LibreOffice
The Document Foundation

Draw Guide

Chapter 8
Connections, Flowcharts, and
Organization Charts

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Note for Mac users

Some keystrokes and menu items are different on a Mac from those used in Windows and Linux. The table below gives some common substitutions for the instructions in this chapter. For a more detailed list, see the application Help.

Windows or Linux	Mac equivalent	Effect
Tools > Options menu selection	**LibreOffice > Preferences**	Access setup options
Right-click	*Control+click* or *right-click* depending on system setup	Open a context menu
Ctrl (Control)	⌘ *(Command)*	Used with other keys
F5	*Shift+⌘+F5*	Open the Navigator
F11	⌘*+T*	Open the Styles and Formatting window

Documentation for LibreOffice is available at http://www.libreoffice.org/get-help/documentation

Contents

Connectors and glue points

Connectors and glue points were briefly introduced in *Chapter 2 Drawing Basic Shapes*. This section describes them in more detail and how to use them.

Connectors are lines or arrows whose ends automatically dock to a connection or glue point on an object. Connectors are useful when drawing, for example, flowcharts and organization charts. The connecting lines between objects remain intact even when objects are moved or rearranged. Also, if you copy an object with a connector, the connector is also copied.

Connectors

Draw has a comprehensive selection of connectors on a Connectors toolbar (Figure 1) to help you connect objects in, for example, a flowchart or organization chart. To open this toolbar, click the small triangle to the right of the Connector icon on the Drawing toolbar. Note that this icon changes shape depending on the last connector tool used.

The Connector toolbar shown in Figure 1 displays a default set of connectors. If the connector you want to use is not displayed, then use one of the following methods to select the connector you want to use.

- Click on the small triangle on the right of the title bar and select your connector from the drop down list.
- Right click in a blank area on the toolbar and select **Visible Buttons** from the context menu. Click the connector you want to use and it is added to the Connectors toolbar.

Figure 1: Connector toolbar

Note	This toolbar can become a floating toolbar by clicking on the bottom of the pop-up toolbar and dragging it into your workspace.

Types of connectors

Connectors fall into four type groups:

- *Standard connectors* (Figure 2) – the line segments run vertically and horizontally. Draws a connector with one or more 90-degree angle bends. Click on an object glue point on an object, drag to a glue point on another object, then release.
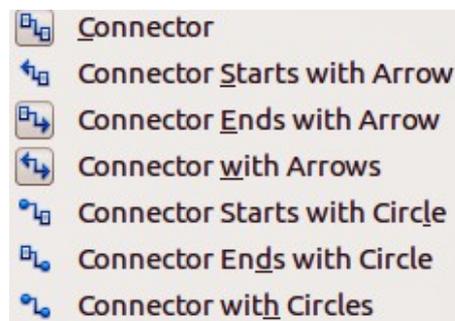

Figure 2: Standard connectors

- *Line connectors* (Figure 3) – consist of a line segment with two smaller segments at the ends. Draws a connector that bends near a glue point. Click on an object glue point, drag to a glue point on another object, then release. To adjust the length of the line segment between a bend point and a glue point, click the connector and drag the bend point.
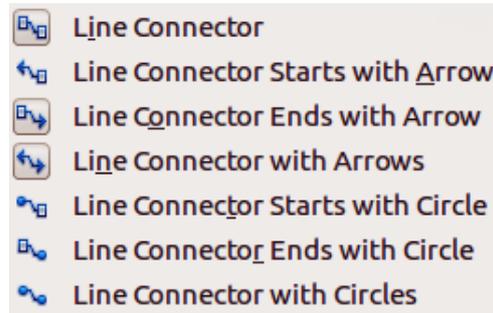
Figure 3: Line connectors

- *Straight connectors* (Figure 4) – consist of a single line. Draws a straight line connector. Click on an object glue point, drag to a glue point on another object, then release.
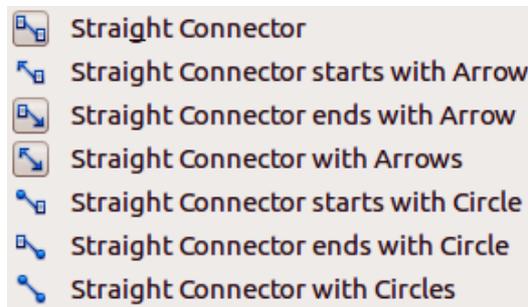
Figure 4: Straight connectors

- *Curved connectors* (Figure 5) – are based on Bézier curves and curve around objects. Draws a curved line connector. Click on an object glue point, drag to a glue point on another object, then release.
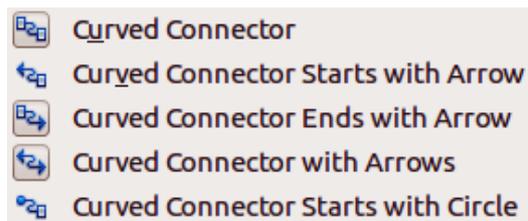
Figure 5: Curved connectors

Adding connectors

When you select a connector and move the mouse pointer over a filled object or the edge of an unfilled object, glue points appear. A glue point is a fixed point where you can attach a connector line. You can also add custom glue points to an object, see "Glue points" on page 7 for more information.

