Chapter 1

Introduction to Autodesk Revit Architecture 2014

Learning Objectives

After completing this chapter, you will be able to:

- *Understand the basic concepts and principles of Revit Architecture 2014.*
- *Understand different terms used in Revit Architecture.*
- *Know the parametric behavior of Revit Architecture.*
- *Start the Revit Architecture 2014 software.*
- *Use different components of the User Interface screen of Revit Architecture.*
- *Access the Revit 2014 Help and Autodesk WikiHelp.*
- *Know Worksharing using Revit Server.*



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INTRODUCTION TO Autodesk Revit Architecture

Welcome to the realm of Autodesk Revit Architecture, a powerful building modeler that has changed the outlook of the building industry about computer aided designs. Autodesk Revit Architecture is a design and documentation platform that enables you to use a single, integrated building information model to conceptualize, design, and finally document a project. Its integrated parametric modeling technology is used to create the information model of a project, and to collect and coordinate information across all its representations. In Autodesk Revit Architecture, drawing sheets, 2D views, 3D views, and schedules are a direct representation of the same building information model. Using its parametric change engine, you can modify a design at any stage of a project. The change in the project is automatically made and represented in all its views, resulting in the development of better designs, along with an improved coordination. The use of Autodesk Revit Architecture provides a competitive advantage and a higher profitability to architects and building industry professionals.

Autodesk Revit Architecture AS A BUILDING INFORMATION MODELER

The history of computer aided design and documentation dates back to the early 1980s when architects began using this technology for documenting their projects. Realizing its advantages, information sharing capabilities were developed, especially to share data with other consultants. This led to the development of object-based CAD systems in the early 1990s. Before the development of these systems, objects such as walls, doors, windows were stored as a non-graphical data with the assigned graphics. These systems arranged the information logically, but were unable to optimize its usage in a building project. Realizing the advantages of the solid modeling tools, the mechanical and manufacturing industry professionals began using the information modeling CAD technology. This technology enabled them to extract data based on the relationship between model elements.

In 1997, a group of mechanical CAD technologists began working on a new software for the building industry. The Building Information Modeling (BIM) provided an alternative approach to building design, construction, and management. This approach, however, required a suitable technology to implement and reap its benefits. In such a situation, the use of parametric technology with the Building Information Modeling approach was envisaged as an ideal combination. They developed a software that was suitable for creating building projects. This led to the development of a software that later came to be known as Autodesk Revit Building, and has now been changed to Autodesk Revit Architecture.

Autodesk Revit Architecture is a building design and documentation platform, in which a digital building model is created using the parametric elements such as walls, doors, windows, and so on. All building elements have inherent relationship with one another, which can be tracked, managed, and maintained by the computer.

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BASIC CONCEPTS AND PRINCIPLES

Autodesk Revit Architecture enables you to envisage and develop a building model with actual 3D parametric building elements. It provides a new approach to the architectural thought and the implementation process. In a way, it replicates the way architects conceive a building. For example, 2D CAD platforms mostly use lines to represent all elements, as shown in Figure 1-1. However, in Autodesk Revit Architecture, you can create a building model using 3D elements such as walls, floors, doors, and windows, as shown in Figure 1-2.

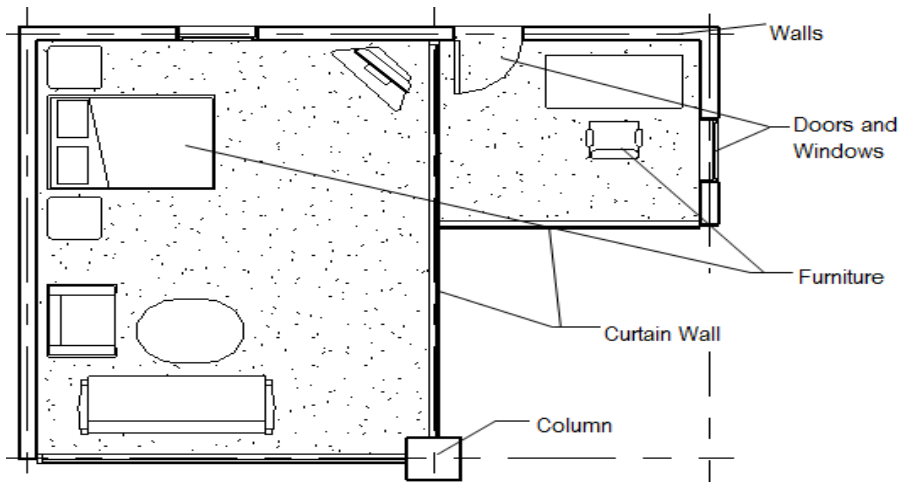


Figure 1-1 *CAD project created using 2D lines and curves*

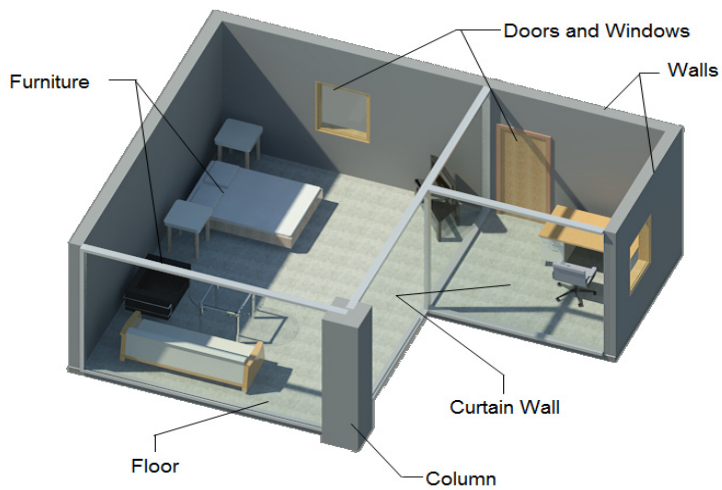


Figure 1-2 *Autodesk Revit Architecture project created using parametric building model*

Using these 3D elements, you can visualize the architectural or interior project with respect to its scale, volume, and proportions. This enables you to study design alternatives and develop superior quality design solutions. Autodesk Revit Architecture automates routine drafting and coordination tasks and assists in reducing errors in documentation. This, in turn, saves time, improves the speed of documentation, and lowers the cost for users.

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Understanding the Parametric Building Modeling Technology

A project in Autodesk Revit Architecture is created using the in-built parametric building elements. The term parametric refers to the relationship parameters between various building elements. Some relationships are made by Autodesk Revit Architecture itself, and others by the user. For example, doors, which have an inherent parametric relationship with walls, cannot be created without first creating a host wall. A door always moves with the host wall. Similarly, floors too are parametrically linked to walls. When you move walls, the floor extents are also modified automatically. Each building element has in-built bidirectional associativity with many other elements in the project.

A building information model is created using different interdependent parametric building elements such as walls, floors, roof, ceiling, stairs, ramps, curtain walls, and so on. As they are bidirectionally associated elements, any change made in one element is automatically adopted by others. The integrated building information model thus created contains all data for a project. You can then create project presentation views such as plans, sections, elevations, and so on for documentation. As you modify the model while working in certain views, Autodesk Revit Architecture's parametric change engine automatically updates other views. This capability is, therefore, the underlying concept in Autodesk Revit Architecture.

Autodesk Revit Architecture's parametric change engine enables you to modify design elements at any stage of the project development. As changes are made immediately and automatically, it saves the time and effort of coordinating them in all other associated views, which, for most projects, is an inevitable part of the design process. Autodesk Revit Architecture's capability to coordinate between various aspects of the building design provides immense flexibility in the design and development process along with an error-free documentation.

Autodesk Revit Architecture also provides a variety of in-built parametric element libraries that can be selected and used to create a building model. It also provides you with the flexibility of modifying properties of these elements or create your own parametric elements, based on the project requirement.

Terms Used in Autodesk Revit Architecture

Before using Autodesk Revit Architecture, it is important to understand the basic terms used for creating a building model. Various terms in Autodesk Revit Architecture such as project, level, category, family, type, and instance are described next.

Autodesk Revit Architecture Project

A project in Autodesk Revit Architecture is similar to an actual architectural or interior project. In an actual project, the entire documentation such as drawings, 3D views, specifications, schedules, cost estimates, and so on are inherently linked and read together. Similarly, in Autodesk Revit Architecture, a project not only includes the digital 3D building model but also its parametrically associated documentation. Thus, all components such as the building model, its standard views, architectural drawings, and schedules combine together to form a complete project. A project file contains all project information such as building elements used in a project, drawing sheets, schedules, cost estimates, 3D views, renderings, walkthroughs, and so on. A project file also stores various settings such as environment, lighting, and so on. As data is stored in the same file, it becomes easier for Autodesk Revit Architecture to coordinate the entire database.

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Levels in a Building Model

In Autodesk Revit Architecture, a building model is divided into different levels. These levels may be understood as infinite horizontal planes that act as hosts for different elements such as roof, floor, ceiling, and so on. The defined levels in a building model can, in most cases, relate to different floor levels, or stories of the building project. Each element that you create belongs to a particular level.

