G. API User Interface Guidelines

Introduction

This section is intended to provide guidance and best practices for designing user interfaces for applications based on the Revit API. The following principles are followed by the Autodesk design and development staff when developing Revit and will provide a good starting point to the rest of this document.

Consistency

It is important for applications based on the API to provide a user experience that is consistent with Revit. This will allow the users of your application to leverage knowledge they developed while learning Revit. Consistency can be obtained by re-using certain dialog types, instead of creating or re-creating dialogs. See the dialog types section for examples of dialogs you can leverage when creating your application.

Speak the Users' Language

Understanding and communicating within the user's language is always critical, but particularly within a user interface. Users will need to provide as well as receive feedback from the application.

The tone used in user interface language should be informal, helpful, and consultative in tone. The user interface should politely provide information that is clear and informative to the user, and that can be acted upon accordingly with confidence.

Good Layout

A well-balanced layout of information can be achieved by following Gestalt Principles:

- PROXIMITY: items placed close together are perceived as being closely associated
- SIMILARITY: items that share similar appearance are perceived as being closely associated
- CONTINUITY: humans tend to prefer simple, unbroken contours over more complex, yet similarly plausible forms

Good Defaults

When a user needs to edit data or change a setting, the lack of any or obvious default can lead to errors and force users to re-edit and re-enter information. Remember to:

- Set the control value with a reasonable default value for the current context by consulting usage data or using the previously entered values by the user. The appropriate default may be blank.
- Where appropriate, remember the last used setting of the user instead of always presenting the same system default

A common example is pre-setting certain settings or options which would be the most often selected.

Progressive Disclosure

As an application's complexity increases, it becomes harder for the user to find what they need. To accommodate the complexity of a user interface, it is common to separate the data or options into groupings. The concept of Progressive Disclosure shows the needed information as necessary. Progressive Disclosure may be user-initiated, system initiated, or a hybrid of the two.

User initiated action

Examples here include a Show More button for launching a child dialog, TABS for chunking interface elements into logical chunks, and a COLLECTION SEARCH / FILTER for selectively displaying items in a collection by certain criteria.

System initiated action

These can either be:

- Event based: An event within the product initiates the disclosure of more information, such as with a **TASK DIALOG**.
- Time based: More information is disclosed after specified amount of time passes, such as in an automatic slide show.

Hybrid (user and time initiated)

An example of a hybrid is Progressive TOOLTIPS, where the user initiates the initial tooltip by hovering the mouse over the control, but after a set amount of time a more detailed tooltip appears.

Localization of the User Interface

If you plan to localize the user interface into languages other than English, be aware of the space requirements.

The English language is very compact, so translated text usually ends up taking up more space (30% on average for longer strings, 100% or more on short strings (a word or short phrase)). This can present problems if translated text is inserted into dialog boxes that were designed for an English product, because there is not usually sufficient space in available to fit the translated text. The common solution to this problem is to resize the dialog box so that the translated text fits properly, but most times this isn't the best solution.

Instead, by careful design of the dialog box by the developer, the same dialog box resource can be used for most if not all languages without the need for costly and time-consuming re-engineering. This paper tells you how to design 'global' dialog boxes.

These following design rules must be adhered to at all times to prevent globalization and localization problems.

- The English dialog must be at least 30% smaller than the minimum screen size specified by the product.
- A dialog must be designed with the following amounts of expansion in mind. This amount of extra space should look good in English and avoid resizing for most localization.

CHARACTERS	PERCENTAGE
1-5 characters	100%
6-10 characters	40%
11-100 characters	30%
100 characters or greater	20%

- Make the invisible control frame around text controls, frames etc. as large as possible to allow for longer translated text. These frames should be at least 30% larger than the English text.

Refer to the USER INTERFACE TEXT GUIDELINES FOR MICROSOFT WINDOWS USER EXPERIENCE GUIDELINES for additional information regarding localizing text.

Dialog Guidelines

Introduction

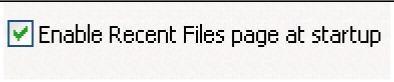
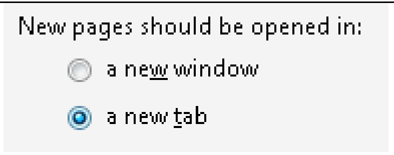
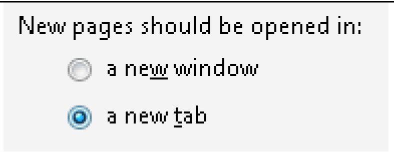
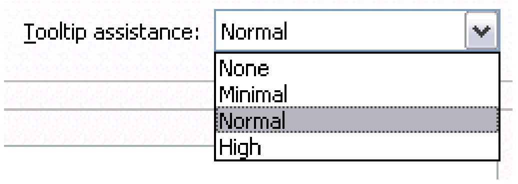
A dialog is a separate controllable area of the application that contains information and/or controls for editing information. Dialogs are the primary vehicle for obtaining input from and presenting information to the user. Use the following guidelines when deciding which dialog to use.

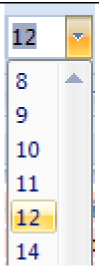
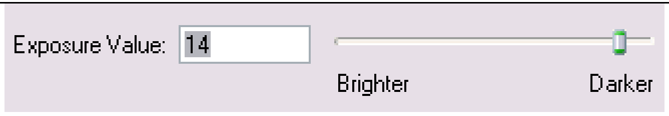
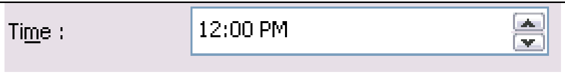
Dialog Type	Definition	Use When
Modal	• Halts the rest of the application and waits for user input	• Task(s) in the dialog are infrequent • It is acceptable to halt the system while the user enters data
Modeless	• User can switch between the dialog and the rest of the application without closing the dialog	• Task(s) in the dialog are frequent • Halting the system would interrupt the user workflow

Behavior Rules

- A dialog can either be user initiated (prompted by clicking a control) or system initiated (a warning triggered by a system event)
- The initial dialog location typically should be centered on the screen, but this rule may vary based on variation or on a particular context of use, but should have an immediate focus
- Dialogs should be resizable when the content is dynamic, please see DYNAMIC LAYOUT section for more on this topic

Dialog Controls

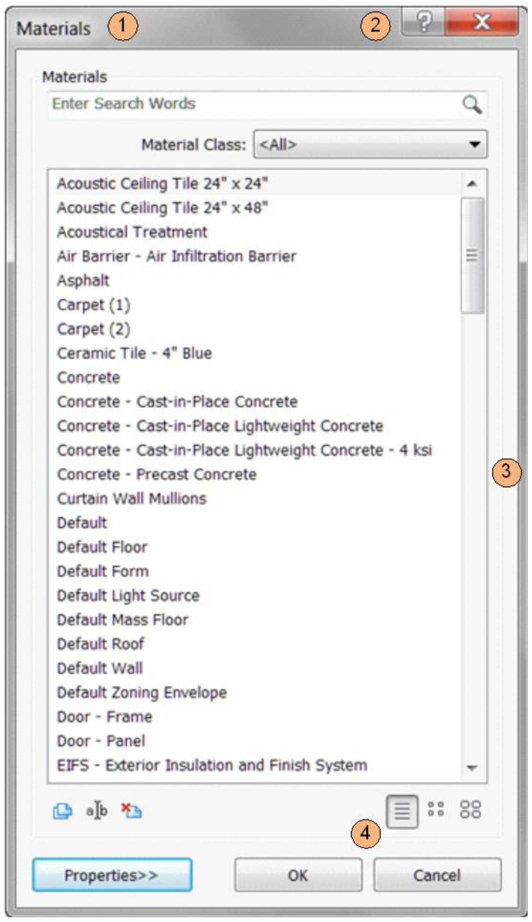
Control	Use When	Example
CHECK BOX	The choice being made (and it's opposite) can be clearly expressed to the user with a single label	 ✓ Enable Recent Files page at startup The opposite of enable is disable
RADIO BUTTON	There are between 2 - 5 mutually exclusive but related choices and the user can only make one selection per choice	 New pages should be opened in: ○ a new window ● a new tab
TEXT BOX	This choice requires manually entering a numerical text value	 New pages should be opened in: ○ a new window ● a new tab
DROP DOWN LIST	Select from a list of mutually exclusive choices It is appropriate to hide the rest of the choices and only show the	 Tooltip assistance: Normal None Minimal Normal High

	default selection Also, use this instead of radio buttons when there are more than four choices or if real estate is limited	
COMBO BOX	Similar to a drop-down list box, but allows the user to enter information not pre-populated in the drop-down	
SLIDER	Use when the expected input or existing data will be in a specific range. Sliders can also be combined with text boxes to give additional level of user control and give feedback as the slider is moved	Exposure Value: 14
SPINNER	Use this option if the data can be entered sequentially and has a logical limit. This can be used in conjunction with an editable text box	Time : 12:00 PM

Laying Out a Dialog

Basic Elements

Every dialog contains the following elements:

	Element	Requirements	Illustration
1	**Title bar**	Title bars text describes the contents of the window.	
2	**Help button**	A button in the title bar next to the close button. • Help button is optional - use only when a relevant section is available in the documentation • Note that many legacy dialogs in Revit still have the Help button located in the bottom right of the dialog	
3	**Controls**	The bulk of a dialog consists of controls used to change settings and/or interact with data within an application. The layout of the controls should follow the LAYOUT FLOW, SPACING AND MARGINS, **Grouping**, and DIALOG CONTROLS sections outlined below. When an action control interacts with another control, such as a text box with a Browse button, denote the relationship by placing the *RELATED* controls in one of three places: • To the right of and top-aligned with the other control • Below and left-aligned with the other control. See CONTENT EDITOR • Vertically centered between related controls. See LIST BUILDER	
4	**Commit Buttons**	See the COMMITTING CHANGES section. The most frequently-used Commit buttons include: • OK • Cancel • Yes • No • Retry • Close	

Materials

Materials

Enter Search Words

Material Class: <All>

Acoustic Ceiling Tile 24" x 24"
Acoustic Ceiling Tile 24" x 48"
Acoustical Treatment
Air Barrier - Air Infiltration Barrier
Asphalt
Carpet (1)
Carpet (2)
Ceramic Tile - 4" Blue
Concrete
Concrete - Cast-in-Place Concrete
Concrete - Cast-in-Place Lightweight Concrete
Concrete - Cast-in-Place Lightweight Concrete - 4 ksi
Concrete - Precast Concrete
Curtain Wall Mullions
Default
Default Floor
Default Form
Default Light Source
Default Mass Floor
Default Roof
Default Wall
Default Zoning Envelope
Door - Frame
Door - Panel
EIFS - Exterior Insulation and Finish System

Layout Flow

When viewing a dialog within a user interface, the user has multiple tasks to accomplish. How the information is designed and laid out must support the user in accomplishing their task(s). Keeping this in mind, it is important to remember users:

- Scan (not read) an interface and then stop when they get to what they were looking for and ignore anything beyond it
- Focus on items that are different
- Not scroll unless they need to

Lay out the window in such a way that suggests and prompts a "path" with a beginning, middle, and end. This path should be designed to be easily scanned. The information and controls in the "middle" of the path must be designed to be well balanced and clearly delineate the relationship between controls. Of course, not all users follow a strictly linear path when completing a task. The path is intended for a typical task flow.

Variation A: Top-Down

Place UI items that:

1. Initiate a task in the upper-left corner or upper-center
2. User must interact with to complete the task(s) in the middle
3. Complete the task(s) in the lower-right corner

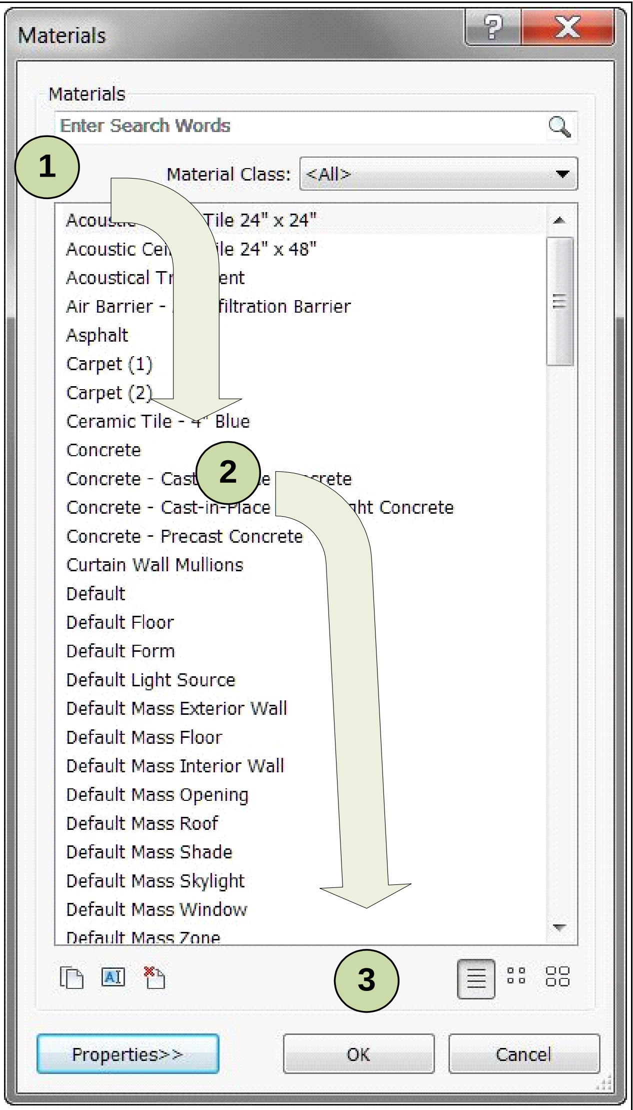
In this example (Materials dialog), the user does the following:

