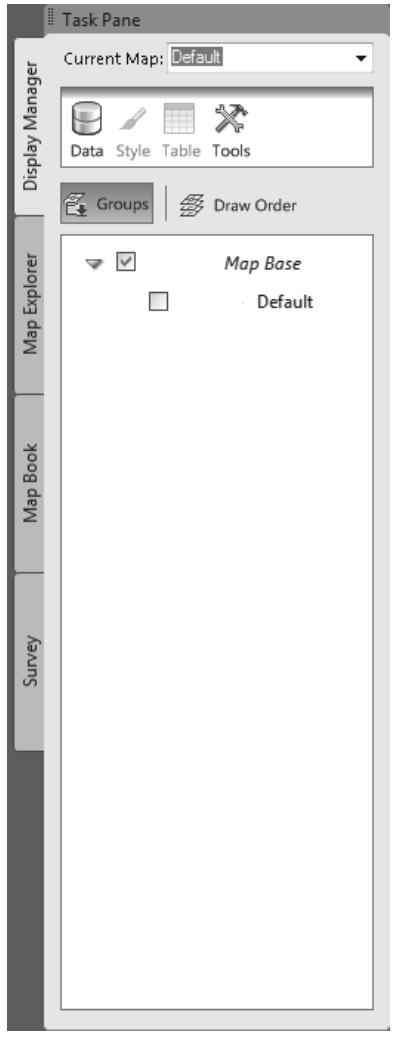

Figure 1-14** The **Task Pane

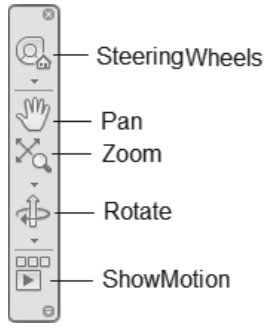

Figure 1-15** The tools in the **Navigation Bar

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Zoom

On invoking this tool, various zoom tools are displayed in the **Zoom** drop-down. The options in the **Zoom** drop-down are used to enlarge or reduce a view in the Drawing Window without affecting the actual shape and size of the objects in this view. You will learn more about zoom tool in the later chapters.

Rotate

The tools in the **Rotate** drop-down are used to rotate a view in the Drawing Window in the 3D space.

ShowMotion

Choose this button to capture different views in a sequence and animate them when required.

ViewCube

ViewCube is available on the top right corner of the drawing area and is used to switch between the standard and isometric views or to roll the current view. The ViewCube and its options are discussed in later chapters.

AutoCAD Map 3D DIALOG BOXES

There are certain commands, which when invoked, display a dialog box. When you choose an item in the menu bar with the ellipses [**...**], a dialog box is displayed. For example, when you choose **Options** in the **Tools** menu, the **Options** dialog box is displayed. A dialog box contains Title Bar, radio buttons, text or edit boxes, check boxes, slider bars, image boxes, and command buttons. Some of the components of a dialog box are shown in Figure 1-16.