Subdivisions of Elements into Categories and Subcategories

Apart from building elements, an Autodesk Revit Architecture project also contains other associated elements such as annotations, imported files, links, and so on. These elements have been divided into the following categories:

Model Category : Consist of various building elements used in creating a building model such as wall, floor, ceiling, roof, door, window, furniture, stairs, curtain systems, ramps, and so on

Annotation Category : Consist of annotations such as dimensions, text notes, tags, symbols, and so on

Datum Category : Consist of datums such as levels, grids, reference planes, and so on

View Category : Consist of interactive project views such as floor plans, ceiling plans, elevations, sections, 3D views, renderings, and walkthroughs

In addition to these four categories, other categories such as **Imported**, **Workset**, **Filter**, and **Revit Categories** can also exist, if the project has imported files, enabled worksets, or linked Autodesk Revit Architecture projects, respectively.

Families in Autodesk Revit Architecture

Another powerful concept in Autodesk Revit Architecture is family. A family is described as a set of elements of the same category that can be grouped together based on certain common parameters or characteristics. Elements of the same family may have different properties, but they all have common characteristics. For example, **Double Hung** is a single window family, but it contains different sizes of double hung windows. Family files have a *.rfa* extension. You can load additional building component families from the libraries provided in Autodesk Revit Architecture package.

Families are further divided into certain types. Type or family type, as it is called, is a specific size or style of a family. For example, **Double Hung : 36" x 48"** is a window type. All uses of the same family type in a project have same properties. Family and family types can also be used to create new families using the **Family Editor**.

Instances are the actual usage of model elements in a building model or annotations in a drawing sheet. A family type, created in a new location, is identified as an instance of the family type. All instances of the same family type have same properties. Therefore, when you modify the properties of a family type, the properties of all its instances also get modified.

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The family categorization of Revit elements is given below:

Model Category : Wall
Family : Basic Wall
Family type : Brick on Mtl. Studs
Instance : Particular usage of a family type

The hierarchy of building elements in Autodesk Revit Architecture plays an important role in providing the flexibility and ease of managing a change in the building model. Figure 1-3 shows the hierarchy of categories and families in a typical Autodesk Revit Architecture project. The following is another example of the terms described in this section.

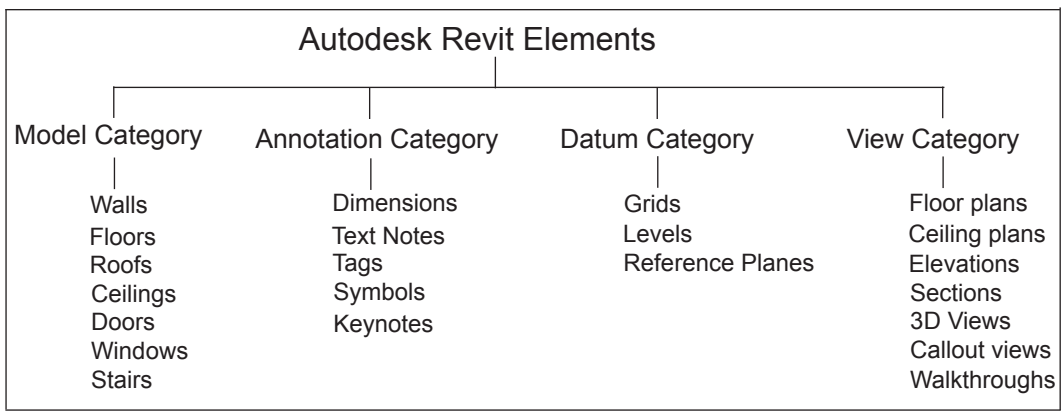


Figure 1-3 *Hierarchy of Autodesk Revit Architecture categories and families*

Creating a Building Model Using Parametric Building Elements

Another classification of categories of elements followed in Autodesk Revit Architecture is based on their usage. Autodesk Revit Architecture uses five classes of elements: host, component, annotation, view, and datum. Hosts are the element categories that form the basic structure of a building model and include model elements such as walls, floor, roof, and ceiling. Components are the elements that are added to host elements or act as stand-alone elements such as doors, windows, and furniture. Annotations are the 2D, view-specific elements that add content to the project documentation such as dimensions, tags, text notes, and so on. Views represent various orientations of a building model such as plans, elevations, sections, 3D views, and so on. Datum refers to the reference elements that assist you in creating a building model, which include grids, levels, reference planes, and so on.

There is no specific methodology available for creating a building model in Autodesk Revit Architecture. It provides you with the flexibility of generating building geometry based on the project requirement, design complexity, and other factors. However, the following steps describe a general procedure that may be followed for creating an architectural building model using the in-built parametric elements provided in Autodesk Revit Architecture.

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The first step is to create the exterior walls of a building at the predefined lowest level (level 1). Next, create interior walls at that level and add components to the building model. Then, define the upper levels based on the story height of the building. You can also link the control height of the walls to the levels and extend the exterior walls to their full height. Next, create floors and roof using the defined levels. Add the site topography to the building model and then add site components to complete the building project. You can then create drawing sheets with the desired views for its presentation. Autodesk Revit Architecture also provides tools to create rendered 3D views and walkthroughs. Figure 1-4 shows an example of a building section with various building elements and annotations.

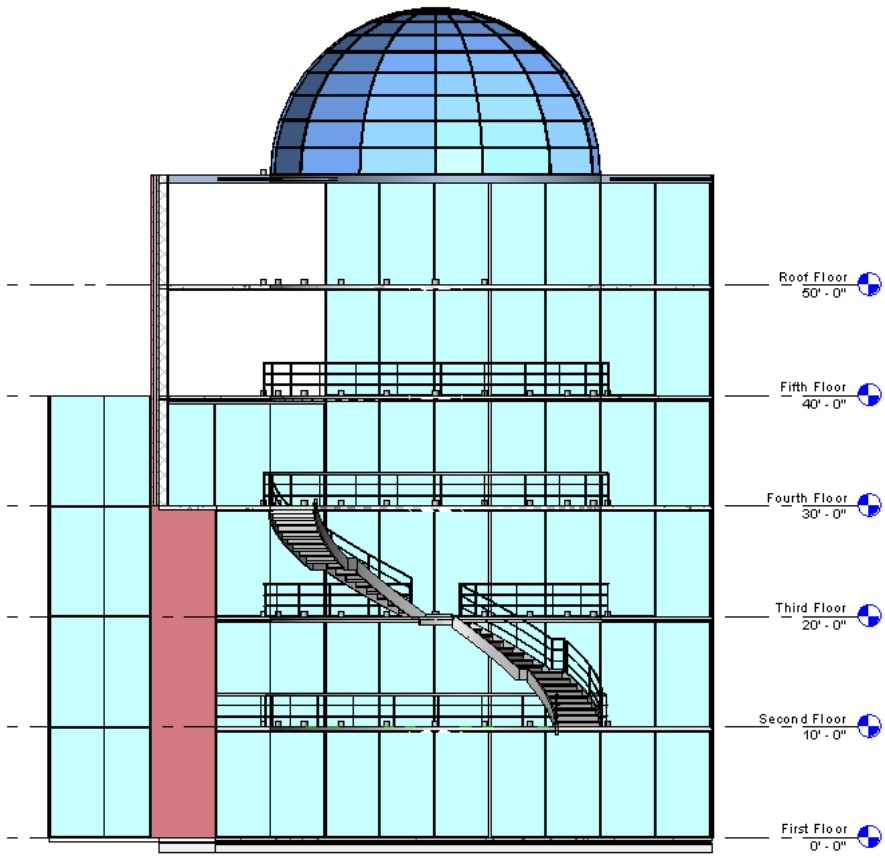


Figure 1-4 *Building section showing building elements and levels*

Visibility/Graphics Overrides, Scale, and Detail Level

Autodesk Revit Architecture enables you to control the display and graphic representation of a single element or the element category of various elements in project views by using the visibility and graphics overrides tools. You can select a model category and modify its linetype and detail level. This can also be done for various annotation category elements and imported files. These settings can be done for each project view based on its desired representation. You can also hide an element or an element category in a view using the **Hide in View** and **Isolate**

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tools. You can override the graphic representation of an element or an element category in any view using the **Visibility/Graphics** tool.

The scale is another important concept in an Autodesk Revit Architecture project. You can set the scale for each project view by selecting it from the available list of standard scales such as 1/16"=1'0", 1/4"=1'0", 1"=1'0", 1/2"=1'0", and so on. As you set a scale, Autodesk Revit Architecture automatically sets the detail level appropriate for it. There are three detail levels provided in an Autodesk Revit Architecture project: **Coarse**, **Medium**, and **Fine**. You can also set the detail level manually for each project view. Each detail level has an associated linetype and the detail lines associated with it. The details of annotations such as dimensions, tags, and so on are also defined by the selected scale.