1. Searches/filters the list
2. Selects an item
3. Commits or Cancels

Variation B: Left-Right

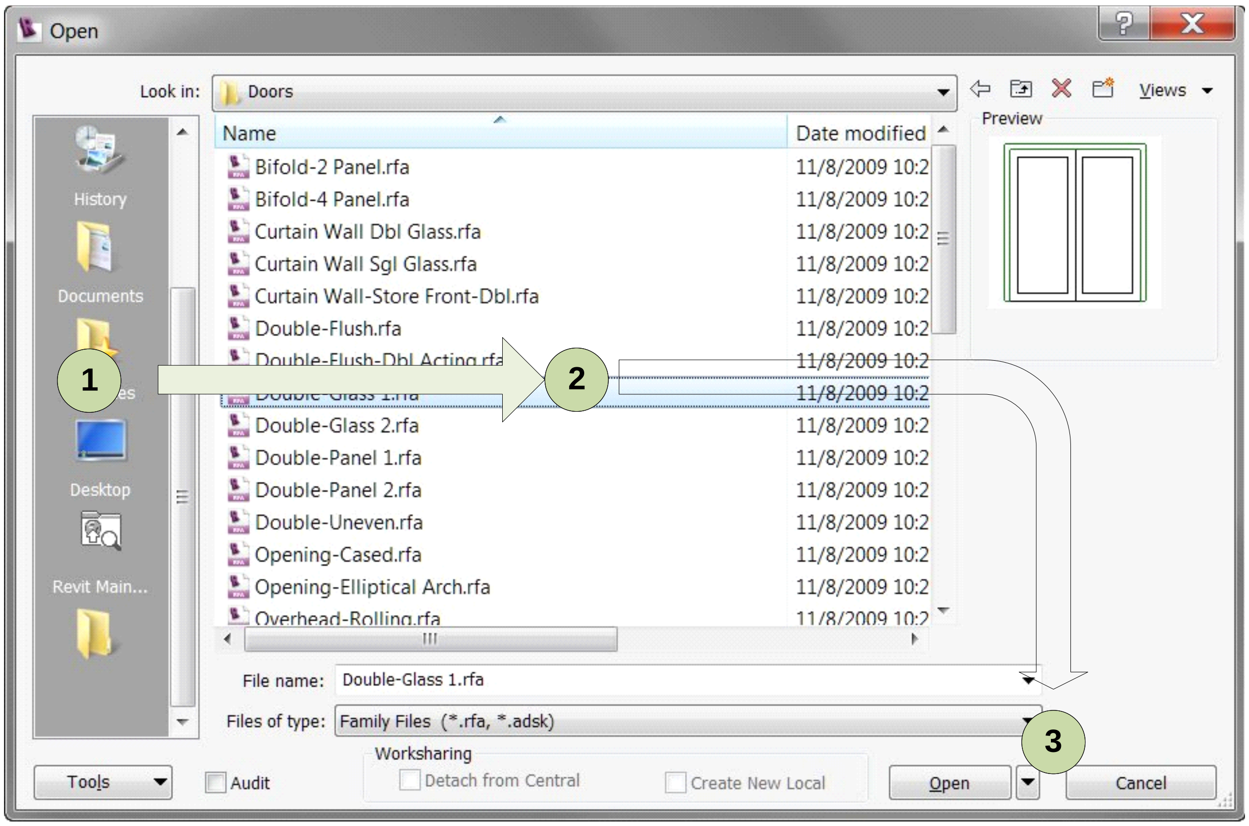
Place UI items that:

1. Initiate a task or change between modes in the far left (see TABS section)
2. User must interact with to complete the task(s) in the middle. This may be separated into separate distinct sections
3. Complete the task(s) in the lower-right corner



Acous Tile 24" x 24"
Acoustic Cei ile 24" x 48"
Acoustical Tr ent
Air Barrier - filtration Barrier
Asphalt
Carpet (1)
Carpet (2)
Ceramic Tile - 4" Blue
Concrete
Concrete - Cast e crete
Concrete - Cast-in-Place ht Concrete
Concrete - Precast Concrete
Curtain Wall Mullions
Default
Default Floor
Default Form
Default Light Source
Default Mass Exterior Wall
Default Mass Floor
Default Mass Interior Wall
Default Mass Opening
Default Mass Roof
Default Mass Shade
Default Mass Skylight
Default Mass Window
Default Mass Zone

Figure 197 – Materials dialog



File name: Double-Glass 1.rfa

Files of type: Family Files (*.rfa, *.adsk)

Figure 198 – Revit File Open dialog

Note: A top-down flow can also be used within this dialog, if they user is browsing the file hierarchy instead of the shortcuts on the far left.

Variation C: Hybrid

As seen in Variation B, many windows that are laid out left to right are actually a hybrid of left-right and top-down.

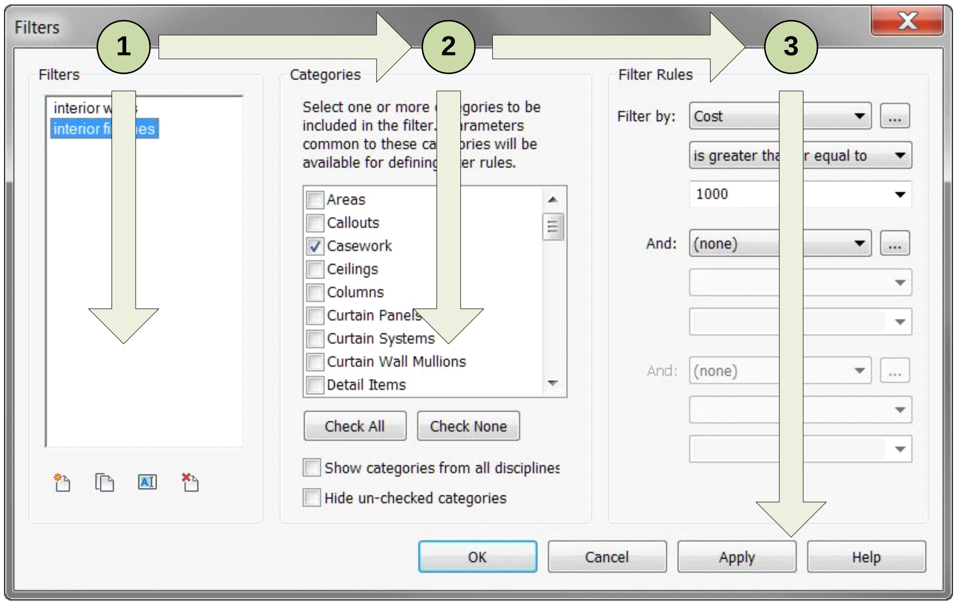


Figure 199 - Revit Filters dialog

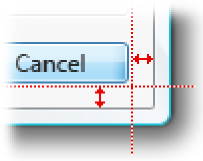
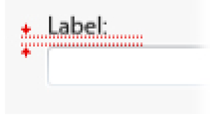
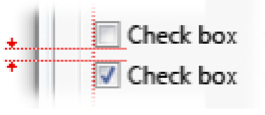
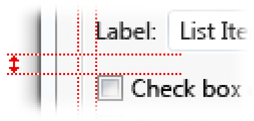
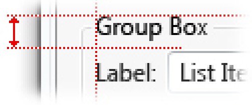
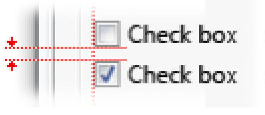
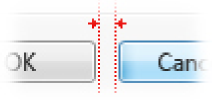
In this example (Revit Filters), the three primary tasks are grouped into columns, delineated by the group boxes: Filters, Categories and Filter Rules. Each of these columns contains a top-down flow that involves selecting from a collection of items or modifying a control.

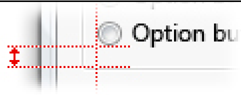
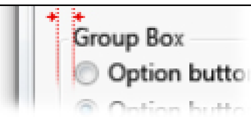
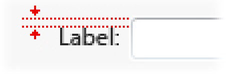
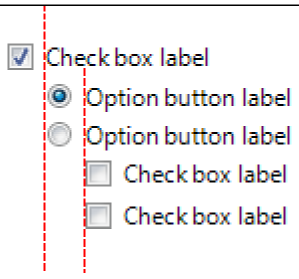
Spacing and Margins

The following table, taken from the LAYOUT SECTION OF THE MICROSOFT WINDOWS USER EXPERIENCE GUIDELINES lists the recommended spacing between common UI elements (for 9 pt. Segoe UI at 96 dpi). For a definition of the difference between dialog units (DLU) and relative pixels, see the LAYOUT METRICS section from the Microsoft guidelines.

TIP: Visual Studio makes it easy to follow these guidelines using a combination of Margin and Padding properties and the Snap lines feature. For more information, see *WALKTHROUGH: LAYING OUT WINDOWS FORMS CONTROLS WITH PADDING, MARGINS, AND THE AUTO SIZE PROPERTY.*

Spacing and Margins Table

Element	Placement	Dialog units	Relative pixels
	Dialog box margins	7 on all sides	11 on all sides
	Between text labels and their associated controls (for example, text boxes and list boxes)	3	5
	Between related controls	4	7
	Between unrelated controls	7	11
	First control in a group box	11 down from the top of the group box; align vertically to the group box title	16 down from the top of the group box; align vertically to the group box title
	Between controls in a group box	4	7
	Between horizontally or vertically arranged buttons	4	7

	Last control in a group box	7 above the bottom of the group box	11 above the bottom of the group box
	From the left edge of a group box	6	9
	Text label beside a control	3 down from the top of the control	5 down from the top of the control
	Between paragraphs of text	7	11
	Smallest space between interactive controls	3 or no space	5 or no space
	Smallest space between a non-interactive control and any other control	2	3
	When a control is dependent on another control, it should be indented 12 DLUS or 18 relative pixels, which by design is the distance between check boxes and radio buttons from their labels.	12	18

Grouping

Group boxes are the most common solution used to explicitly group related controls together in a dialog and give them a common grouping.

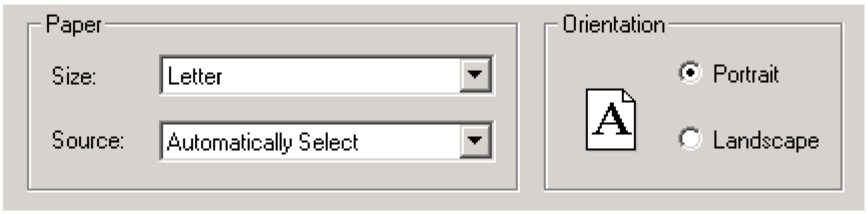


Figure 200 - Group box within a standard Print dialog

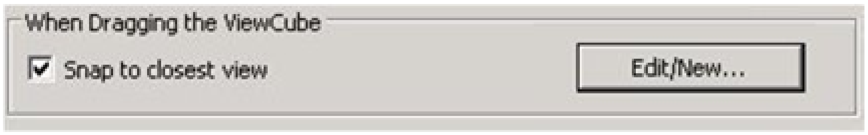
A group box should include:

- Two or more related controls
- Exists with at least one other group box
- A label that:
    - describes the group
    - follows sentence style
    - is in the form of a noun or noun phrase
    - does not use ending punctuation
- A Spacing and Margins section describes spacing rules

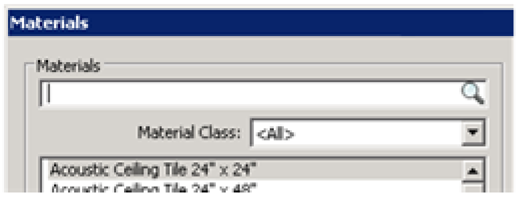
Poor Examples- What Not to Use

The following are examples of what **should not** be done:

Group boxes without a label or a group box with only one control.



One group box in a dialog.



The (Materials) single group box title is redundant with the dialog title and can be removed.

Figure 201 – Group box with no label and group box with one control and Group box with title that is redundant with dialog title

Avoid "nesting" two of more group boxes within one another and placing Commit buttons inside a group box.

Horizontal Separator

An alternative to the traditional group box is a horizontal separator. Use this only when the groups are stacked vertically in a single column.

The following example is from Microsoft Outlook 2007:

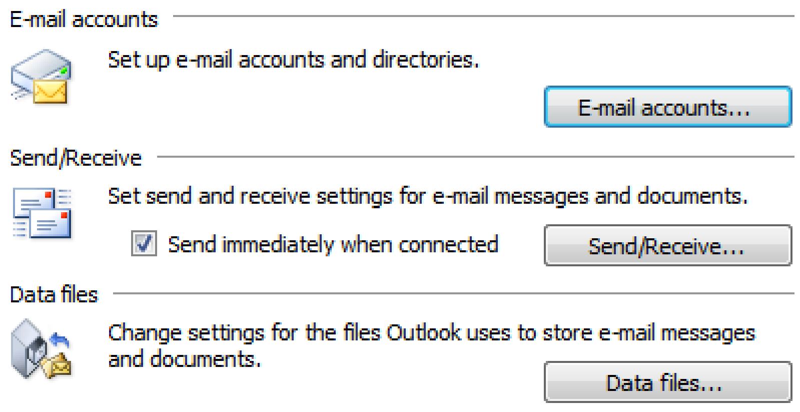

E-mail accounts
Set up e-mail accounts and directories.
E-mail accounts...
Send/Receive
Set send and receive settings for e-mail messages and documents.
Send immediately when connected
Send/Receive...
Data files
Change settings for the files Outlook uses to store e-mail messages and documents.
Data files...

Figure 202 - Horizontal separators in Microsoft Outlook 2007

Spacing between the last control in the previous group and the next grouping line should be 12 DLUs (18 relative pixels).

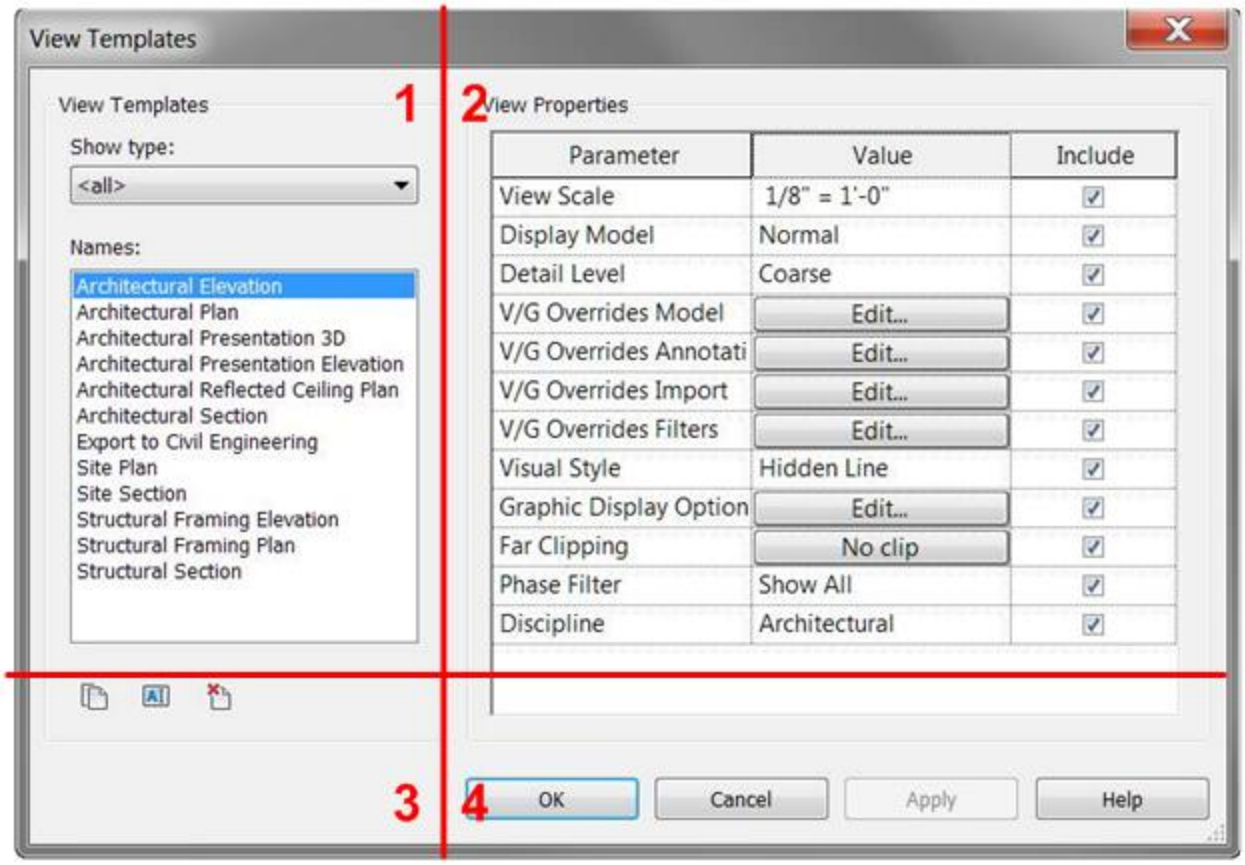
Dynamic Layout

Content that is presented on different types or sizes of display devices usually requires the ability to adapt to the form that it is displayed in. Using a dynamic layout can help when environment changes such as localizing to other languages, changing the font size of content, and for allowing user to manually expand the window to see more information.