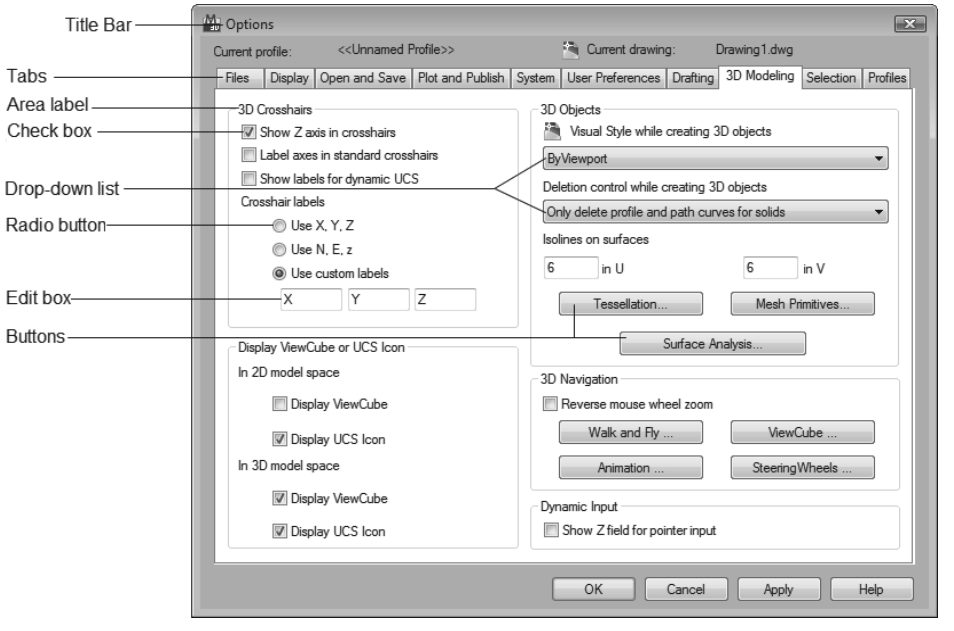

Figure 1-16 *Components of a dialog box*

The Title Bar displays the name of a dialog box. Tabs contain various sections with a group of related options under them. The check boxes are toggle buttons for making the particular option available or unavailable. The drop-down list displays a list of items to choose from; only one item can be selected at a time. The text box is an area where you can enter any text like a file name. It is also called an edit box because you can make changes to the text entered in it. In some dialog boxes, there is the **[...]** button, which when chosen displays another related dialog box. There are certain command buttons (**OK**, **Cancel**, **Help**) at the bottom of the dialog box. The names of these buttons imply their functions. The button with a dark border is the default selected button. A dialog box also has a **Help** button which when clicked shows help on various features of the dialog box.

AutoCAD Map 3D'S HELP



Title Bar: ? > Help **Shortcut Key:** F1 **Command:** HELP or ?



You can get online help and documentation about the working of AutoCAD Map 3D 2012 commands from the **Help** menu in the title bar, see Figure 1-17. You can also access the **Help** menu by pressing the F1 function key. From the last release of AutoCAD, a new **InfoCenter** bar has been added in the menu bar. This bar will help you search information by using certain keywords, see Figure 1-18. The options in the **Help** menu and the **InfoCenter** bar are discussed next.

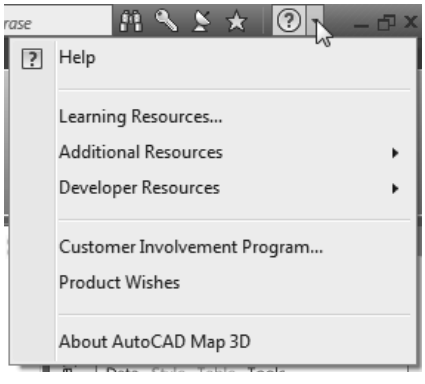

***Figure 1-17** The **Help** menu*

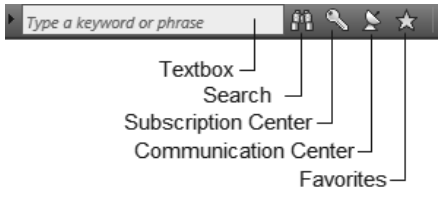

***Figure 1-18** The **InfoCenter** bar*

Help Menu

This menu contains various options. These options are discussed next.

Help

On choosing the **Help** option, the **AutoCAD Map 3D Help** window will be displayed, as shown in Figure 1-19. You can use this window to access help on different topics and commands.

Using the instructions in this window, you can easily understand various tools and methods used in AutoCAD Map 3D 2012. Additionally, you can access online help documentation as well as local (offline) help documentation.