Extracting the Project Information

A single integrated building information is used to create and represent a building project. You can extract project information from a building model and create area schemes, schedule, and cost estimates, and then add them to the project presentation.

Autodesk Revit Architecture also enables you to export the extracted database to the industry standard Open Database Connectivity (ODBC) compliant relational database tables. The use of the building information model to extract database information eliminates the error-prone method of measuring building spaces individually.

Creating an Architectural Drawing Set

After creating the building model, you can easily arrange the project views by plotting them on drawing sheets. Drawing sheets can also be organized in a project file based on the established CAD standards followed by the firm. In this manner, the project documentation can easily be transformed from the conceptual design stage to the design development stage and finally to the construction document stage. The project view on a drawing sheet is only a graphical representation of the building information model and therefore, any modification in it is immediately made in all associated project views, keeping the drawings set always updated.

Creating an Unusual Building Geometry

Autodesk Revit Architecture also helps you conceptualize a building project in terms of its volume, shape, and proportions before working with actual building elements. This is possible by using the **Massing** tool, which enables you to create quick 3D models of buildings and conduct volumetric and proportion study on overall masses. It also enables you to visualize and create an unusual building geometry. The same massing model can then be converted into a building model with individual parametric building elements. It provides continuity in the generation of building model right from sketch design to its development.

Flexibility of Creating Special Elements

Autodesk Revit Architecture provides a large number of in-built family types of various model elements and annotations. Each parametric element has the associated properties that can be modified based on the project requirement.

Autodesk Revit Architecture also enables you to create the elements that are designed specifically for a particular location. The in-built family editor enables you to create new elements using

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family templates. This provides you with the flexibility of using in-built elements for creating your own elements. For example, using the furniture template, you can create a reception desk that is suitable for a particular location in the design.

Creating Structural Layouts

Autodesk Revit Architecture's structural tools enable you to add structural elements to a building model. An extensive in-built library of structural elements has been provided in Autodesk Revit Architecture. You can add structural columns, beams, walls, braces, and so on to the project. Thus, structural consultants can also incorporate their elements in the basic architectural building model and check for inconsistency, if any.

Working on Large Projects

In Autodesk Revit Architecture, you can work on large projects by linking different building projects together. For a large project that consists of a number of buildings, you can create individual buildings as separate projects and then link all of them into a single base file. The database recognizes the linked projects and includes them in the project representation of the base file.

For example, while working on a large campus of an educational institution, you can create separate project files for academic building, administration area, gymnasium, cafeteria, computer centre, and so on, and then link them into the base site plan file. In this manner, large projects can be subdivided and worked upon simultaneously.

Working in Large Teams and Coordinating with Consultants

Worksets, in Autodesk Revit Architecture, enable the division of the building model into small editable set of elements. The worksets can be assigned to different teams working on the same project and then their work can easily be coordinated in the central file location. The effort required to coordinate, collaborate, and communicate the changes between various worksets is taken care of by computer. Various consultants working on a project can be assigned a workset with a set of editable elements. They can then incorporate their services and modify the associated elements.

For example, a high rise commercial building project can be divided into different worksets with independent teams working on exterior skin, interior walls, building core, toilet details, finishes, and so on. The structural consultants can be assigned the exterior skin and the core workset, in which they can incorporate structural elements. Similarly, the rest of the teams can work independently on different worksets.

STARTING Autodesk Revit Architecture 2014



When you turn on your computer, the operating system is automatically loaded. You can start Autodesk Revit Architecture by double-clicking on the **Revit Architecture 2014** icon on the desktop. Alternatively, choose the **Start > All Programs > Autodesk > Revit Architecture 2014 > Revit Architecture 2014** from the taskbar, as shown in Figure 1-5; the user interface screen of Revit Architecture 2014 will be displayed, as shown in Figure 1-6. Note that this path sequence will be applicable if the operating system is Windows 7.

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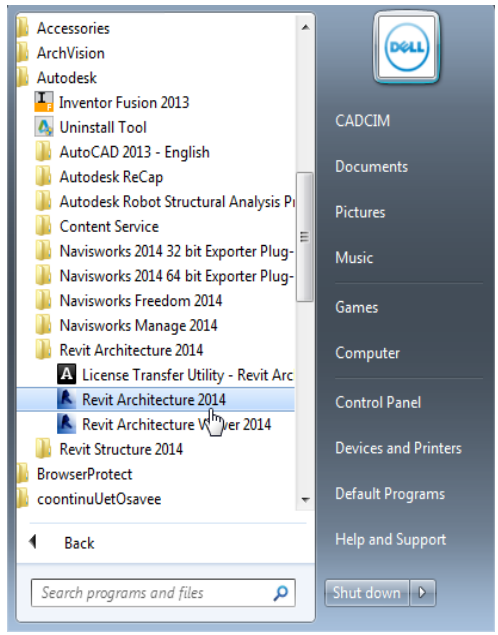


Figure 1-5 *Starting Autodesk Revit Architecture 2014 using the taskbar*

Note

The path for starting Autodesk Revit Architecture depends on the Operating System being used.

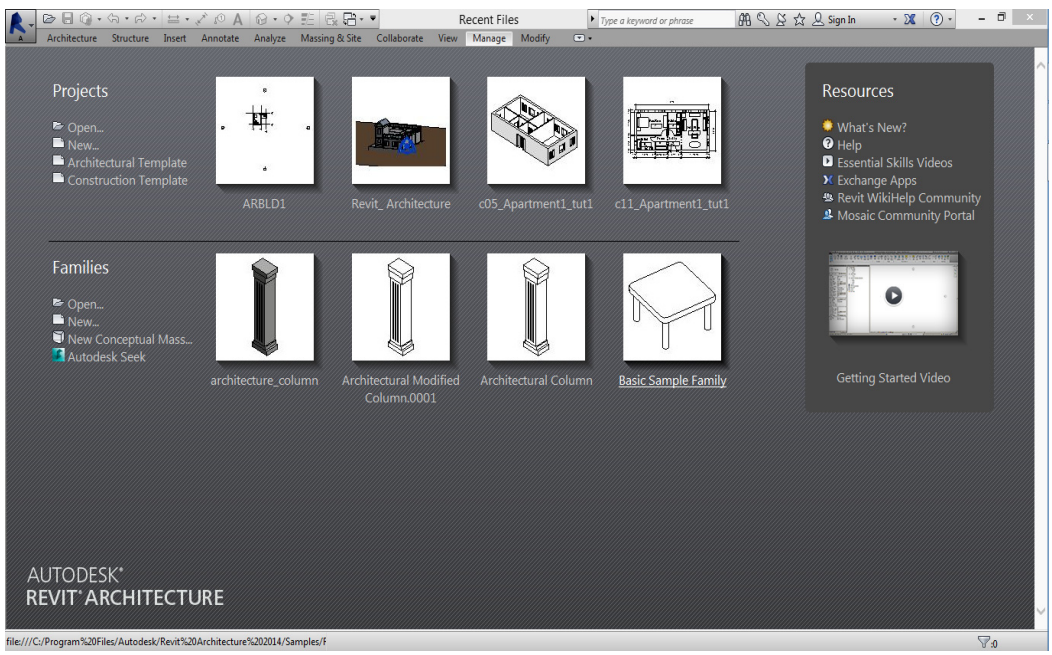


Figure 1-6 *The interface screen of Autodesk Revit Architecture 2014*

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The interface screen has three sections: **Projects**, **Families**, and **Resources**. The options in the **Projects** section are used to open an existing project, a new project, an existing template. The options in the **Families** section are used to open a new or an existing family. You can also invoke the Conceptual Mass environment from this section to create a conceptual mass model. If you choose the **Autodesk Seek** option from the **Families** section, you will be directed to the *http://seek.autodesk.com/localeTaxBrowse.htm?category=en_us:adsk:revit-arch&locale=en-us&globaldd=globaldropdown.option.b* link and the **Autodesk® Revit Architecture Web Library - US Edition** page will open. From this page, you can download various components for your project.

In the **Resources** section of the interface screen, you can choose the **What's New?** option to get information about the new tools and features in Autodesk Revit Architecture 2014. In addition, you can choose the **Help** option from the **Resources** section to view help resources related to Revit software. On choosing the **Help** option, you will be directed to *http://wikihelp.autodesk.com/Revit/enu/2014* link and the **Autodesk WikiHelp** page with **Revit 2014** page will open. In the **Community Learning** section, there are two areas: **Browse Help** and **Add Knowledge**. In the **Browse Help** area, you can choose various links to access help documents related to Revit 2014 release. For example, to access information related to additions and enhancements in Revit 2014 release, you can choose the **New in Revit 2014** link. On doing so, the **New in Revit 2014** page will be displayed with various links. You can know about various enhancements through these links. In the **Revit 2014** page, you can use various options in the **Add Knowledge** area to contribute resources in form of articles, tutorials, and videos to the Autodesk WikiHelp.