To create a dynamic layout:

- Treat the content of the window as dynamic and expand to fill the shape of its container unless constrained.
- Add a resizing grip to the bottom right corner of the dialog.
- The dialog should not be resizable to a size smaller than the default size.
- The user defined size should be remembered within and between application sessions.
- Elements in the dialog should maintain alignment during resizing based on the quadrant they are described in the following table:

Home Quadrant	Alignment
1	Left and Top
2	Right and Top
3	Left and Bottom
4	Right and Bottom
Multiple	If control is located in multiple quadrants, it should anchor to quadrant 1 and/or 3 (to the left) and expand/contract to the right to maintain alignments



View Templates

Show type: <all>

Names:
- Architectural Elevation
- Architectural Plan
- Architectural Presentation 3D
- Architectural Presentation Elevation
- Architectural Reflected Ceiling Plan
- Architectural Section
- Export to Civil Engineering
- Site Plan
- Site Section
- Structural Framing Elevation
- Structural Framing Plan
- Structural Section

View Properties

Parameter	Value	Include
View Scale	1/8" = 1'-0"	✓
Display Model	Normal	✓
Detail Level	Coarse	✓
V/G Overrides Model	Edit...	✓
V/G Overrides Annotati	Edit...	✓
V/G Overrides Import	Edit...	✓
V/G Overrides Filters	Edit...	✓
Visual Style	Hidden Line	✓
Graphic Display Option	Edit...	✓
Far Clipping	No clip	✓
Phase Filter	Show All	✓
Discipline	Architectural	✓

Figure 203 - Four square grid applied to Revit View Templates dialog to demonstrate how it should be resized

In this example, the list box is located in all four quadrants. So, it is anchored to the top-left and expands to the right and to the bottom.

Implementation Notes

Here are the some steps to consider when implementing a dynamic layout:

- Break the design on sections based on the structure of the content and flow you would like to achieve when container's size changes.
- Define the minimum, maximum and other size constrains for the various sections and control used. This is usually driven by the purpose of the data type we are presenting, images, supplemental information and controls.
- Consider alignment, that is, how the content will flow when re-sized.
- Consider which items should be static and which dynamic and how they are expandable – which should usually be for left-to-right languages, and dialogs should flow to the right and bottom, being anchored and aligned to the top and left.

For guidelines on how different controls should handle resizing, see the table below:

Control	Content	Re-sizable	Moveable
Button	Static	No	Yes
Link	Static	No	Yes
Radio Button	Static	No	Yes
Spin Control	Static	No	Yes, based on the element to which it is attached
Slider	Static	X Direction	Yes
Scroll Bar	Static	X Direction	Yes
Tab	Dynamic	X and Y Direction	Yes, but not smaller then the biggest control contained
Progressive Disclosure	Dynamic	X and Y Direction	Yes, but not smaller then the biggest control contained
Check Box	Static	No	Yes
Drop-Down List	Dynamic	X Direction	Yes but not smaller then the biggest text contained.
Combo Box	Dynamic	X and Y Direction	Yes, but not smaller then the biggest text contained
List View	Dynamic	X and Y Direction	Yes, but not smaller then the biggest text contained
Text Box	Dynamic	X and Y if multi-line	Yes
Date Time Box	Dynamic	X Direction	Yes, but not smaller then the biggest text contained
Tree View	Dynamic	X and Y Direction	Yes, but not smaller then the biggest text contained
Canvas	Dynamic	X and Y Direction	Yes
Group Box	Dynamic	X and Y Direction	Yes, but not smaller then the biggest control contained
Progress Bar	Static	X	Yes
Status Bar	Dynamic	X	Yes

Table or data grid	Dynamic	X and Y	Yes, table columns should grow proportionally in the X direction

***TIP**: For more detail on using a FlowLayoutPanel to build a resizable dialog, see:*
Walkthrough: Arranging Controls on Windows Forms Using a FlowLayoutPanel

Dialog Types

There are a handful of dialog types that persist throughout the Revit products. Utilizing these standard types helps to drive consistency and leverage users' existing learning and knowledge patterns.

Standard input dialog

This is the most basic dialog type. This should be used when the user needs to make a number of choices and then perform a discrete operation based on those choices. Controls should follow rules for

Grouping, SPACING AND MARGINS, and LAYOUT FLOW.

The Revit Export 2D DWF Options dialog is a good example of a Standard Input dialog.

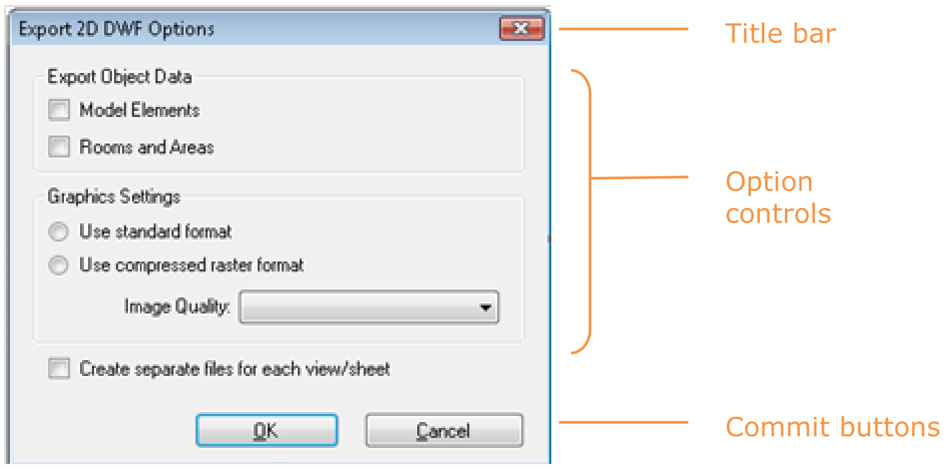


Figure 204 - The Export 2D DWF Options dialog

Property Editor

Use when an item's properties need to be modified by the user. To create a property editor, provide a TABLE VIEW that presents a name/property pair. The property field can be modified by a Text Box, Check Box, Command Button, Drop-Down List, or even a slider.

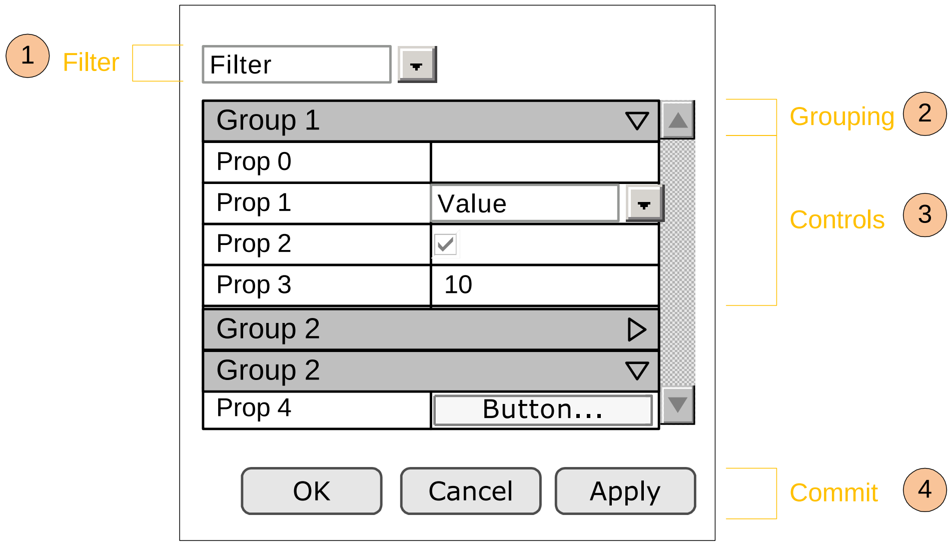


Figure 205 - Property Grid

Supported Behaviors

ID	Behavior	Description	Required
1	Filter	Filters the list of properties based on specified criteria	No
2	Grouping	Grouping the properties makes them easier to scan	No
3	Controls (Edit properties of an item)	Each value cell can contain a control that can be edited (or disabled) depending on the context	Yes
4	Commit (Buttons)	Optional, only use if within a modal dialog	No

Content Editor

If multiple action controls interoperate with the same content control (such as a list box), vertically stack them to the right of and top-aligned with the content control, or horizontally place them left-aligned under the content control. This layout decision is at the developer's discretion.

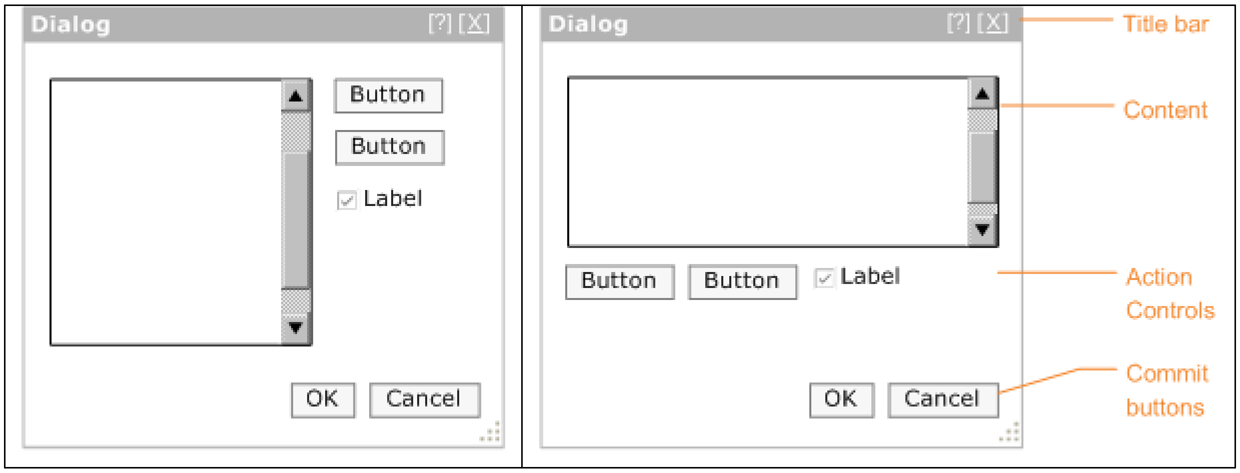


Figure 206 – Action controls to the right of content and action controls below content

Collection Viewer

In applications such as Revit, the user must view and manage collections of items to complete their tasks. The Collection View provides the user a variety of ways of viewing the items (browsing, searching and filtering) in the collection. Provide a way for a user to easily browse through a collection of items for the purpose of selecting an item to view or edit (see COLLECTION EDITOR). Optionally provide the ability to search and/or filter the collection.

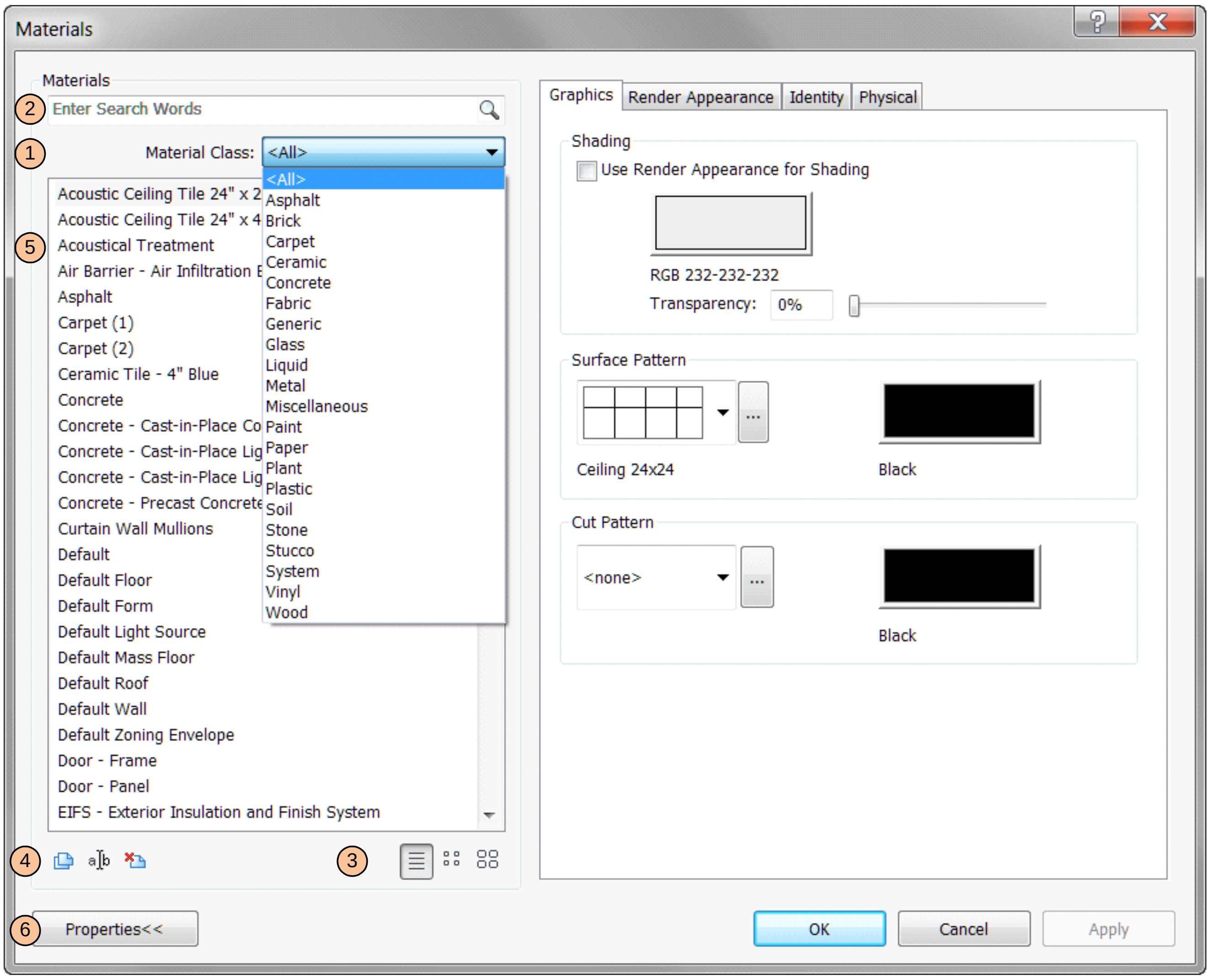


Figure 207 - Materials dialog from Revit

The example above shows Collection Viewer represented as a List. Table View and Tree View are also options for displaying the collection items.