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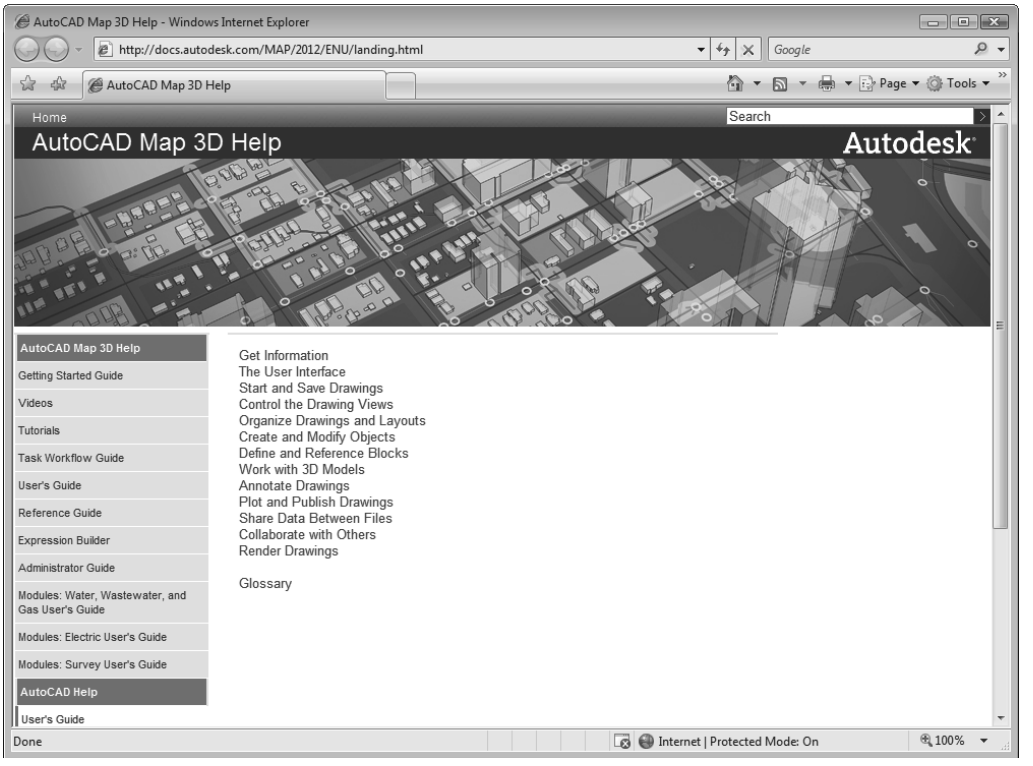

***Figure 1-19** The **AutoCAD Map 3D Help** window*

In this window, you can access the help files related to certain keywords. To do so, enter any keyword in the **Search** edit box located at the top right corner of the **AutoCAD Map 3D Help** page and then choose the right-arrow button next to the edit box; a new page with the heading **Search** is displayed. This page displays the search related topics in the **Search Results** area. In addition, you can type a keyword in the **Search** help for edit box and press ENTER to display the information related to the keyword entered in the **Search Results** area. In the new page displayed, you can choose the **Advanced Search Options** option to use the advanced methods to search the related topics.

Learning Resources

This option is used to view various resources in AutoCAD Map 3D. On choosing this option from the **Help** menu, the **AutoCAD Map 3D Help** window will be displayed. In this window, you can click on the desired icon to find information about a particular subject.

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Additional Resources

This utility connects you to the **Support Knowledgebase**, **Online Training Resources**, **Online Developer Center**, **Developer Help**, and **Autodesk User Group International** web pages and websites. The **Developer Help** option provides a detailed help on customizing AutoCAD.

Developer Resources

This option is used to view help information about the programming aspects of AutoCAD Map 3D.

Customer Involvement Program

This option is used to share information about your system configuration and usage of Autodesk products with Autodesk. The collected information is used by Autodesk for the improvement of Autodesk software.

Product Wishes

This option is used to display the discussion forum of the Authorized Developer Network group.

About AutoCAD Map 3D

This option gives you information about the release, serial number, licensed to, and the legal description about AutoCAD Map 3D 2012.