In the **Resources** section of the Autodesk Revit Architecture 2014 interface screen, you can choose **Essential Skills Videos** to get basic information about using Revit Architecture. These videos and their associated information help you to learn about the complete software. Moreover, you can choose the **Exchange Apps** option to access various add-ons that can be used to enhance the productivity of Revit. On choosing this option, the **Autodesk Exchange| Apps** page will be displayed. In this page, various links are available as add-ons that can be used in Revit applications. In **Revit WikiHelp Community** of the **Resources** section, you can access information related to various communities and their contribution in form of articles, tutorials, and videos. The **Mosaic Community Portal** in the **Resources** section is used to open the mosaic projects on the web. The mosaic projects is an initiative of Autodesk, which is an online peer-to peer (P2P) resource for Autodesk Revit and AutoCAD Civil 3D users.

In the **Projects** section, choose the **Open** option; the **Open** dialog box will be displayed. Browse to the desired location in the dialog box and select the file. Now, choose the **Open** button to open the file.

To open a new project file, choose the **New** option from the **Projects** section. Alternatively, choose **New > Project** from the **Application Menu**; the **New Project** dialog box will be displayed. In this dialog box, you can select the desired template from the **Template file** drop down or you can browse the other template files, by choosing the **Browse** button from the **Choose Template** dialog box. In this dialog box, make sure that the **Project** radio button is selected, and then choose the **OK** button; a new project file will open and the interface screen will be activated.

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USER INTERFACE

In Autodesk Revit Architecture 2014 has ribbon interface. The ribbon, which contains task-based tabs and panels, streamlines the architectural workflow and optimizes the project delivery time. In Autodesk Revit Architecture 2014, when you select an element in the drawing area, the ribbon displays a contextual tab that comprises of tools corresponding to the selected element. The interface of Autodesk Revit Architecture is similar to the interfaces of many other Microsoft Windows based programs. The main parts in the Revit interface are **Ribbon**, **Options Bar**, **Project Browser**, **Drawing Area**, **Status Bar**, and **View Control Bar**, as shown in Figure 1-7.

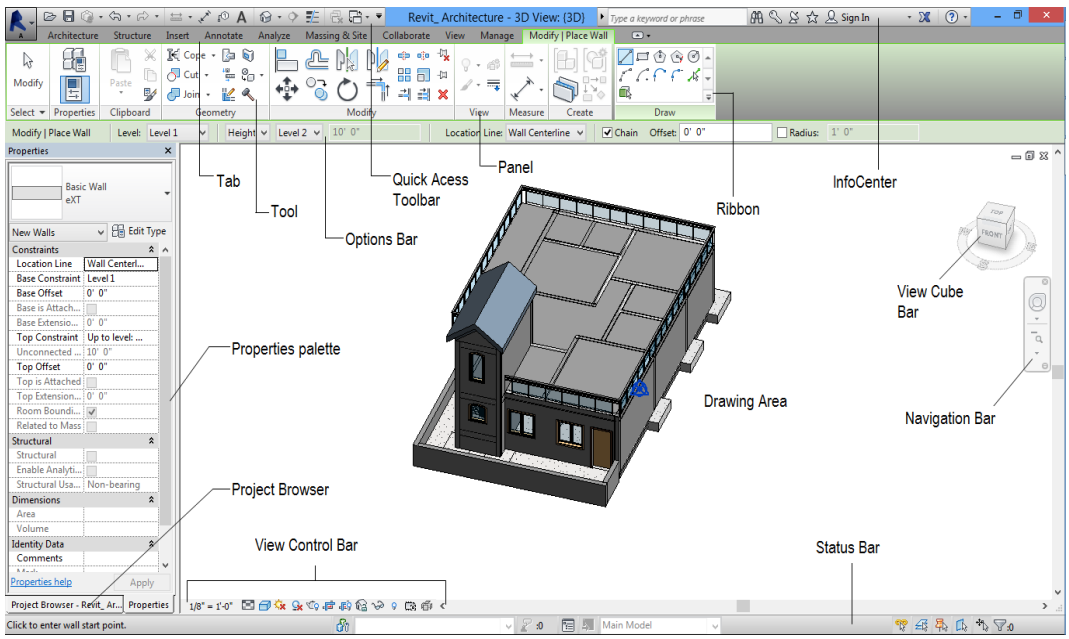


*Figure 1-7 The **Autodesk Revit Architecture 2014** user interface screen*

Invoking Tools

To perform an operation, you can invoke the required tools by using any one of the following two options:

Ribbon: You can invoke all necessary tools from the ribbon.

Shortcut Keys: Some tools can also be invoked by using the keys on the keyboard.

Title Bar

The Title bar, docked on the top portion of the user interface, displays the program's logo, program's name, name of the current project, and the view opened in the viewing area. **Project 1- Floor Plan: Level 1** is the default project and view.

Ribbon

The ribbon, as shown in Figure 1-8, is an interface that is used to invoke tools. When you open a file, the ribbon is displayed at the top in the screen. It comprises of task-based tabs

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and panels, refer to Figure 1-8, which provide all tools necessary for creating a project. The tabs and panels in the ribbon can be customized according to the need of the user. This can be done by moving the panels and changing the view states of the ribbon (changing the ribbon view state is discussed later in this chapter). The ribbon has three types of buttons are available in: general button, drop-down button, and split button. These buttons can be used from the panels.

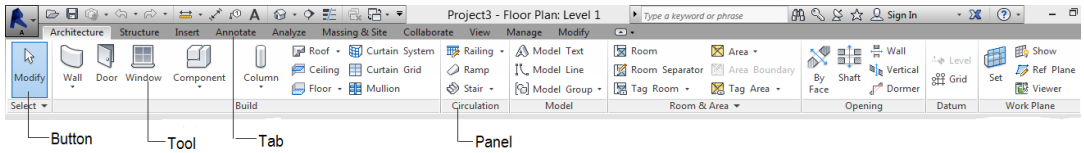


Figure 1-8 *Different components of a ribbon*

Moving the Panels

In the ribbon, you can move a panel and place it anywhere on the screen. To do so, press and hold the left mouse button on the panel label in the ribbon drag it to a desired place on the screen. Next, use the tools of the moved panel and place the panel back to the ribbon. To do so, place the cursor on the moved panel and choose the **Return Panels to Ribbon** button from the upper right corner of this panel, as shown in Figure 1-9; the panel will return to the ribbon.

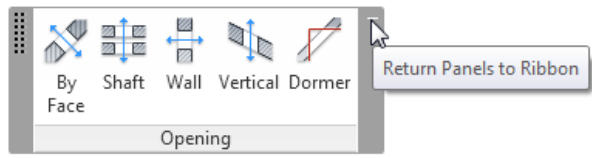


Figure 1-9 *Choosing the* ***Return Panels to Ribbon*** *button*

Changing the View States of the Ribbon

The ribbon can be displayed in three view states by selecting any of the following four options: **Minimize to Tabs**, **Minimize to Panel Titles**, **Minimize to Panel Buttons**, and **Cycle through all**. To use these options, move the cursor and place it over the second arrow on the right of the **Modify** tab, refer to Figure 1-10 in the ribbon; the arrow will be highlighted. Now, click on the down arrow; a flyout will be displayed, as shown in Figure 1-10. In this flyout, you can choose the **Minimize to Tabs** option to display only the tabs in the ribbon. If you choose the **Minimize to Panel Titles** option, the ribbon will display the titles of the panels along with the tabs. You can choose the **Minimize to Panel Buttons** option to display the panels as buttons in the ribbon along with tabs.

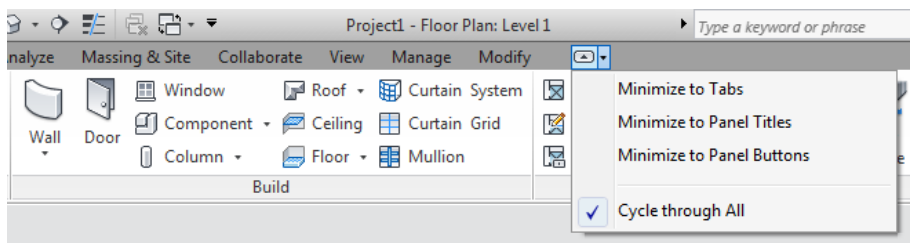


Figure 1-10 *Various options in the flyout for changing the view state of the ribbon*

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Tip: *Tooltips appear when you rest the cursor over any tool icon in the ribbon. The name of the tool appears in the box, assisting you to identify each tool icon.*



Note

*If the ribbon is changed to a different view state, place the cursor over the first arrow at the right of the **Modify** tab, the **Show Full Ribbon** tooltip will be displayed. Click on the arrow; the full ribbon will be displayed.*

The following table describes various tabs in the ribbon and their functions:

Tab	Description
Architecture	Contains tools for creating architectural elements for a project
Structure	Contains tools for creating structural elements in a project
Create	This tab is available in family editor. It contains tools that are used to create a family
Insert	Contains tools to insert or manage secondary files such as raster image files or CAD files
Annotate	Contains tools for documenting a building model such as adding texts and dimensions
Massing & Site	Contains tools for modeling and modifying conceptual mass and site elements
Analyze	Contains tools for energy analysis of the project
Collaborate	Contains tools for collaborating the project with other team members (internal and external)
View	Contains tools used for managing and modifying the current view and also for switching views
Manage	Contains tools for specifying the project and system parameters and project settings
Modify	Contains tools for editing elements in the model

Contextual Tabs in the Ribbon

These tabs are displayed when you choose certain tools or select elements. These tabs contain a set of tools or buttons that relate only to a particular tool or element. For example, when you invoke the **Window** tool, the **Modify | Place Window** contextual tab is displayed. This tab shows 10 panels: **Select**, **Properties**, **View**, **Measure**, **Geometry**, **Clipboard**, **Create**, **Modify**, **Mode**, and **Tag**. The **Select** panel contains the **Modify** tool. The **Properties** panel contains the **Properties** button and the **Type Properties** tool. The **Mode** panel has some necessary tools that are used to load model families or to create the model of a window in a drawing. The other panels, apart from those discussed above, contain the tools that are contextual and are used to edit elements when they are placed in a drawing or selected from a drawing for modification.