Supported Behaviors

	Action	Description	Required
1	Filter	This provides options for filtering the list view. This can be represented as a: • Drop down - default criteria must be selected and should include "All" as an option • Check boxes - check box ON would refine the list. Default set by designer • Radio buttons - choosing between radio buttons refines the	No

		list. Default set by designer Once a choice is selected, the collection will automatically update based on the selected criteria. Controls must follow the MICROSOFT WINDOWS USER EXPERIENCE GUIDELINES	
2	Search Box	A search box allows users to perform a keyword search on a collection. The search box must follow MICROSOFT WINDOWS USER EXPERIENCE GUIDELINES	No
3	Change viewing mode	If the collection is viewed as list, the items can be optionally displayed with small or large icons instead of text	No
4	Collection Manager	• A separate UI will be provided to edit, rename, delete or add items to the collection. See Collection Editor • This is only displayed if managing the collection is user-editable	No
5	View the collection	The collection itself can be viewed in the following ways: List View, Table View, Tree View, or as a Tree Table	Yes
6	Show More	This button hides/shows the additional data associated with the currently selected item. See Show More **Button**	No

List View

When the user needs to view and browse and optionally select, sort, group, filter, or search a flat collection of items. If the list is hierarchical, use TREE VIEW or TREE TABLE and if the data is grouped into two or more columns, use TABLE VIEW instead.

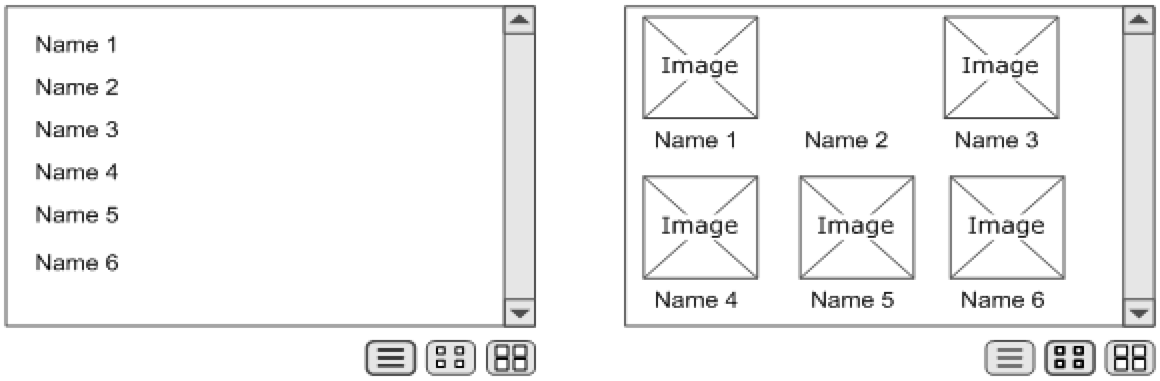


Figure 208 - List View, showing different ways of presenting the data

There are four basic variations of this pattern that includes the following:

Drop down list

Use a drop down list box when you only need to present a flat list of names, only a single selection is required and space is limited. The MICROSOFT USER EXPERIENCE GUIDELINES should be followed when using a drop-down list.

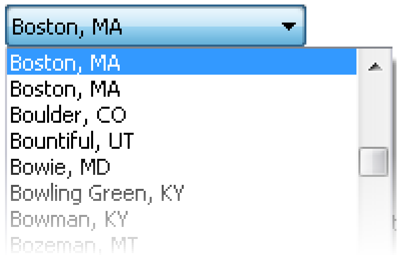


Figure 209 - Drop-down list

Combo box

Use a combo box when you want the functionality of the drop-down list box but also need to the ability to edit the drop-down list box. The MICROSOFT USER EXPERIENCE GUIDELINES should be followed when using this option, including for how to decide between drop-down and combo box.

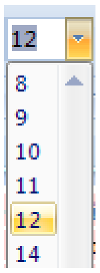


Figure 210 – The font selector in Microsoft Office 2007 is an example of a combo box

List box

Use when you only need to present a - list of names, it benefits the user to see all items and when there is sufficient room on the UI to display list box. Use also if selecting more than one option is required. The MICROSOFT USER EXPERIENCE GUIDELINES should be followed when using a list box.

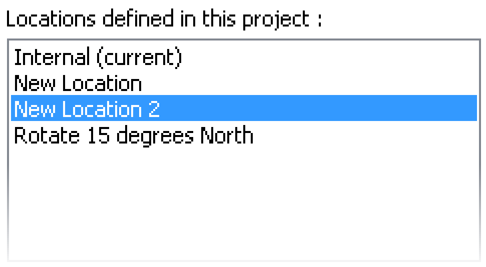


Figure 211 - List box

List View

Use when the data includes the option of list, details and/or graphical thumbnail previews, such as a Windows Open Dialog.

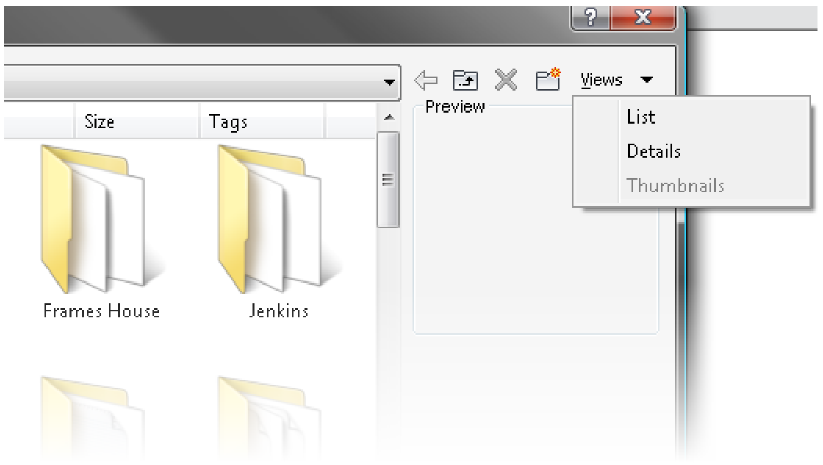


Figure 212 - List view

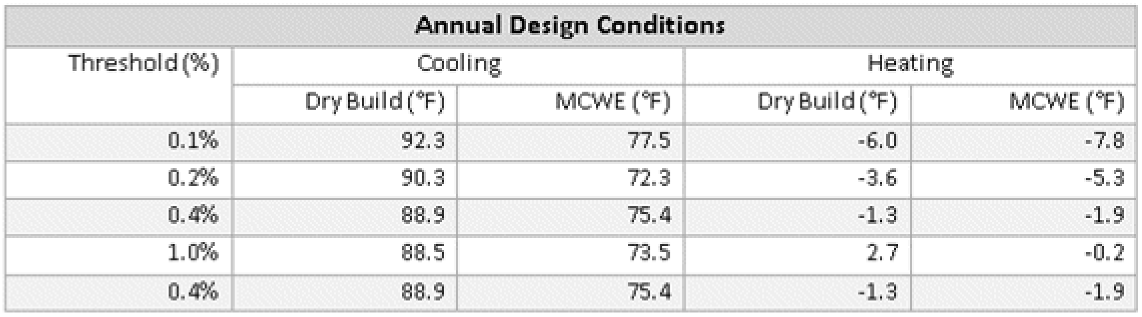
Table View

Users often need to view the contents of a collection so that they can easily comprehend and compare the attributes of many items at once. To accommodate this, present the user with a table that is formatted in such a way that is conducive to scanning.

Examples

Good Example - The following is an example of a well-formatted table.

Note the header cells are differentiated from the data cells and the alignment differs to makes it easier to scan the data.

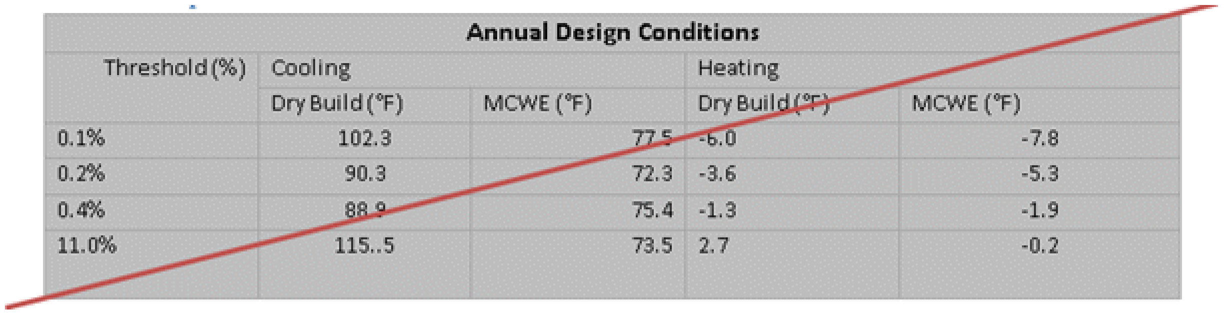


Annual Design Conditions				
Threshold (%)	Cooling		Heating	
	Dry Build (°F)	MCWE (°F)	Dry Build (°F)	MCWE (°F)
0.1%	92.3	77.5	-6.0	-7.8
0.2%	90.3	72.3	-3.6	-5.3
0.4%	88.9	75.4	-1.3	-1.9
1.0%	88.5	73.5	2.7	-0.2
0.4%	88.9	75.4	-1.3	-1.9

Figure 213 - Good table example

Poor Example - The following is an example of a poorly formatted table.

Note the header cells are not differentiated from the data cells and the alignment makes it difficult to scan the data.



Annual Design Conditions				
Threshold (%)	Cooling		Heating	
	Dry Build (°F)	MCWE (°F)	Dry Build (°F)	MCWE (°F)
0.1%	102.3	77.5	-6.0	-7.8
0.2%	90.3	72.3	-3.6	-5.3
0.4%	88.9	75.4	-1.3	-1.9
11.0%	115..5	73.5	2.7	-0.2

Figure 214 - Bad table example

Table title and header cells

- Highlight and bold the table title to differentiate it from the data cells and the header cells
- For columns that are sort able, clicking the header sorts the collection. To differentiate table rows from each other, a different shade is used as background color for every second row. Keep the difference between the two colors to a minimum to preserve a gentle feeling. The colors should be similar in value and low in saturation - the one should be slightly darker or lighter than the other. It is often seen that one of the two colors is the background color of the page itself
- Ensure that the colors are different than header and title rows
- Title and header cells should be in title case

Columns containing numeric data

- Right align the column heading**s** for the data column
- Right (decimal) align data in numeric columns
- Format the values in percentage columns with percentage signs immediately to the right of the values to ensure that users are aware that the values are percentages

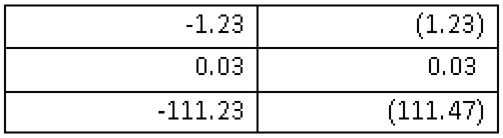
  NOTE: People can easily forget that they are looking at percentages so the redundancy is important here, especially for tables with many values

Columns containing numerical data

- Right align the column headings for the data column
- Right (decimal) align data in financial columns

Columns with a mix of positive and negative numeric data

Align the data so that decimals align



-1.23	(1.23)
0.03	0.03
-111.23	(111.47)

Figure 215 - Properly aligned numeric data

Columns containing only single letter or control (such as check box)

- Center the data or check symbol in this column
- Center the heading for the column

Columns with text that does not express numbers or dates

- Left align the column header of the number column
- Left align the text data
- Left align data that are not used as numbers like product IDs or registration numbers

Columns containing dates (treat dates as text)

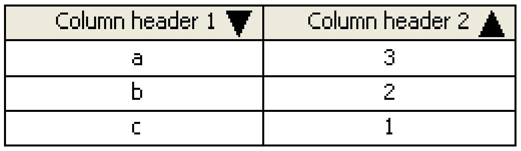
- Left align the column header of a date column
- Left align the dates
- Include a date format in the column header if you are presenting to an international audience to avoid confusion

Column Sorter

Use a column sorter when users are viewing a collection (such as a large table), possibly spanning multiple pages, that they must scan for interesting values.

There are several meaningful possibilities for sorting the table and users may be more effective if they can dynamically change the column that is used for sorting the values on.

- Allow users to sort a collection of items by clicking on a column header
- As users click on the column label, the table is sorted by that column
- Another click reverses the order, which should be visualized using an up or down-wards pointing arrow
- Make sure it is visible which columns can be clicked on and which one is active now



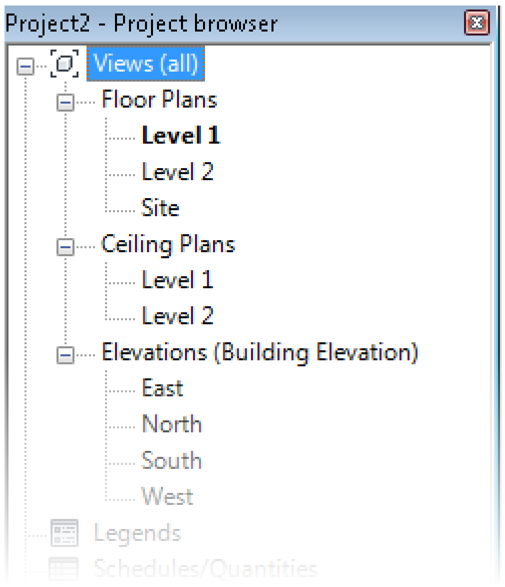
Column header 1 ▼	Column header 2 ▲
a	3
b	2
c	1

Figure 216 - Column sorter

Tree View

Often a user may need to understand complex relationships within a hierarchy of items and this can often best displayed within a 'tree view.' The user may also need to select one or more of the items. If the collection is a flat list, use the LIST VIEW and if the data is grouped into two or more columns, use Table VIEW or TREE TABLE instead.

A tree UI follows the principle of user initiated PROGRESSIVE DISCLOSURE. Using a tree allows complex hierarchical data to be presented in a simple, yet progressively complex manner. If the data becomes too broad or deep, a search box should be considered.

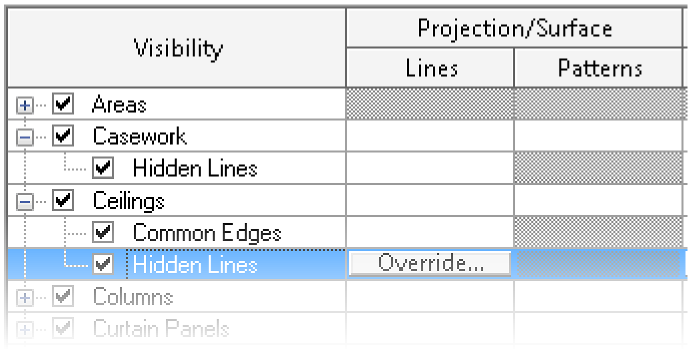


```
Project2 - Project browser
⊟ Views (all)
   ⊟ Floor Plans
        Level 1
        Level 2
        Site
   ⊟ Ceiling Plans
        Level 1
        Level 2
   ⊟ Elevations (Building Elevation)
        East
        North
        South
        West
   Legends
   Schedules/Quantities
```

Figure 217 - The Revit Project Browser is a good example of a tree view

Tree Table

As with a Tree View, the user may need to view and browse a hierarchically organized collection of items with the intent of selecting one or more of the items. However, the user also needs to see more properties of the item than just the name. To accommodate this, present the user with a tree embedded within a table. Each row presents additional attributes of the item. Expanding a node exposes another row.



Visibility	Projection/Surface	
	Lines	Patterns
⊞ ✓ Areas	▨	▨
⊟ ✓ Casework		
✓ Hidden Lines		▨
⊟ ✓ Ceilings		
✓ Common Edges		▨
✓ Hidden Lines	Override...	▨
⊞ ✓ Columns		
⊞ ✓ Curtain Panels		

Figure 218 - The Revit Visibility/Graphics dialog is a good example of a Tree Table

Collection Search / Filter

When the user is viewing a collection with many items, they may need to filter the number of items. To accomplish this, provide a way for the user choose between either a system-provided list of filter criteria and/or user-creatable criteria. Selecting the criteria automatically filters the collection. The two most common ways are demonstrated in the Revit Materials dialog.