InfoCenter Bar

The **InfoCenter** bar contains various options to search for help information of a tool, method, Ribbon, and so on. In addition to help information, you can also retrieve the location details of a particular tool. Various options in this bar are discussed next.

InfoCenter Text Box

InfoCenter text box is an easy way to get the desired help documentation. To get help using this option, left-click in the text box of the **InfoCenter** bar and enter the keywords or questions to be searched for and then press ENTER; the result will be displayed as a link in the drop-down panel, as shown in Figure 1-20. To display the required information of the required topic in the **User's Guide** window, click on it in the drop-down panel.

Communication Center

Choose the **Communication Center** button to display the drop-down panel that contains the information regarding software updates and other

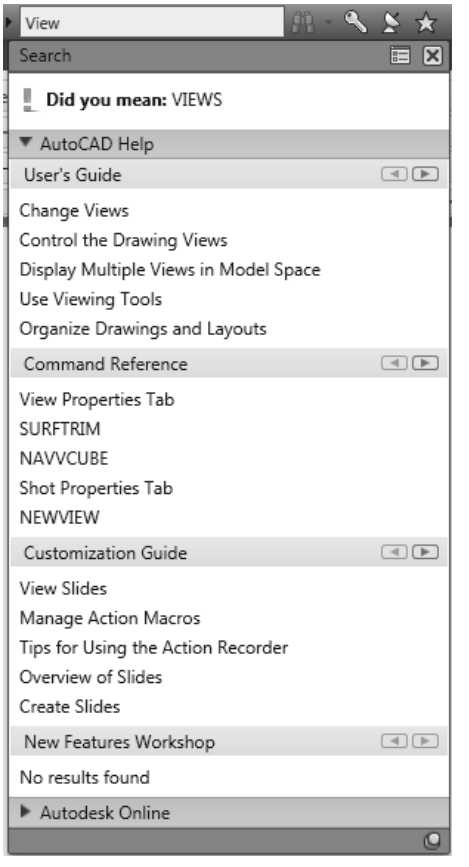

Figure 1-20 *The display of* ***InfoCenter*** *search results*

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products of Autodesk. You can also access the information about subscriptions, articles, tips, and patches of the software using the **Communication Center** button.

Favorites

Choose this button to display the drop-down panel that shows the list of favorite links. You can mark a link displayed on the **InfoCenter** and the **Communication Center** as favorite. To do so, click on the favorite symbol displayed on the right of each search result in the **InfoCenter** or **Communication Center** drop-down panel. To remove an entry from favorites, click on the red cross displayed on the right of each favorite entry in the favorite drop-down panel.

ADDITIONAL HELP RESOURCES

1. You can get help for a command while working. To do so, press the F1 key; the html **Help** file containing information about the command is displayed. You can exit the dialog box and continue with the command.

2. You can get help about the options in a dialog box by choosing the **Help** button in that dialog box.

3. Some of the dialog boxes have a question mark (**?**) button at the top right corner just adjacent to the **close** button. When you choose this button, the '?' gets attached to the cursor. You can then drop it on any item in the dialog box to display information about that particular item.

ABBREVIATIONS OF THE FILE FORMATS

In this textbook, some of the vector layers have been specified by their respective file formats. Table 1-1 shows the description of abbreviation of the file formats used.

Abbreviation	Description
DWG	Drawing file (AutoCAD file format)
DWT	Drawing template file (AutoCAD file format)
DWF	Drawing Web Format (AutoCAD file format)
SHP	Shape file (ESRI file format)
SDF	Spatial Data File (Autodesk file format)
CSV	Comma Separated Variables (MS EXCEL file format)
TXT	Text file
JPEG	Joint Photographic Experts Group (Image file)
TiFF	Tagged Image Format File (Image file)
ISD	Index file generated for point cloud data
LAS and LSD	LiDAR data file format
GPS	Global Positioning System

Table 1-1 *Description of abbreviations of the file formats*

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