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Application Frame

The application frame helps you manage projects in Autodesk Revit Architecture. It consists of **Application** button, **Application Menu**, **Quick Access Toolbar**, **InfoCenter**, and **Status Bar**. These are discussed next.

Application Button

The **Application** button is displayed at the top-left corner of the Revit interface. This button is used to display as well as close the **Application Menu**.

Application Menu

The **Application Menu** contains the tools that provide access to many common file actions such as **Open**, **Close**, and **Save**. Click the down arrow on the **Application** button to display the **Application Menu**, as shown in Figure 1-11. Alternatively, press ALT+F to display tools in the **Application Menu**.

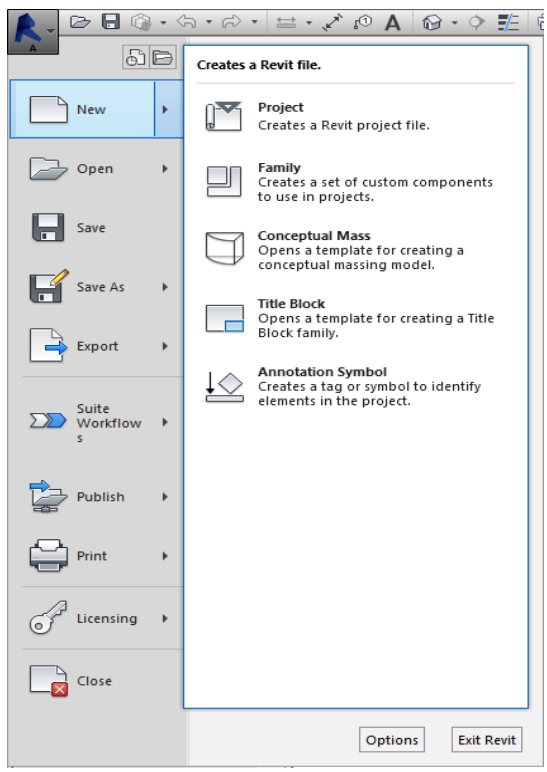


Figure 1-11 The Application Menu

Quick Access Toolbar

The **Quick Access Toolbar**, as shown in Figure 1-12, contains the options to undo and redo changes, open and save a file, create a new file, and so on.

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By default, the **Quick Access Toolbar** contains the following options: **Open**, **Save**, **Redo**, **Undo**, and others. You can customize the display of the **Quick Access Toolbar** by adding more tools and removing the unwanted tools. To add a tool or a button from the panel of the ribbon to the **Quick Access Toolbar**, place the cursor over the button; the button will be highlighted. Next, right-click; a flyout will be displayed. Choose **Add Quick Access Toolbar** from the flyout displayed; the highlighted button will be added to **Quick Access Toolbar**. The **Quick Access Toolbar** can be customized to re-order the tools displayed in it. To do so, choose the down arrow next to the **Switch Windows** drop-down, refer to Figure 1-12; a flyout will be displayed. Choose the **Customize Quick Access Toolbar** option located at the bottom of the flyout; the **Customize Quick Access Toolbar** dialog box will be displayed. Use various options in this dialog box and choose the **OK** button; the **Customize Quick Access Toolbar** dialog box will close and the tools in the **Quick Access Toolbar** will be re-ordered.

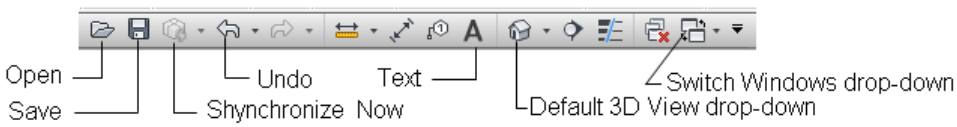


Figure 1-12 The Quick Access Toolbar

InfoCenter

You can use **InfoCenter** to search the information related to Revit Architecture (Help), display the **Subscription Center** panel for subscription services and product updates, and display the **Favorites** panel to access saved topics. Also in the **InfoCenter**, you can use the **Autodesk 360** and the **Exchange Apps** options to log-in to **Autodesk 360** and **Autodesk Exchange Apps** pages. Figure 1-13 displays various tools in **InfoCenter**.

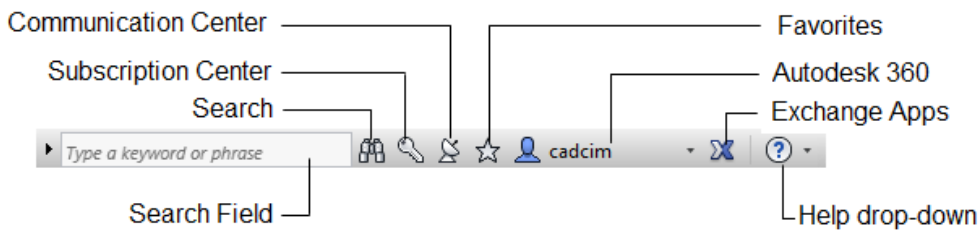


Figure 1-13 The InfoCenter

Status Bar

The **Status Bar** is located at the bottom of the interface screen. When the cursor is placed over an element or component, the **Status Bar** displays the name of the family and type of the corresponding element or components. It also displays prompts and messages to help you use the selected tools.

View Control Bar

The **View Control Bar** is located at the lower left corner of the drawing window, as shown in Figure 1-14. It can be used to access various view-related tools. The **Scale** button shows the scale of the current view. You can choose this button to display a flyout that contains standard drawing scales. From this flyout, you can then select the scale for the current view.

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The **Detail Level** button is used to set the detail level of a view. You can select the required detail level as **Coarse**, **Medium**, and **Fine**. Similarly, the **Visual Style** button enables you to set the display style. The options for setting the display style are: **Wireframe**, **Hidden Line**, **Shaded**, **Consistent Colors**, **Realistic**, and **Raytrace**.

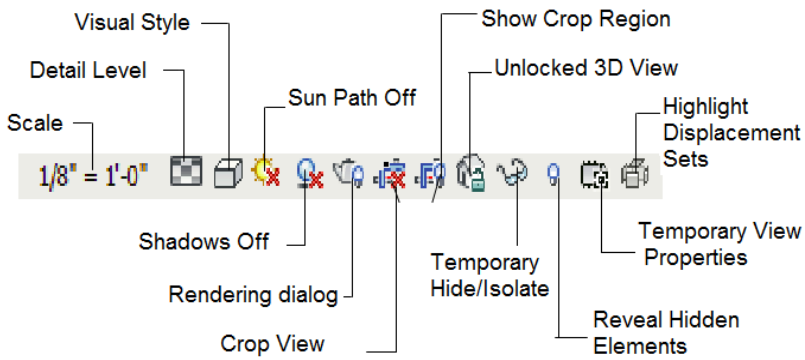


Figure 1-14** The **View Control Bar

Options Bar

The **Options Bar** provides information about the common parameters of component type and the options for creating or editing it. The **Options Bar** changes its appearance based on the type of component selected or being created. You can also modify the properties of the component by entering a new value in the edit box for the corresponding parameter in the **Options Bar**. For example, the **Options Bar** for the **Wall** tool displays various options to create a wall, as shown in Figure 1-15.