- A search box allows the list to be filtered based on a keyword
- A drop-down allows the list to be filtered based on a set of defined criteria

Collection Editor

In addition to viewing a collection of items, a user will also typically want to edit the collection. This can be accomplished by associating a toolbar for editing, creating, duplicating, renaming, and deleting items.

The Edit Bar

The buttons should be ordered left to right in the following order and with the following as tooltip labels: *Edit*, *New*, *Duplicate*, *Delete*, *Rename*. If a feature does not utilize one or more buttons, the rest move to the left.

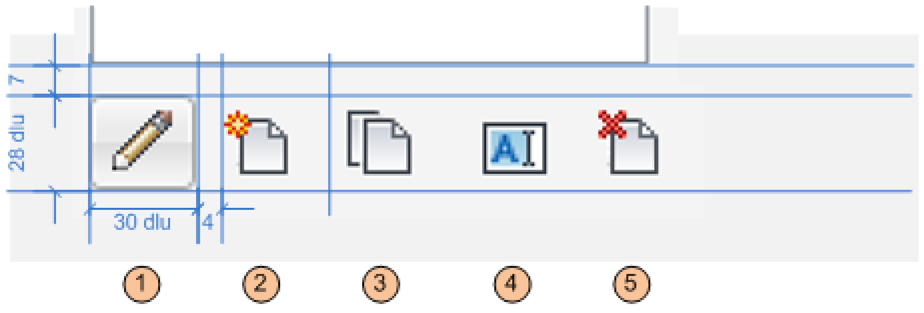


Figure 219 - The Edit Bar

	Action	Context
1	Edit	Use If an item can be edited. Editing an item may launch a separate dialog if there are less than three properties to edit. See the Collection Viewer section for more

		details on displaying collection items
2	New	Use New if the application is creating a new item
3	Duplicate	Use Duplicate if the feature can only duplicate existing items
4	Rename	Use Rename if the feature allows items to be renamed
5	Delete	Use Delete to remove the feature

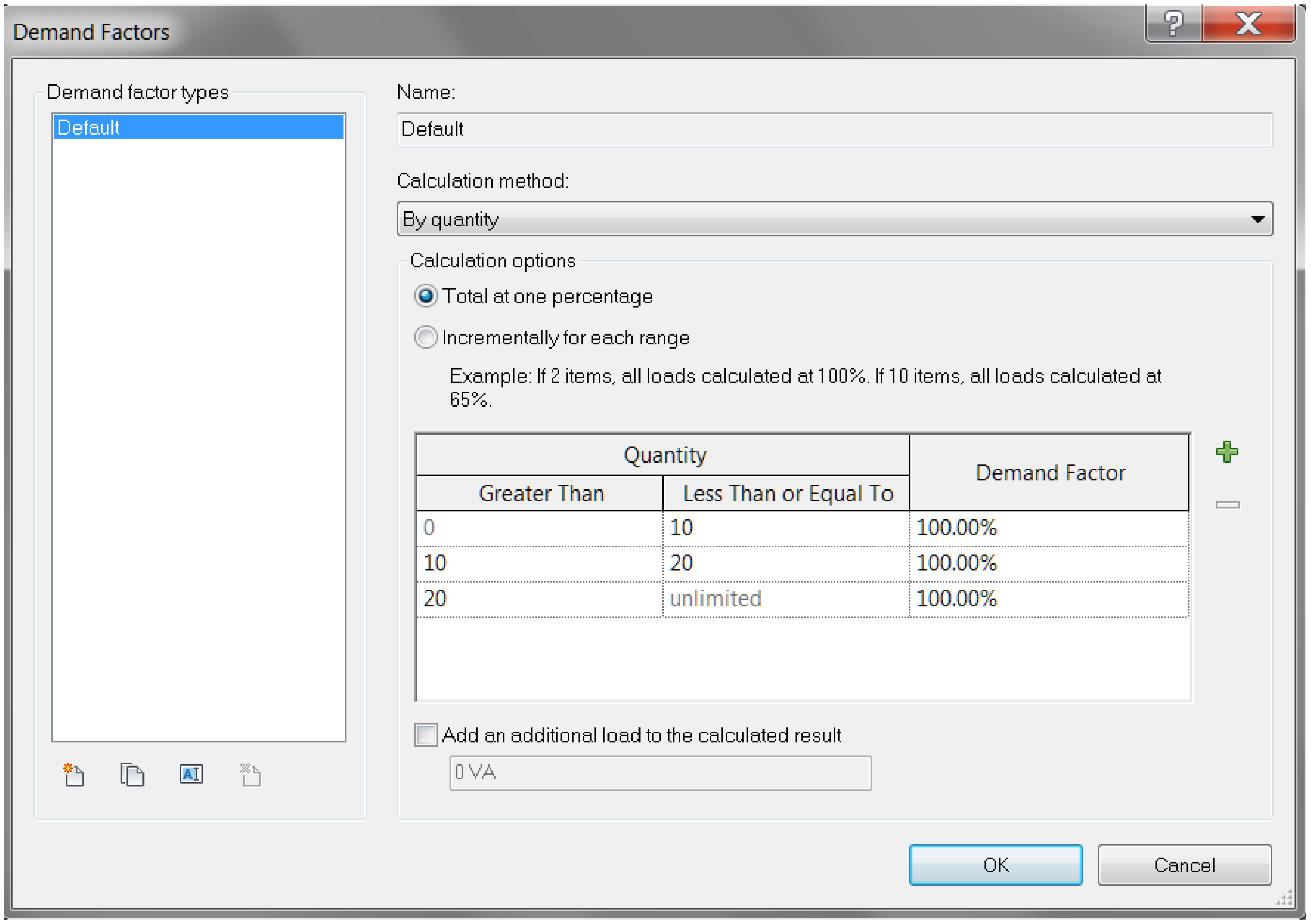
To ensure that the primary UI element is placed first in the layout path, the following rules should be followed when placing the manage controls:

- Navigating list is primary task: place at the bottom-left of the list control
- Managing list is primary task: place at top left of list control
- When the main collection being managed is represented as a combo box: place to the right of the combo box

Add/Remove

A slight variation on the Edit Bar is the use of Add and Remove buttons, denoted by plus and minus icons, as shown below. Add and Remove is used when data is being added to an existing item in the model.

The following is a good example of a Collection Editor dialog that uses both forms of the Edit Bar. The Add (+) and Remove (-) buttons are used to add values to an already existing demand factor type.



Name: Default

Calculation method: By quantity

Calculation options

(●) Total at one percentage

( ) Incrementally for each range

Example: If 2 items, all loads calculated at 100%. If 10 items, all loads calculated at 65%.

Quantity		Demand Factor
Greater Than	Less Than or Equal To	
0	10	100.00%
10	20	100.00%
20	unlimited	100.00%

☐ Add an additional load to the calculated result

0 VA

Figure 220 - Demand Factors dialog in Revit MEP 2011

List Builder

Use when there is a number of items that the user has to add/remove from one list to another. This is typically used when there is a list (located on the right) that needs to have items added to it from an existing list (located on the left.) Provide a List Box View of the two lists with button controls between, one for adding and the other for removing items.

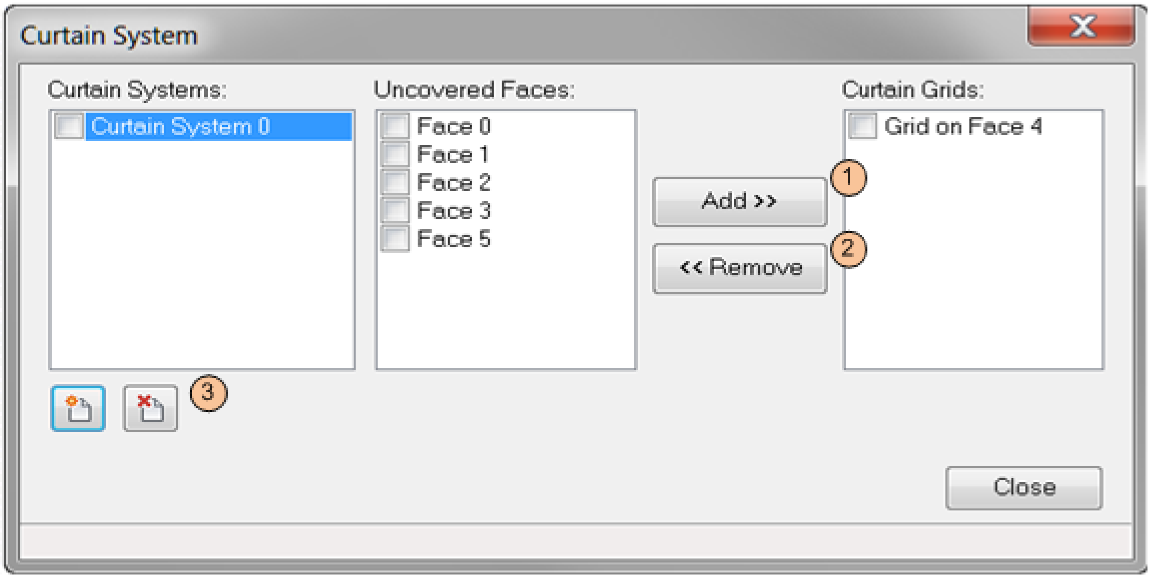


Figure 221 - The Curtain System SDK sample

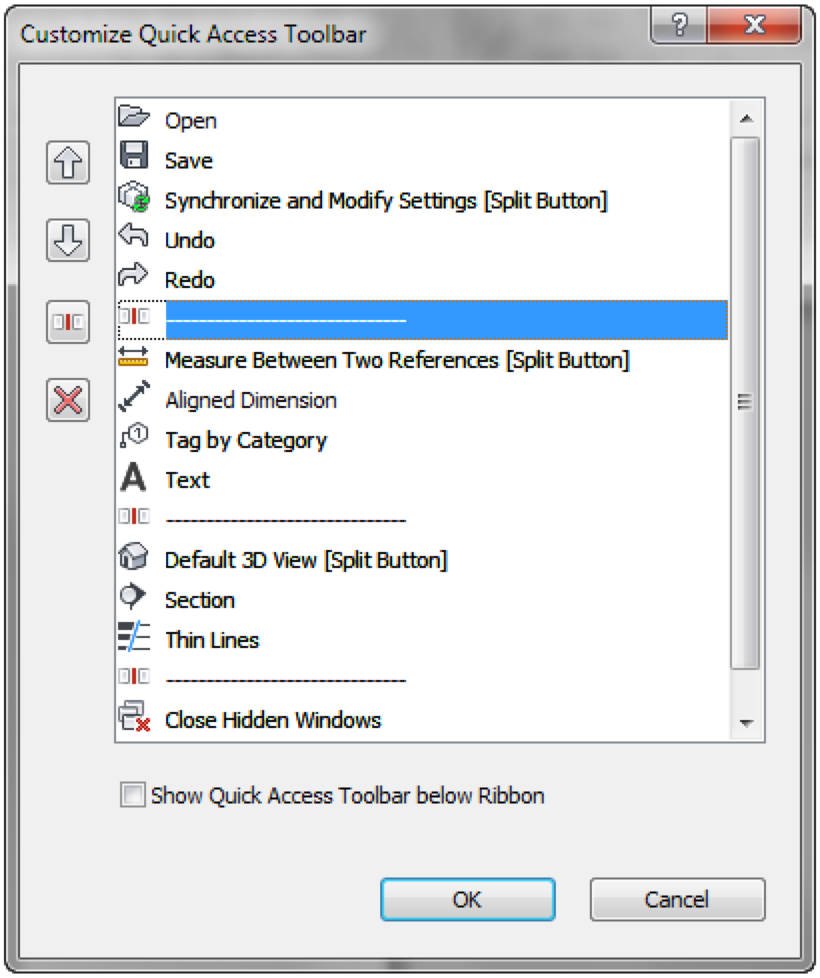
Supported Behaviors

	Action	Description	Required
1	Add (to list)	Takes an item from list A and adds it to list B	Yes
2	Remove (from list)	Removes item from List B	Yes
3	Collection Editor	If List A can be managed in this context, use Collection Manager	No

Depending on the feature, the List Builder can act in one of two ways:

- Item can only be added once items from List A can only be added to List B once. In this case, the Add button should be disabled when a previously added item is selected in List A.
- Item can be added multiple times. In this case, the Add button is not disabled, and the user can add an item from List A to List B multiple times (the amount determined by the feature.) See Edit Label example below.

If the user needs to arbitrarily move an item up or down in a collection, provide up/down buttons next to the list.


Customize Quick Access Toolbar
Open
Save
Synchronize and Modify Settings [Split Button]
Undo
Redo

Measure Between Two References [Split Button]
Aligned Dimension
Tag by Category
Text

Default 3D View [Split Button]
Section
Thin Lines

Close Hidden Windows
Show Quick Access Toolbar below Ribbon
OK
Cancel

Figure 222 - Up/down buttons

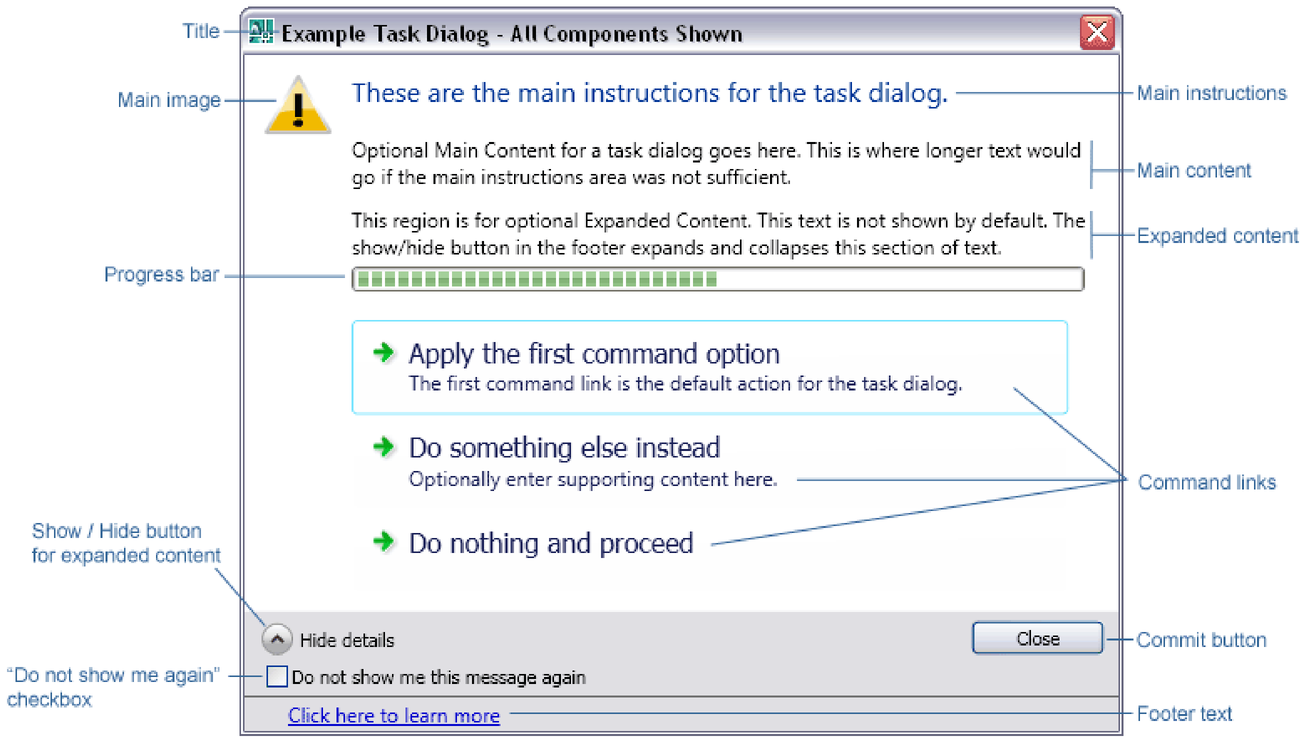
Task Dialog

Task dialogs are a type of modal dialog. They have a common set of controls that are arranged in a standard order to assure consistent look and feel.