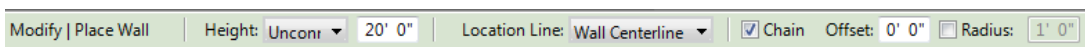


***Figure 1-15** The **Options Bar** with different options to create a wall*

Type Selector

The **Type Selector** drop-down list is located in the **Properties** Palette of the currently invoked tool. For example, if you invoke the **Wall** tool, all properties of the wall will be displayed in the **Properties** Palette. In the **Properties** Palette, you can use the **Type Selector** drop-down list to select the required type of the wall. The options in the **Type Selector** drop-down list keep on changing based on the current function of the tool or the elements selected. When you place an element or a component in a drawing, you can use the **Type Selector** drop-down list to specify the type of element or component. You can also use this drop-down list to change the existing type of a selected element to a different type. In Autodesk Revit Architecture, you can add the **Type Selector** drop-down list to the **Quick Access Toolbar**. To do so, right-click on the **Type Selector** drop-down list in the **Properties** Palette and choose the **Quick Access Toolbar** option from the flyout displayed.

Drawing Area

The Drawing Area is the actual modeling area, where you can create and view the building model. It covers the major portion of the interface screen. You can draw various building components in this area using the pointing device. The position of the pointing device is

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represented by the cursor. The Drawing Area also has the standard Microsoft Windows functions and buttons such as close, minimize, maximize, scroll bar, and so on. These buttons have the same function as that of the other Microsoft Windows-based programs.

Project Browser

The **Project Browser** is located below the ribbon. It displays project views, schedules, sheets, families, and groups in a logical, tree-like structure, as shown in Figure 1-16, and helps you open and manage them. To open a view, double-click on the name of the view; the corresponding view will be displayed in the drawing area. You can close the **Project Browser** or dock it anywhere in the drawing area.

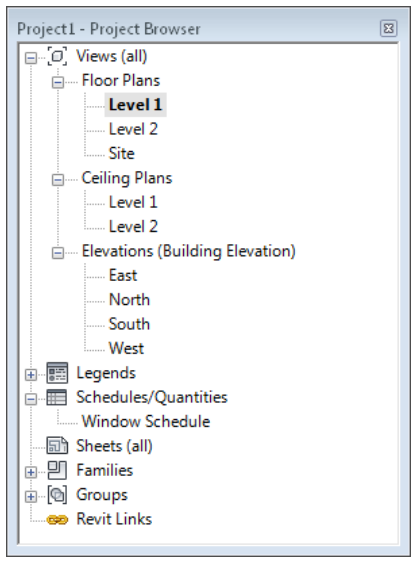


Figure 1-16 *The* ***Project Browser***



Note

If the ***Project Browser*** *is not displayed on the screen, choose the* ***View*** *tab from the ribbon and then click the* ***User Interface*** *drop-down from the* ***Windows*** *panel. Next, select the* ***Project Browser*** *check box from the flyout displayed.*

The **Project Browser** can be organized to group the views and sheets based on the project requirement. For example, while working on a large project with a number of sheets, you can organize the **Project Browser** to view and access specific sheets.



Note

In the ***Project Browser****, you can expand or collapse the view listing by selecting the '+' or '-' sign, respectively. The current view in the drawing window is highlighted in bold letters. The default project file has a set of preloaded views.*

Keyboard Accelerators

In Autodesk Revit Architecture, accelerator keys have been assigned to some of the frequently used tools. These keys are shortcuts that you can type through the keyboard to invoke the corresponding tool. Accelerator keys corresponding to a tool appear as a tooltip when you move the cursor over the tool. In Autodesk Revit Architecture 2014, you can export all commands (even if they do not have shortcut keys assigned) to a XML file. You can further edit the XML file to assign shortcut keys to commands, and then import them back to be used in Revit.



Tip: *As you become accustomed to using Autodesk Revit Architecture, you will find these* ***Keyboard Accelerators*** *quite useful because they save the effort of browsing through the menus.*

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Properties Palette

The **Properties** Palette, as shown in Figure 1-17, is a modeless interface, which displays the type and element properties of various elements and views in a drawing. The **Properties** Palette is dockable and resizable, and it supports multiple monitor configurations. The **Properties** Palette is displayed in the Revit interface by default and it shows the instance properties of an active view. When you select an element from a drawing, the **Properties** Palette displays its instance properties. You can also access the **Type Properties** of the selected element from the **Properties** Palette. To do so, choose the **Edit Type** button from the Palette; the **Type Properties** dialog box will be displayed. In this dialog box, you can change the **Type Properties** of the selected element. In the **Properties** Palette, you can assign a type to a selected element in a drawing from the **Type Selector** drop-down list. In Revit Architecture, you can toggle the display of the **Properties** Palette in its interface. Choose the **Properties** button in the **Properties** panel of the **Modify** tab to hide it. Similarly, you can choose the **Properties** button to display the Palette if it is not visible in the interface.

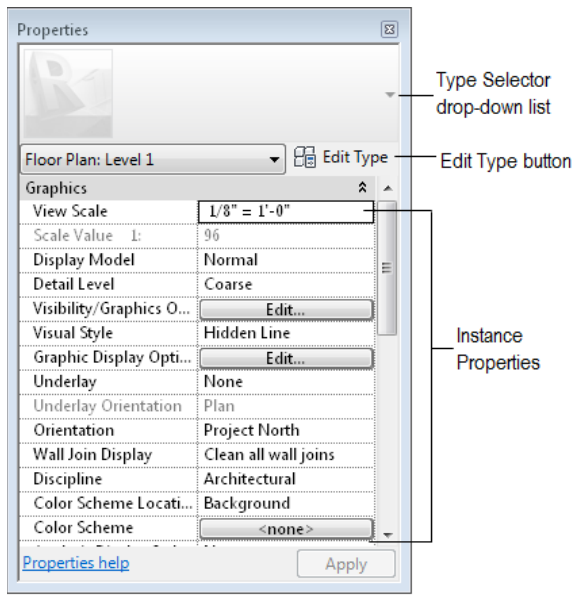


Figure 1-17 *The* ***Properties*** *Palette*

DIALOG BOXES

Certain Autodesk Revit Architecture tools, when invoked, display a dialog box. A dialog box is a convenient method of accessing and modifying the parameters related to that tool. For example, when you choose **Save As > Project** from **Application Menu**, the **Save As** dialog box will be displayed, as shown in Figure 1-18. A dialog box consists of various parts such as dialog label, radio buttons, text or edit boxes, check boxes, slider bars, image box, and tool buttons, which are similar to other windows-based programs. Some dialog boxes contain the [**...**] button. On choosing such buttons, another related dialog box will be displayed. There are certain buttons such as **OK**, **Cancel**, and **Help**, which appear at the bottom of most of the dialog boxes. The names of the buttons imply their respective functions. The button with a dark border is the default button.

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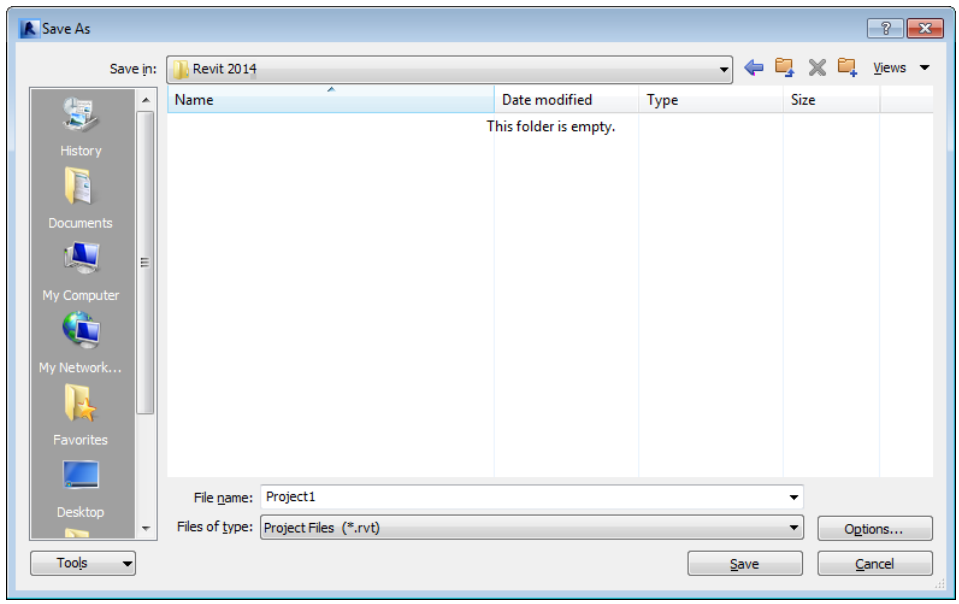


Figure 1-18 *The* ***Save As*** *dialog box*

MULTIPLE DOCUMENT ENVIRONMENT

The multiple document environment feature allows you to open more than one project at a time in a single Autodesk Revit Architecture session. This is very useful when you want to work on different pro jects simultaneously and make changes with reference to each other.

Sometimes, you may need to incorporate certain features from one project into the other. With the help of multiple document environments, you can open multiple projects and then use the **Cut**, **Copy**, and **Paste** tools from the **Clipboard** panel of the **Modify (type of element)** tab to transfer the required components from one project to another. These editing tools can also be invoked by using the CTRL+C and CTRL+V keyboard shortcuts.