A task dialog is used when the system needs to:

- provide users with information
- ask users a question
- or allow users to select options to perform a command or task

The image below shows a mockup of a task dialog with all possible controls enabled. Most of the controls shown are optional and one would never create a task dialog that had everything on. The mockup below simple illustrates all the parts of a task dialog that could be utilized in one image.



These are the main instructions for the task dialog.

Optional Main Content for a task dialog goes here. This is where longer text would go if the main instructions area was not sufficient.

This region is for optional Expanded Content. This text is not shown by default. The show/hide button in the footer expands and collapses this section of text.

Apply the first command option
The first command link is the default action for the task dialog.

Do something else instead
Optionally enter supporting content here.

Do nothing and proceed

Figure 223 - A task dialog with all components visible

Note that this particular task dialog would never happen in a real implementation. Only a small subset would ever be used at one time. Task dialogs cannot display other controls such as, text inputs, list boxes, combo boxes, check boxes, etc. They also only accommodate single step, single action operations; meaning a user may make a single choice and complete the task dialog operation. As a result any dialog that requires such additional controls or multiple steps operations (as with a wizard) are not task dialog candidates. They would need to be implemented as custom dialogs using .NET controls to have a similar look & feel to Task Dialogs.

The sections to follow explain when, where and how each task dialog component should be used to be consistent with others in Autodesk products.

General Design Principles

These are a few guiding principles that can be applied globally to task dialogs.

When reviewing the contents of a task dialog ask:

- Does it provide all the information needed to take informed action?
- Is the information too technical or jargon filled to be understood by the target user?

The following points apply to English language versions of product releases:

- Text should be written in sentence format - normal capitalization and punctuation. Titles and command button text are the exceptions, which are written in title format.
- Use a **single space** after punctuation. For example, DO NOT put two spaces after a period at the end of a sentence.
- Avoid the use of parentheses to address plurals. Instead, recast sentences. For example:

  Write "At least one referenced drawing contains one or more objects that were created in…" instead of "The referenced drawing(s) contains object(s) that were created in …"

- Include a copyright symbol © after any third party application called out in a task dialog.

Title (required)

All task dialogs require a title. Titles of task dialogs should be descriptive and as unique as possible. Task dialog titles should take the format of the following:

<featureName> - <shortTitle>

- Where <featureName> is the module from which the task dialog was triggered
- And <shortTitle> is the action that resulted in the task dialog being shown
- Examples:
    - **Reference Edit – Version Conflict**
    - **Layer – Delete**
    - **BOM – Edit Formula**

Where possible, use verbs on the second <shortTitle> part of the title such as Create, Delete, Rename, Select, etc.

In cases where there is no obviously applicable feature name (or several) applying a short title alone is sufficient.

A task dialog title should never be the product name, such as AutoCAD Architecture.

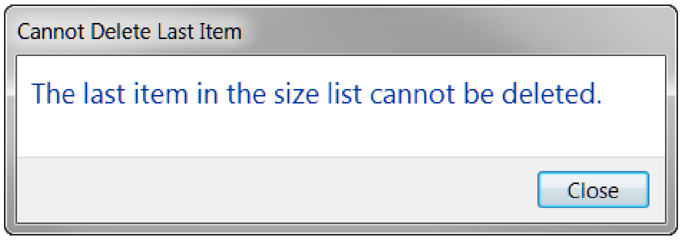
Title bar Icon

The icon appearing in the far left to the title bar should be that of the host application – this includes third party plug-ins. Task dialogs may contain plug-in names in the title to specify the source of the message, but the visual branding of all task dialogs should match the host application; such as Revit Structure, Inventor, AutoCAD Electrical, etc.

Main Instructions (required)

This is the large primary text that appears at the top of a task dialog.

- Every task dialog should have main instructions of some kind
- Text should not exceed three lines
- **[English Language Versions]** Main instructions should be written in sentence format - normal capitalization and punctuation
- **[English Language Versions]** Address the user directly as "you"
- **[English Language Versions]** When presented with multiple command link options the standard final line for the main instructions should be, "What do you want to do?"


Cannot Delete Last Item

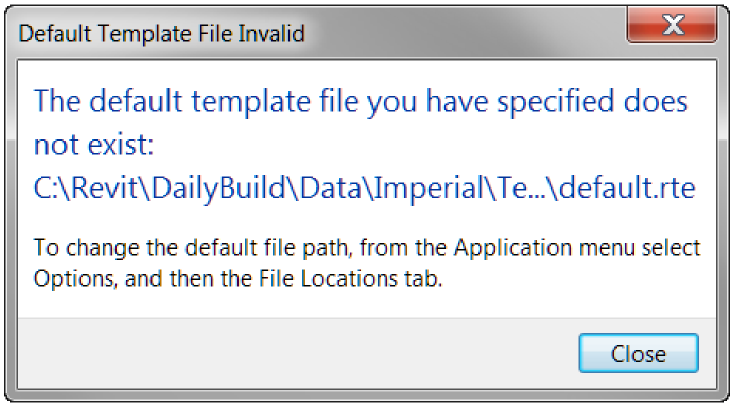
The last item in the size list cannot be deleted.

Figure 224 - A very simple task dialog with only main instructions for text

Main Content (optional – commonly used)

This is the smaller text that appears just below the main instructions.

- Main content is optional. It's primarily used when all the required instructions for a task dialog will not fit in the main instruction area
- Main content should not simply restate the main instructions in a different way, it should contain additional information that builds upon or reinforces the main instructions
- **[English Language Versions]** Main instructions should be written in sentence format (normal capitalization and punctuation)
- **[English Language Versions]** Address the user directly as "you" when needed



Default Template File Invalid

The default template file you have specified does not exist:
C:\Revit\DailyBuild\Data\Imperial\Te...\default.rte

To change the default file path, from the Application menu select Options, and then the File Locations tab.

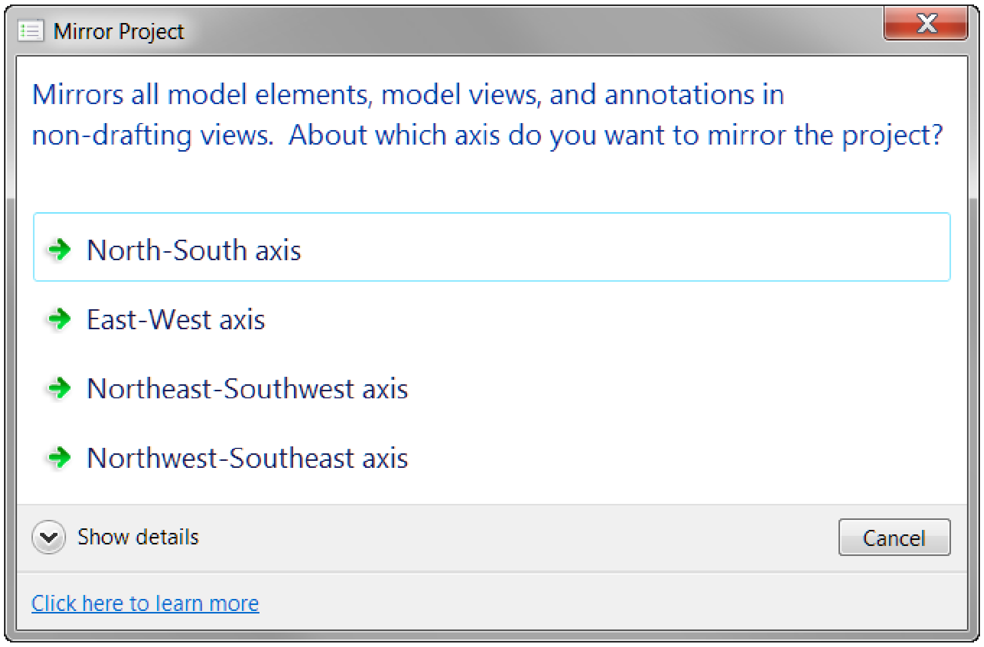
Close

Figure 225 - A task dialog that uses both main instructions and main content

Expanded Content (optional – rarely used)

This text is hidden by default and will display at the bottom of the task dialog when the "Show" button is pressed.

- Expanded content is optional, and should be rarely used. It is used for information that is not essential (advance or additional information), or that doesn't apply to most situations
- **[English Language Versions]** Expanded content should be written in sentence format (normal capitalization and punctuation)
- **[English Language Versions]** Address the user directly as "you" when needed


Mirror Project

Mirrors all model elements, model views, and annotations in non-drafting views. About which axis do you want to mirror the project?

- North-South axis
- East-West axis
- Northeast-Southwest axis
- Northwest-Southeast axis

Figure 226 - The Show Details button displays additional Main Content text

Main Image (optional - low usage)

Task dialogs support the inclusion of an image to the left of the main instructions. Prior to task dialogs it has been common for most dialogs to have some sort of icon to show that the information it contained was informative, a warning, and error, etc.

Because images were used all the time the value of any image in a dialog was low.

For Autodesk products the warning icon (exclamation point in a yellow triangle) should only be used in situations where a possible action will be destructive in some way and likely cause loss of data or significant loss of time in rework.

A few examples include:

- Overwriting a file
- Saving to an older or different format where data may be lost
- Permanently deleting data
- Breaking associations between files through moving or renaming

This is only a partial list. With the exception of such situations **usage of a main image should be avoided**. See Figure 228 for an example of a Task Dialog with a warning icon.

"Do not show me again" (DNSM) Checkbox (optional)

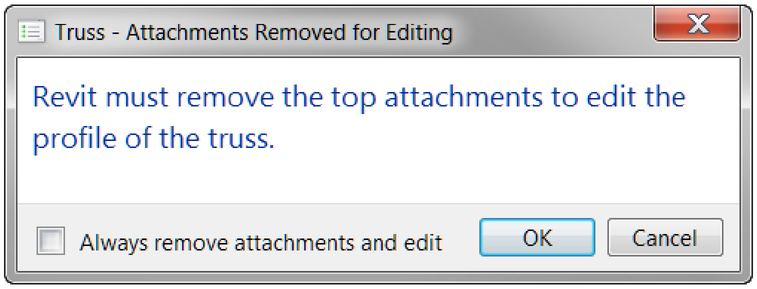
Task dialogs support a "Do not show me again" checkbox that can be enabled on dialogs that users can opt to not see in the future. The standard wording for the label on this checkbox for English language versions is:

"Do not show me this message again"

Do not is not contracted to "Don't" and there is no punctuation at the end of the line.

For the single action the working should be "Always <action>" – for example

- If the action is "Save current drawing" the checkbox label would read "Always save current drawing"
- If the action is "Convert objects to linework" the checkbox label would read "Always convert objects to linework"


Truss - Attachments Removed for Editing

Revit must remove the top attachments to edit the profile of the truss.

Figure 227 - Example of a task dialog using the DNSMA checkbox as an "Always..." checkbox for one choice

Where multiple are choices possible:

- The generic wording “**Always perform my current choice**” should be used
- Command links should be used to show the available choices. If buttons are used and a Cancel button is included it looks as though “cancel” is an option that could always be performed in future

Footer Text (optional)

Footer text is used to link to help. It replaces the Help or “?” button found on previous dialogs, and will link to the same location as an existing help link. On English language versions the text in the footer should read:

“Click here to learn more”

The text should be written as a statement in sentence format, but with no final punctuation. See Figure 226 for an example of a Task Dialog with footer text.

Progress Bar (optional – rarely used)

In instances where a task dialog is showing progress, or handling of an available option may take several seconds or more a progress bar can be used.

Command Links (optional – commonly used)

In task dialogs there are two ways a user can select an action – command links and commit buttons.

Command links are used in the following situations:

- More than one option is available (**avoid situations where only one command link is shown**)
- And a short amount of text would be useful in helping a user determine the best choice

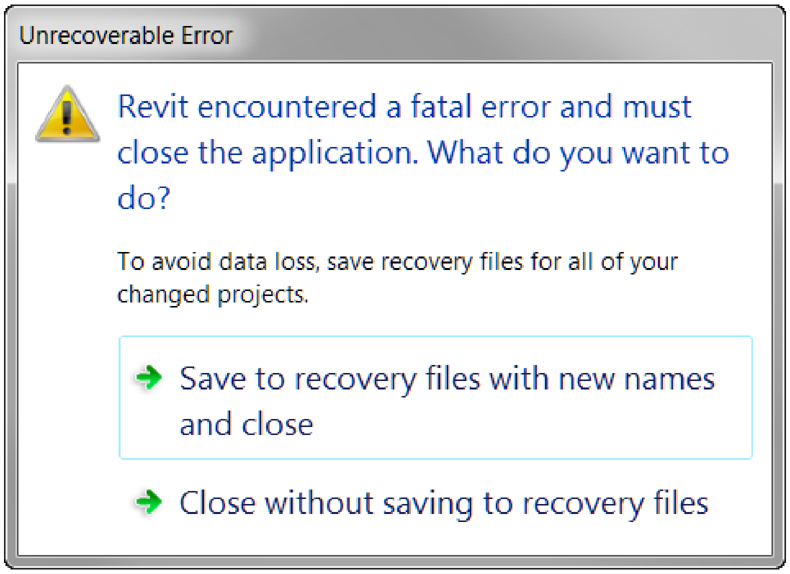
Command links handle scenarios such as:

- Do A, B, or C
- Do A or B or A and B
- Do A or do not do A
- Etc

Command link text has two parts:

1. **Main content**: This is required for any command link. It is one line, written as a statement. For English language versions it is in sentence format without final punctuation.
2. **Supplemental content**: This is optional additional text to clarify the main content. For English language versions it is written in normal sentence format with final punctuation.

The first command link (one at the top) is the default action for the task dialog. It should be the most common action or the least potentially damaging action if no choice is substantially more likely than the other for the common use case.

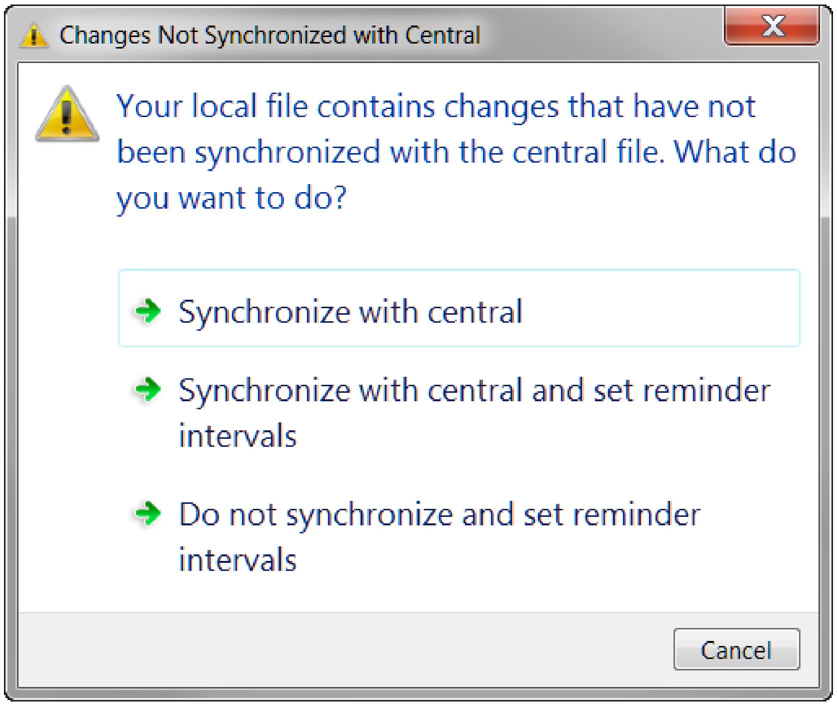

Unrecoverable Error

Revit encountered a fatal error and must close the application. What do you want to do?

To avoid data loss, save recovery files for all of your changed projects.

Save to recovery files with new names and close
Close without saving to recovery files

Figure 228 - A task dialog with two command links


Changes Not Synchronized with Central

Your local file contains changes that have not been synchronized with the central file. What do you want to do?

Synchronize with central
Synchronize with central and set reminder intervals
Do not synchronize and set reminder intervals
Cancel

Figure 229 - Task Dialog with command links and a command button

Commit Buttons (optional – commonly used)

Commit buttons are simple buttons in the footer of the task dialog. Standard (English) terms include:

- OK
- Cancel
- Yes
- No
- Retry
- Close

It is possible to use custom text on commit buttons, but that is not recommended.

Notes on proper usage of each of the primary button types:

- The OK button should only be used in situations where a task dialog poses a question that can be answered by OK.
- The Cancel button should only be used when a task can truly be canceled, meaning the action that triggered the task dialog will be aborted and no change will be committed. It can be used in combination with other commit buttons or command links.
- The Yes & No button(s) should always be used in combination, and the text in the main instructions and / or main content should end in a yes / no question.
- The Retry button must appear with at least a Cancel button as an alternate option, so a user can choose not to retry.
- The Close button is used on any purely informational task dialog; i.e. where the user has no action to choose, but can just read the text and close the dialog.
  Previously the OK button was often used on such dialogs. It **should not** be used in task dialogs for this purpose.

The following are some examples of how commit buttons should be used:

- See Figure 226 for an example of a Cancel button with command links
- See Figure 224 for an example of a purely informative task dialog with a close button
- See Figure 227 for an example of a task dialog with OK and Cancel buttons

Default button or link

All tasks dialogs should have a default button or link explicitly assigned. If the task dialog contains an OK button, it should be the default.

Note: The exception is custom task dialogs with command links, which have actions that are equally viable, with none being “better” than the other, should not get assigned a default choice. All dialogs using only commit buttons must be assigned a default button.

Navigation

Tabs

Use when there are loosely related, yet distinct "chunks" of information need to exist within the same UI, but there is not enough room to display it all in a clear manner.

Separate the UI into distinct modal zones, each one represented by a "tab" with a descriptive label. The entire dialog should be treated as a single window with a single set of Commit buttons.

- All of the tabs should be visible at the same time
- Never have a single tab in a static UI such as dialog. Instead, use the tab's title for the page or dialog. Exception: if the number of tabs grows dynamically and the default is one. e.g. Excel's open workbook tabs
- Tabs are for navigation only. Selecting a tab should not perform any other action (such as a commit) besides simply switching to that page in the window
- Avoid nesting tabs within tabbed windows. In this case consider launching a child window
- Do not change the label on a tab dynamically based on interaction within the parent window

Variations

Variation A: Horizontal Tabs

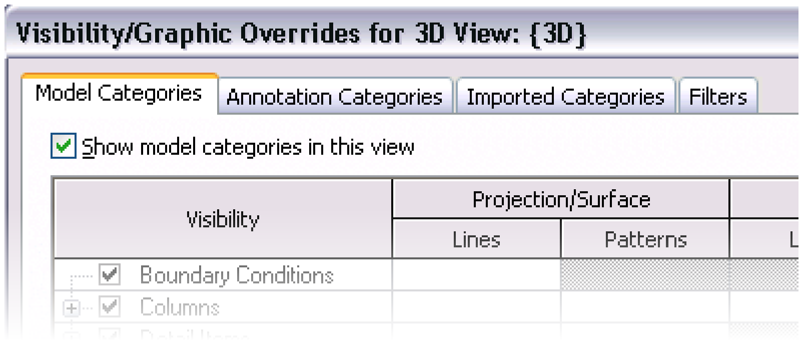


Figure 230 - Horizontal Tabs

Avoid more than one row of horizontal tabs. If a second row is needed, consider a vertical tab.

Variation B: Vertical Tabs

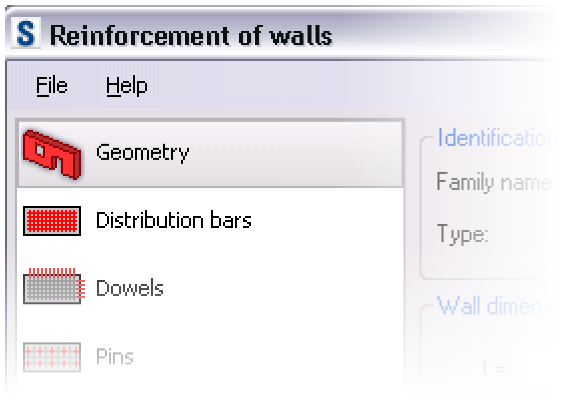


Figure 231 - Vertical Tabs

Vertical tabs are useful:

- In the Left-to-right Layout Flow
- If there are enough tabs that would force a second row in a horizontal layout

Keyboard Accessibility

Tab Order

Pressing the tab key cycles the focus between each editable control in the dialog. The general rule is left-to-right, top-to-bottom.

1. The default tab stop is at the control at the topmost, leftmost position in the dialog
2. Move right until there are no more controls in the current row
3. Move to the next row and start from the left-most control, moving right
4. Repeat step 2 until there are no more rows. Always end with the OK/Cancel/Apply row

- Right and left arrow, down and up arrows, Tab and Shift-tab all have the same behavior, respectively. Except for when the focus is on the following:
  - List control or combo box: The right/left, down/up arrows move the cursor down/up the list, respectively
  - Grid control: The right/left move the cursor right/left across columns, And down/up arrows move cursor down/up the list, respectively
  - Slider: The right/left, down/up arrows move the slider right/left, respectively
  - Spinner: The right/left, down/up arrows move the spinner down/up, respectively

- Treat each Group conceptually as a nested dialog, following the above rules within each Group FIRST and moving from the top-left Group, moving to the right until no more groups are encountered and then moving to the next row of Groups.

- If dialog is tabbed, default tab stop should be the default tab.

TIP: Visual Studio can assist with the creation and editing of tab order by toggling the Tab Order visual helper (accessed from the View > Tab Order menu.)

Access Keys

- Each editable control on a dialog should get a unique access key letter (which is represented by an underlined letter in the control's label)
- The user presses Alt key plus the assigned key and that control is activated as if it was clicked
- The default button does not require an access key since Enter is mapped to it
- The Cancel or Close button also does not need access key since Esc is mapped to it. See COMMITTING CHANGES for more detail

Show More Button

Following the principle of PROGRESSIVE DISCLOSURE, users may need a way of showing more data than is presented as a default in the user interface. The Show More button is typically implemented in one of two ways:

Expander Button: Provide a button with a label such as " << Preview " or "Show more >>" The double brackets >> should point towards where the new information pane will be presented. When opened, the double brackets should switch to indicate how the additional pane will be "closed."

See FIGURE 207 - MATERIALS DIALOG FROM REVIT for an example.

Dialog Launcher: A button with ellipses (…) that launches a separate dialog. This is typically used to provide a separate UI for editing a selected item.

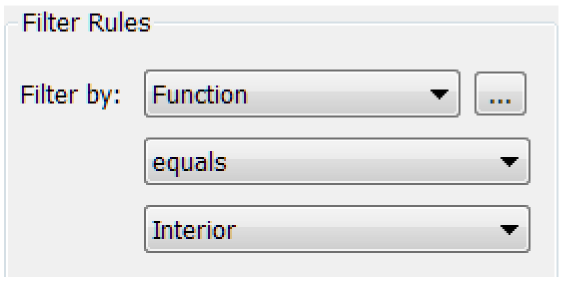


Figure 232 –Dialog launcher button, as implemented in the Revit View Filters dialog

Committing Changes

Modal dialogs are used to make changes to data within the project file. Use when there is an editor a series of edits have been queued up in a modal dialog or form and need to be committed at once. If the dialog is purely informational in nature, use a TASK DIALOG, which has its own committing rules.

Each modal dialog or web-form must have a set of commit buttons for committing the changes and/or canceling the task and/or closing the dialog.

Sizing

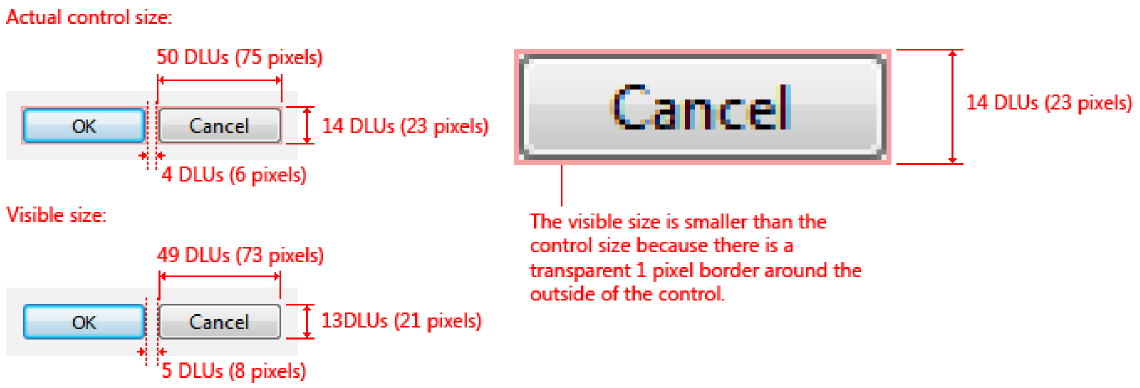


Figure 233 - Commit Button sizes (taken from Microsoft Windows User Experience Guidelines)

Layout

A summary of commit button styles for different window types

Pattern	Commit Button style
Modal Dialog	OK/Cancel or [Action]/Cancel
Modeless dialog	Close button on dialog box and title bar
Progress Indicator	Use Cancel if returns the environment to its previous state (leaving no side effect); otherwise, use Stop

Commit buttons should follow this layout pattern.

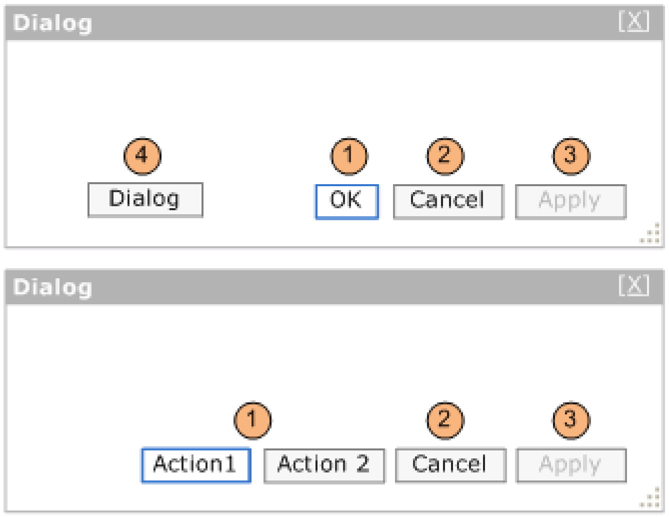


Figure 234 - Standard Commit Button layouts

	Button Type
1	Default (OK and other Action) buttons
2	Cancel or Close Button
3	Apply Button
4	Dialog buttons (optional)

Position the Default, Cancel, and Apply button(s) in this order and right aligned. The Dialog button(s) (if present) are aligned to the left, but to the right of the help button (if present).

Default (OK and other Action) buttons

The dialog must have a default action button. This button should be closely mapped to the primary task of the dialog. This can either be labeled OK or a more descriptive verb that describes the action.

- Make the button with less destructive result to be the Default button
- Enter key is the keyboard access point for the Default button

OK button

OK buttons can be used when saving a setting or series of settings. OK button rules:

- OK button should be used when it is the ONLY action (besides cancel) that can be committed from the dialog. Do not mix OK with other action buttons
- In modal dialogs, clicking OK means apply the values, perform the task, and close the window
- Do not use OK buttons to respond to questions
- Label OK buttons correctly. The OK button should be labeled OK, not Ok or Okay
- Do not use OK buttons in modeless dialog boxes. Use a action button or Close button

Action buttons

Action buttons have descriptive verbs that will be defined by the designer. Action button rules:

- Action buttons can be used to describe more clearly the action that will be taken when clicked
- One action button must be set as the default. This should be the action most closely mapped to the primary task of the dialog
- There can be one or more action buttons, but do not mix OK button with action buttons
- Use Cancel or Close button for negative commit buttons instead of specific responses to the main instruction
  Otherwise, if user wants to cancel, the negative commit would require more thinking than needed for this particular small task

Cancel or Close Button

- Verify the Close button on the title bar has the same effect as Close or Cancel
- Esc is the keyboard shortcut for Cancel or Close

Cancel button

- Cancel button should only be used when a task will be aborted and no change will be committed
- Clicking the Cancel button means abandon all changes, cancel the task, close the window, and return the environment to its previous state and leaving no side effect
- For nested choice dialog boxes, clicking the Cancel button in the owner choice dialog typically means any changes made by owned choice dialogs are also abandoned.
- Don't use Cancel button in modeless dialog boxes. Use Close button instead

Close Button

- Use Close button for modeless dialog boxes, as well as modal dialogs that cannot be canceled
- Clicking Close button means close the dialog box window, leaving any existing side effects

Apply button (optional)

Apply button will commit any changes made within the dialog on all tabs, pages, or levels within a hierarchy without closing the dialog. Optimally, the user will receive visual feedback of the applied changes. Here are some basic Apply Button rules:

- In modal or modeless dialogs, clicking Apply means apply the values, perform the task, and do not close the window
- In modeless dialog use Apply button only on those tasks that require significant or unknown upfront time to be performed, otherwise data change should be applied immediately
- The Apply button is disabled when no changes have been made. It becomes enabled when changes have been made
- Clicking cancel will NOT undo any changes that have been already committed with the Apply button
- Interacting with a child dialog (such as a confirmation) should not cause the Apply function to become enabled
- Clicking the Apply button after committing a child dialog (such as a confirmation message) will apply all the changes made previous to the action triggering the confirmation

Dialog Button (optional)

A dialog button performs an action on the dialog itself. Examples include: Reset and Tools for managing Favorites in an Open Dialog. They should be aligned to the far left of the dialog (to the right of the help button if present) and should never be the default.