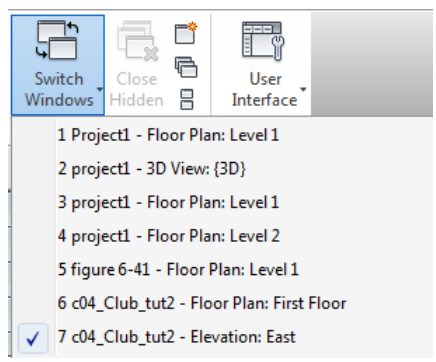


Figure 1-19 *Selecting an option from the* ***Switch Windows*** *drop-down*

To access the opened projects, choose the **Switch Windows** drop-down from the **Windows** panel of the **View** tab; a flyout will be displayed showing the name of different project files opened, as shown in Figure 1-19. Like other Microsoft Windows-based programs, you can select and view the opened projects using the **Cascade** and **Tile** tools from the **Windows** panel of the **View** tab. The cascaded view of projects, as shown in Figure 1-20.

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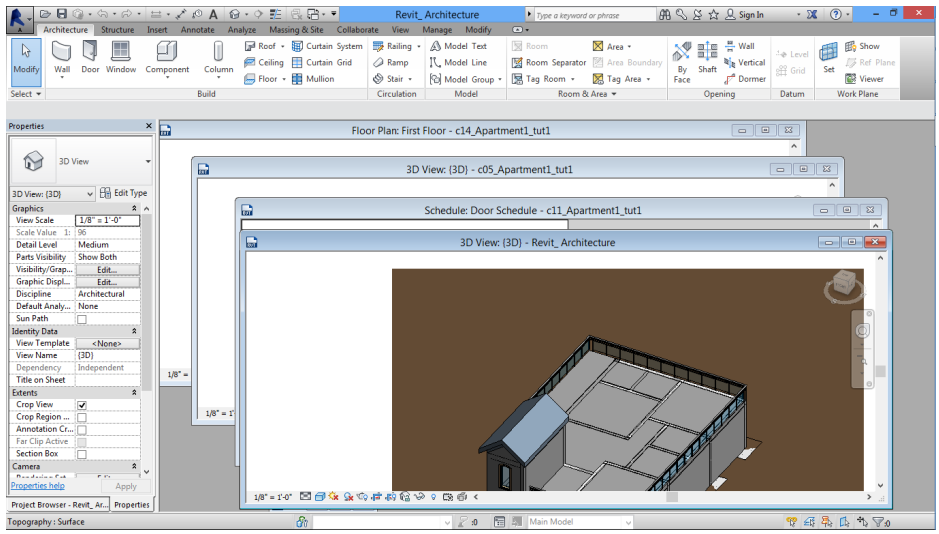


Figure 1-20 *The cascaded view of the projects*

INTEROPERABILITY OF Autodesk Revit Architecture

The models or geometries created in Revit Architecture can easily be exported to AutoCAD based programs, such as 3ds Max and Max Design in the DWG file format. This enables you to visualize and create photorealistic exterior and interior renderings for your project designs. You can also transfer drawings from Revit Architecture to Google SketchUp to visualize your projects in a better way.

Revit Architecture 2014 follows a wide range of industry standards and supports various CAD file formats such as DWF, DGN, DWG, DGN, IFC, SKP, and SAT. For image files, it supports JPG, TIFF, BMP, PNG, AVI, PAN, IVR, and TGA file formats. Besides these, the formats that are supported by Revit Architecture include ODBC, HTML, TXT, gbXML, XLS, and MDB. Revit Architecture is compatible with any CAD system that supports the DWG, DXF, or DGN file format. Revit Architecture can import the models and geometries as ACIS solids. This enables designers to import models from AutoCAD Architecture and AutoCAD MEP (Mechanical, Electrical, and Plumbing) software and to link and import 3D information to Revit Architecture. This feature makes Autodesk Revit Architecture 2014 an efficient, user-friendly, and compatible software.

In Autodesk Revit Architecture 2014, you can directly link the Revit files into 3ds Max Design and load selected views in it. You can also override material in 3ds Max Design and retain its settings when you reload Revit link file. Also, in 3ds Max Design, you can add high level of detail to curved objects to make them smooth. In Autodesk Revit Architecture 2014, the interoperability with V8 Microstation has been introduced. The V8 Microstation files can be imported to the Revit project. In addition to these, mapping functionality for levels, lines, line weights, patterns, and texts and fonts has been added to the export DGN workflow.

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BUILDING INFORMATION MODELING AND Autodesk Revit Architecture 2014

Building Information Modeling (BIM) is defined as a design technology that involves the creation and use of coordinated, internally consistent, and computable information about a building project in design and construction. BIM covers spatial relationships, geographic information, quantities, and properties of building components. Using this technology, you can demonstrate the entire life cycle of a building project starting from the process of construction, facility operation, and information about quantities and shared properties of elements. BIM enables the circulation of virtual information model from the design team to contractors and then to the owner, thereby adding changes and their knowledge to update the model at each stage of transfer. The ability to keep information up-to-date and make it available in an integrated digital environment enables the architects, owners, builders, and engineers to have clear vision of the project before the commencement of actual construction. It enables them to make better and faster decisions as well as to improve the quality and profitability of projects. Autodesk Revit Architecture 2014 is a specially designed platform based on BIM. Revit Architecture 2014 is the best example of the BIM technology. Revit Architecture's parametric model represents a building as an integrated database of coordinated information. In Revit, change anywhere is change everywhere. Any change made in your project at any stage is reflected in the entire project, and also, due to the parametric behavior of elements, the project is updated automatically according to the changes made anywhere in the project. Also, the integration of Revit Architecture with the available in-built commercial tools such as solar studies, material takeoffs, and so on greatly simplifies the project design and reduces the time consumed by these analyses, thereby enabling faster decision making.

Autodesk Revit Architecture HELP



Autodesk Revit Architecture provides help to easily understand various tools and methods used in it. In Autodesk Revit Architecture 2014, you can access online help documentation (Autodesk WikiHelp) as well as local (offline) help documentation. You can access the local help documentation file while you are not connected to the internet.

To access the help feature, click on the **Help** down arrow on the right of the **InfoCenter**; a flyout containing help options will be displayed, as shown in Figure 1-21. Various options to access the help are discussed next.

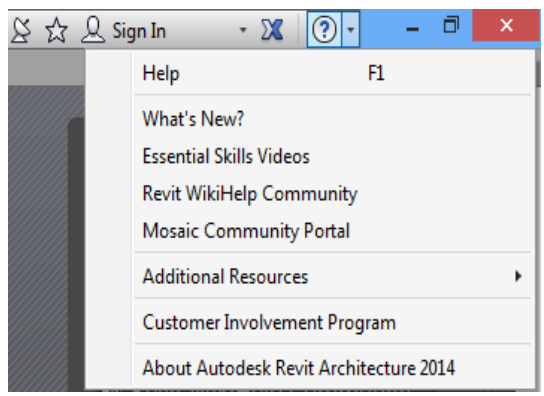


Figure 1-21 *A drop-down menu displaying help options*

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Using the Local Revit Architecture 2014 Help

You can access local Revit Architecture 2014 help while you are offline. To do so, choose the Help tool from the InfoCenter bar; the **Revit Help** page will be displayed, as shown in Figure 1-22. In this page, there are several tabs that contain information of help topics. These tabs are discussed next.

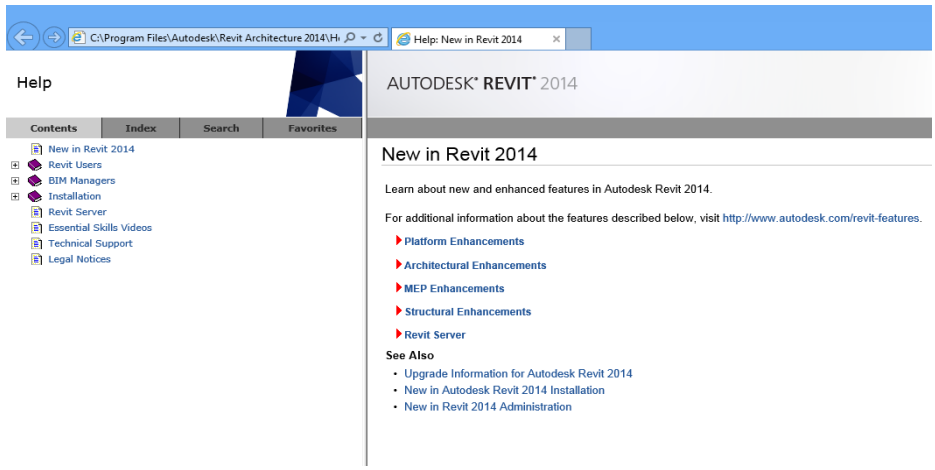


Figure 1-22 *The partial view of the* ***Revit Help*** *page*

Contents Tab

By default, this tab is chosen in the **Revit Help** page. In this tab, the **New in Revit 2014** link is selected, by default. As a result, the **New in Revit 2014** page is displayed with the information about the new and enhanced features that are introduced in Autodesk Revit Architecture 2014. Information related to various features such as Platform Enhancement, Architectural Enhancement, MEP Enhancement, Structural Enhancement, and Revit Server is displayed in this page.

On expanding the **Revit Users** option, various options such as **What's New**, **Introduction to Revit**, **Start a Project**, and so on will be displayed. You can use these options to access information on the new features introduced how to start a project and so on. On expanding the **BIM Managers** option, information related to Revit 2014 Administration, Revit Server, and so on is displayed. On expanding the **Installation** option, you can access information regarding the system requirement, Revit installation overview, Revit Server installation method, and so on.

The subscription feature links such as **Revit Server**, **Essential Skill Videos**, **Technical Support** and **Legal Notices** help you to know about the add-ons that are available to the subscribers.

Index Tab

The **Index** tab displays the complete index of tools and options available in Autodesk Revit Architecture in an alphabetical order. To search for the information about a tool or an option, type its name or a related word in the **Search for the keyword** edit box and choose the **View** button; the related reference to the word entered will automatically get highlighted in the list area. You can choose any of the topics in the list area to view the information related to it.

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Search Tab

In Autodesk Revit Architecture, you can access the help files. To do so, choose the **Search** tab; a page that will help you to search topics in Revit will be displayed. Type a keyword in the **Search help for** edit box and choose the **Search** button; the topics related to the search will be displayed in the area below the edit box. In the **Search method** area, you can use various options to do advanced searches regarding the related topics in Revit.

Using the Autodesk WikiHelp

In Autodesk Revit Architecture 2014, Autodesk WikiHelp has been introduced to access various help topics online. To access the Autodesk WikiHelp for Revit 2014, press the F1 key or choose the **Help** tool from the **InfoCenter**. On doing so, the **Autodesk WikiHelp** page will be displayed, as shown in Figure 1-23.

In the **Autodesk WikiHelp** page, different areas such as **Browse Help**, **Add Knowledge**, and **Most Popular** are displayed. In the **Browse Help** area, you can click on any link to view specific information contained in that link. To view various tutorials in Revit, choose the **Tutorials** link in the **Most Popular** area; the **Tutorials** page with various tutorials and beginners guide will be displayed. Also, in the **Most Popular** area, you can click on any of the links to view topics related to them. In the **Autodesk WikiHelp**, page, you can add articles and knowledge resources to the Revit community. To do so, click on any of the link in the **Add Knowledge** area; page related to adding various knowledge resources will be displayed. In this page, you can add and share information about various Revit softwares. To learn about adding information, choose the **How to add your knowledge** button in this page. On doing so, the **Wiki Guidelines** page will open and you will be guided how to contribute to the online community.

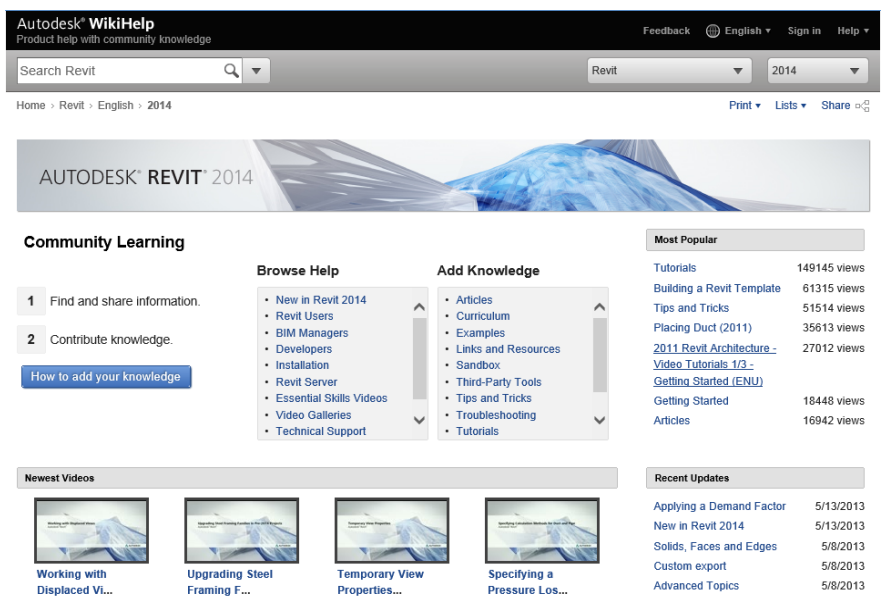


Figure 1-23 *The* ***Autodesk WikiHelp*** *page*

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Using the Context Sensitive Help

If you need help specific to a selected tool or a dialog box, Autodesk Revit Architecture provides several options to access the relevant information. Many dialog boxes contain the **Help** tool and can be used to view help on the options of that dialog box and related topics. If the **Help** tool is not available, you can press the F1 key, while the dialog box is open, to access the related information. To inquire about a tool, place the cursor over it; a **Help** message box will be displayed. Now, you can press the F1 key to view more help contents pertaining to the button, in a separate window. To turn off the **Help** tooltips for buttons, choose the **Options** button from **Application Menu**; the **Options** dialog box will be displayed. In the **User Interface** tab of this dialog box, select the **None** option from the **Tooltip assistance** drop-down list in the **Tooltips** area. Now, choose **OK** to close the **Options** dialog box.

WORKSHARING USING REVIT SERVER

Worksharing is a method of distributing work among team involved in a project, and accomplishing it within the stipulated period of time. In worksharing, each person involved in the project is assigned a task that has to be accomplished by proper planning and by coordinating with the other members of the team.

In a large scale building project, worksharing helps in finishing a project in time and meeting the quality requirements that are set during the process. Generally, in a large scale building project, worksharing is based on the specialization of work. The professionals such as structural engineers, architects, interior architects, and MEP engineers are involved in their respective fields to accomplish the project. So, the distribution of work at the primary stage is made on the basis of the area of specialization. Each professional has his own set of work to perform for the accomplishment of the project.

In Autodesk Revit Architecture 2014, you can apply server-based worksharing with the help of Revit Server, which is a server application. Revit Server uses a central server and multiple local servers for collaborating across a Wide Area Network (WAN). The central server hosts the central model of a workshared project and remain accessible to all team members over the Wide Area Network. Similarly, the local server is accessible to all team members in a Local Area Network (LAN). The local server hosts a local updated copy of the central model. In the Worksharing environment, the team members are not aware of the local server, as it is transparent in their daily operations. Refer to Figure 1-24 for the network model of Revit Server.

In Worksharing environment, a team member starts working on the local model of the central model. The local model will be saved in the computer of the team member. As the team member works, the local server requests updated information from the central model on the central server, using available network capacity to transfer the data over the WAN. The updated version of the model is stored on the local server, so the updates are readily available when a team member requests them.

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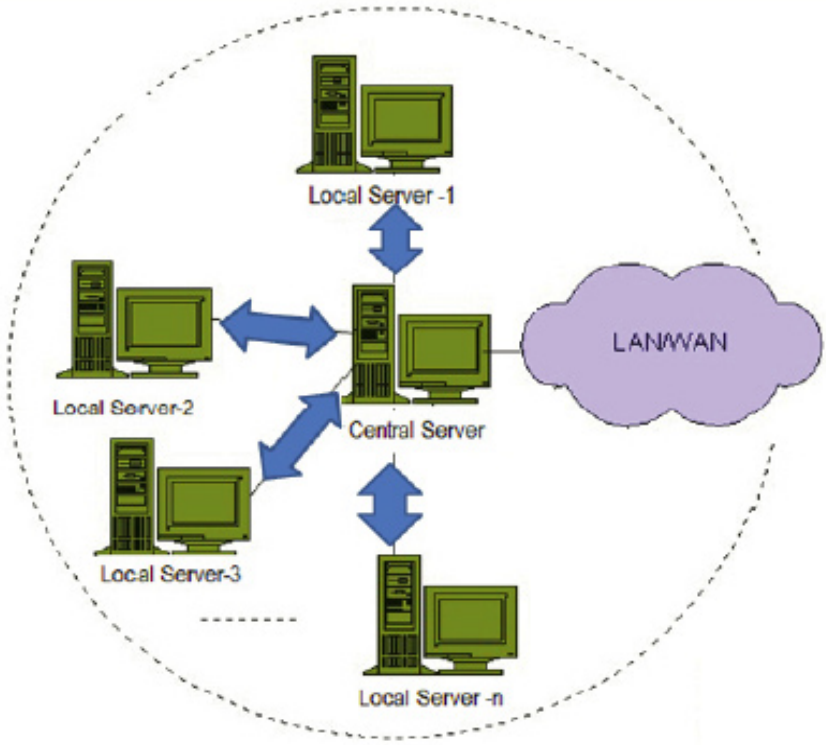


Figure 1-24 *The Network model of Revit Server*

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