Implementation Notes

- Keyboard Access - each commit button should have a keyboard access key mapped to it. The default button should be mapped to Enter
- The close button (whether it is Cancel or Close) should be mapped to Esc
- If Apply exists, and is NOT the default button, it should be mapped to Alt-A

Ribbon Guidelines

The following are aspects of the ribbon UI that can be modified by individual API developers. These guidelines must be followed to make your application's user interface (UI) compliant with standards used by Autodesk.

Ribbon Tab Placement

To make more room on the ribbon, third-party applications can now add ribbon controls to the Analyze tab as well as the Add-Ins tab.

- Applications that add and/or modify elements within Revit should be added to the Add-Ins tab.
- Applications that analyze existing data within the Revit model should be added to the Analyze tab.
- Applications MUST NOT be added to both the Add-Ins and Analyze tabs.

Contextual Tab Focus User Option

The Revit 2011 product line now contains a user option (located on the User Interface tab of the Options dialog) which allows users to choose whether or not to automatically switch to a contextual tab upon selection. This option is set to automatically switch by default. For some API applications, it may be favorable to have this option disabled, to prevent users from being switched away from the Add-ins or Analyze tab. In these cases, it is best to inform users of this option in the documentation and/or as informational text in the installer user interface.

Number of Panels per Tab

Each API application SHOULD add only one panel to either the Add-Ins tab.

Panel Layout

The following guidelines define the proper way to lay out a panel on the Add-ins tab. The following panel under General Layout provides an example to follow.

General layout

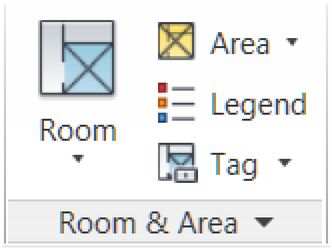


Figure 235 - Room & Area panel in the 2011 Revit products

A panel SHOULD have a large button as the left-most control. This button SHOULD be the most commonly accessed command in the application. The left-most button icon will represent the entire panel when it collapses (see PANEL RESIZING AND COLLAPSING below.) This button MAY be the only button in the group, or this button MAY be followed by a large button and/or a small button stack.

Panels SHOULD NOT exceed three columns. If more controls are necessary, use a drop-down button.

Panels SHOULD only contain controls for launching commands and controlling the application. Controls for managing settings or launching help and "about this application" should be located in a SLIDE-OUT PANEL.

Small button stack

- The stack MUST have at least two buttons and MUST NOT exceed three.
- The order of the small buttons SHOULD follow most frequent on bottom to least frequent on top. This is because the more frequently accessed command should be closer to the modeling window.

Panel Resizing and Collapsing

By default, panels will be placed left to right in descending order left to right based on the order in which they were installed by the customer. Once the width of the combined panels exceeds the width of the current window, the panels will start to resize starting from the right in the following order:

1. Panels with large buttons:
    a. Small buttons lose their labels, then:
    b. The panel collapses to a single large button (the icon representing the panel will be the first icon on the left.)
2. Panels with ONLY small button stack(s):
    a. Small buttons lose their labels and the panel label gets truncated to four characters and an ellipsis (three periods in a row.)
    b. If a small button stack is the left-most control in a panel, then the top button must have a large icon associated with it. This icon will represent the panel when collapsed.

The About button/link should be located within the main user interface and not on a ribbon panel.

Note: Panel resizing and collapsing is handled automatically by the ribbon component.

Ribbon Controls

Ribbon button

A Ribbon button is the most basic and most frequently-used control. Pressing a button invokes a command.

Ribbon buttons can be one of the three sizes:

- Large: MUST have a text label
- Medium: MAY have a text label
- Small: MAY have a text label

Radio Buttons

A radio button group represents a set of controls that are mutually exclusive; only one can be chosen at a time. These groups can be stacked horizontally (as seen in the justification buttons in the example below.)

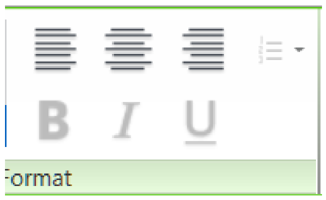


Figure 236 - The Format text panel from Revit 2011

Drop-down button

- The top label SHOULD sufficiently describe the contents of the drop-down list.
- Every item in the list SHOULD contain a large icon.
- A horizontal separator can be optionally added between controls. This should be used if the items are logically grouped under one button, but are separated into distinct groups.

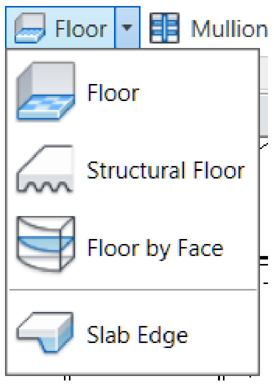


Figure 237 – Floor drop-down button in Revit Architecture

Split Button

A split button is a drop-down button with a default command that can be accessed by pressing the left side of the button. The right side of the button, separated by a small vertical separator, opens a drop-down list. The default command SHOULD be duplicated with the top command in the list.

A split button's default command can be *synchronized*. That is, the default command changes depending on the last used command in the drop-down list.

Combo Box and Text Box

The guidelines for combo boxes and text boxes in the ribbon are the same for those used within dialogs. See the DIALOG CONTROLS SECTION.

Slide-out Panel

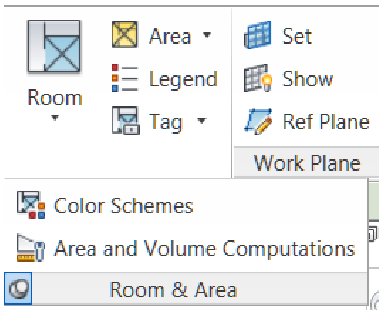


Figure 238 – Floor drop-down button in Revit Architecture

In general slide-outs should be used for commands relevant to the panel, but not primary or commonly used ones.

Each open panel can be optionally pinned open. Otherwise, once the mouse leaves the panel, it closes by itself.

Three suggested uses of slide outs are commands that launch settings dialogs related to the panel's task(s), a Help button, and an About button.

Vertical separator

A vertical separator MAY be added between a control or sets of controls to create distinct groupings of commands within a panel. A panel SHOULD have no more than two separators.

Icons

For proper icon design, see the icon design guidelines.

Text Usage

Button Labels

These guidelines are for English language only.

- MUST not have any punctuation (except hyphen, ampersand or forward slash)
- MUST be no longer than three words
- MUST be no longer than 36 characters
- MUST be Title Case; e.g. Show Mass
- The ampersand '&' MUST be used instead of 'and'. A space should appear before and after the ampersand
- The forward slash '/' MUST be used instead of 'or'. No spaces should appear before and after the slash
- Only large buttons MAY have two line labels but MUST NOT have more than two lines. Labels for all other controls MUST fit on a single line
- Button labels MUST NOT contain ellipses (…)
- Every word MUST be in capital case except articles ("a," "an," and "the"), coordinating conjunctions (for example, "and," "or," "but," "so," "yet," "with," and "nor"), and prepositions with fewer than four letters (like "in"). The first and last words are always capitalized

Panel Labels

These guidelines are English-only. All rules from the Command Labels section apply to Panel Labels in addition to the following:

- The name of the panel SHOULD be specific. Vague, non-descriptive and unspecific terms used to describe panel content will reduce the label's usefulness
- Applications MUST NOT use panel names that use the abbreviations 'misc.' or 'etc'
- Panel labels SHOULD NOT include the term 'add-ins' since it is redundant with the tab label
- Panel labels MAY include the name of the third party product or provider

Tooltips

The following are guidelines for writing tooltip text. Write concisely. There is limited space to work with.

Localization Considerations

- Make every word count. This is particularly important for localizing tooltip text to other languages
- Do not use gerunds (verb forms used as nouns) because they can be confused with participles (verb forms used as adjectives). In the example, "Drawing controls", drawing could be used as a verb or a noun. A better example is "Controls for drawing"
- Do not include lengthy step-by-step procedures in tooltips. These belong in Help
- Use terminology consistently
- Make sure that your use of conjunctions does not introduce ambiguities in relationships. For example, instead of saying "replace and tighten the hinges", it would be better to split the conjunction up into two simple (and redundant) sentences – "Replace the hinges. Then tighten the hinges"
- Be careful with "helping" verbs. Examples of helping verbs include shall, may, would have, should have, might have, and can. For example, can and may could be translated as "capability" and "possibility" respectively

- Watch for invisible plurals such as “object and attribute settings”. Does this mean “the settings for one object and one attribute” or “the settings for many objects and many attributes”?
- Be cautious about words that can be either nouns or verbs. Use articles or rewrite phrases like “Model Display” where model can be a noun or a verb in our software. Another example is “empty file”. It can mean “to empty a file” or “a file with no content”
- Be careful using metaphors. Metaphors can be subtle and are often discussed in the context of icons that are not culturally appropriate or understood across cultures. Text metaphors (such as “places the computer in a hibernating state”) can also be an issue. Instead, you might say “places the computer in a low-power state”

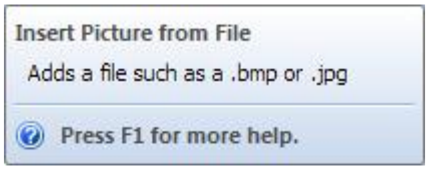
Writing/Wording Considerations

- Use simple sentences. The “Verb-Object-Adverb” format is recommended
- Use strong and specific verbs that describe a specific action (such as “tile”) rather than weak verbs (such as “use to…”)
- Write in the active voice (for example, “Moves objects between model space and paper space”)
- Use the descriptive style instead of the imperative style (“Opens an existing drawing file” vs. “Open an existing drawing file”)
- Make the tooltip description easily recognizable by using the third person singular (for example – “Specifies the current color” instead of “Specify the current color”)
- Don’t use slang, jargon, or hard to understand acronyms

Formatting Considerations

- Use only one space between sentences.
- Avoid repetitive text. The content in the tooltip should be unique and add value.
- Focus on the quality and understandability of the tooltip. Is the description clear? Is it helpful?
- Unless it’s a system variable or command, do not use bold. Although bold is supported in Asian languages, it is strongly recommended to avoid using bold and italics, because of readability and stylistic issues.
- Avoid abbreviations. For example, the word “Number” has many common abbreviations: No., Nbr, Num, Numb. It is best to spell out terms.

Good Example:

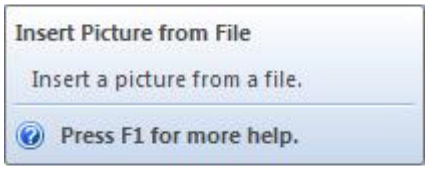

Insert Picture from File

Adds a file such as a .bmp or .jpg

Press F1 for more help.

An example of a more useful descriptive sentence might be “Adds a file such as a .bmp or .jpg”. This provides more detailed information and gives the user more insight into the feature.

Poor Example:


Insert Picture from File

Insert a picture from a file.

Press F1 for more help.

In this example, the tooltip content repeats the tooltip title verbatim and does not add value to the tooltip. Additionally, if the translator cannot identify whether this string is a name/title or a descriptive sentence, it will be difficult for them to decide on the translation style.

As with other guideline issues, follow MICROSOFT GUIDELINES FOR TITLE AND SENTENCE CASE (listed below):

Title Case

- Capitalize all nouns, verbs (including is and other forms of to be), adverbs (including than and when), adjectives (including this and that), and pronouns (including its)
- Capitalize the first and last words, regardless of their parts of speech (for example, The Text to Look For)
- Capitalize prepositions that are part of a verb phrase (for example, Backing Up Your Disk)
- Do not capitalize articles (a, an, the), unless the article is the first word in the title
- Do not capitalize coordinate conjunctions (and, but, for, nor, or), unless the conjunction is the first word in the title
- Do not capitalize prepositions of four or fewer letters, unless the preposition is the first word in the title
- Do not capitalize to in an infinitive phrase (for example, How to Format Your Hard Disk), unless the phrase is the first word in the title
- Capitalize the second word in compound words if it is a noun or proper adjective, an "e-word," or the words have equal weight (for example, E-Commerce, Cross-Reference, Pre-Microsoft Software, Read/Write Access, Run-Time). Do not capitalize the second word if it is another part of speech, such as a preposition or other minor word (for example, Add-in, How-to, Take-off)
- Capitalize user interface and application programming interface terms that you would not ordinarily capitalize, unless they are case-sensitive (for example, The fdisk command)
- Follow the traditional capitalization of keywords and other special terms in programming languages (for example, The printf function, Using the EVEN and ALIGN Directives)
- Capitalize only the first word of each column heading

Sentence Case

- Always capitalize the first word of a new sentence
- Do not capitalize the word following a colon unless the word is a proper noun, or the text following the colon is a complete sentence
- Do not capitalize the word following an em-dash unless it is a proper noun, even if the text following the dash is a complete sentence
- Always capitalize the first word of a new sentence following any end punctuation. Rewrite sentences that start with a case-sensitive lowercase word

Common Definitions

Ribbon

The horizontally-tabbed user interface across the top of (the application frame in) Revit 2010 and later.

Ribbon Tab

The ribbon is separated into tabs. The Add-Ins ribbon tab, which only appears when at least one add-in is installed, is available for third party developers to add a panel.

Ribbon Panel

A ribbon tab is separated into horizontal groupings of commands. An Add-In panel represents the commands available for a third party developer's application. The Add-In panel is equivalent to the toolbar in Revit 2009.

Ribbon Button

The button is the mechanism for launching a command. They can either be large, medium or small (Both large and small buttons can either be a simple push button or a drop-down button.

Menu button

The default first panel on the Add-Ins tab is the External Tools panel that contains one button titled "External Tools." The External Tools menu-button is equivalent to the Tools > External Tools menu in Revit 2009. Any External Command registered in Revit.ini under [ExternalCommands] will appear in this menu button.

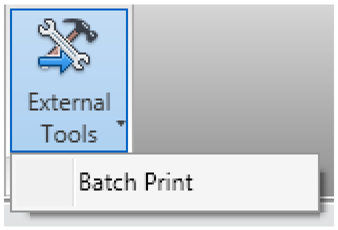


Figure 239 - External Tools menu-button on Add-Ins tab

Drop-down button

A drop-down button expands to show two or more commands in a drop-down menu. Each sub-command can have its own large icon.

Vertical Separator

A vertical separator is a thin vertical line that can be added between controls on a panel.

Tooltip

A tooltip is a small panel that appears when the user hovers the mouse pointer over a ribbon button. Tooltips provide a brief explanation of the commands expected behavior.

Terminology Definitions

Several words are used to signify the requirements of the standards. These words are capitalized. This section defines how these special words should be interpreted. The interpretation has been copied from INTERNET ENGINEERING TASK FORCE RFC 2119.

WORD	**DEFINITION**
MUST	This word or the term "SHALL", mean that the item is an absolute requirement
MUST NOT	This phrase, or the phrase "SHALL NOT", means that the item is an absolute prohibition
SHOULD	This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore the item, but the full implications must be understood and carefully weighed before choosing a different course
SHOULD NOT	This phrase, or the phrase "NOT RECOMMENDED", mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label
MAY	This word, or the adjective "OPTIONAL", means that the item is truly optional. One product team may choose to include the item because a particular type of user requires it or because the product team feels that it enhances the product while another product team may omit the same item