To draw a connector, select the connector type and click on a glue point on an object. Drag the cursor to a glue point on another object and then release. Figure 6 shows a line connector drawn between two objects. Remember not to drag the connector so that it overlaps or touches any objects and creates a confusing drawing. If this does happen, see "Modifying connectors" below on how to change the connector route to avoid any objects the connector crosses over.
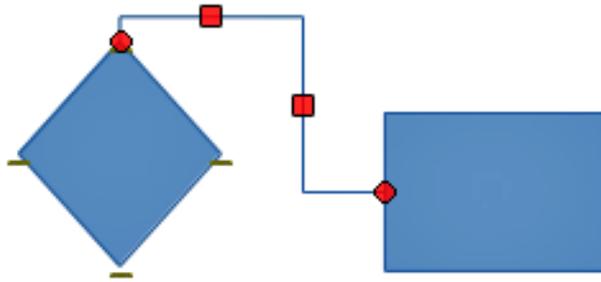
Figure 6: Connector between two objects

You can also drag a connector to an empty part of your document. When you release the mouse button, the unattached end of the connector is locked into place until you drag the end to a different location.

Modifying connectors

To detach or reposition a connector, click and drag either end of the connector line to a different location.

To change the connector route between objects avoiding any objects on the route, click on a control point on the connector line and drag it to a new position. In Figure 6, the control points are shown as small red squares at the point where the connector changes direction.

To modify a connector, right-click on the connector and select **Connector** from the context menu to open the Connector dialog (Figure 7). Use this dialog to change connector type and its properties.

- **Line skew** – defines the skew of the line and the dialog preview displays the result.
- **Line spacing** – sets the spacing for the connectors.
  - *Begin horizontal* – enter the amount of horizontal space you want at the beginning of the connector.
  - *Begin vertical* – enter the amount of vertical space you want at the beginning of the connector.
  - *End horizontal* – enter the amount of horizontal space you want at the end of the connector.
  - *End vertical* – enter the amount of vertical space you want at the end of the connector.
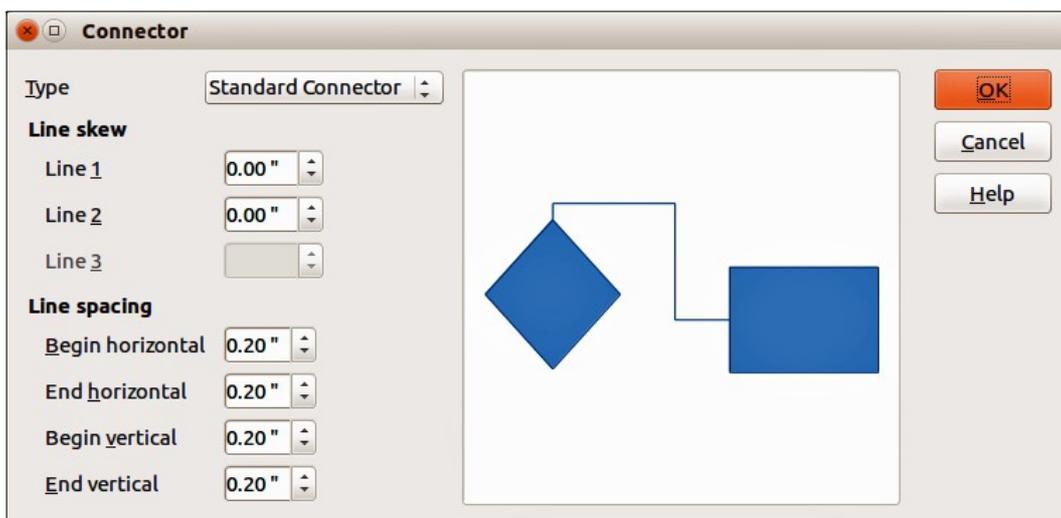

Figure 7: Connector dialog

Note	You cannot swap the ends of the connector using this dialog, that is start point becomes the end point and the end point becomes the start point. To swap the ends of a connector, you have to draw a new connector.

Glue points

Glue points are not the same as the selection handles of an object. The selection handles are for moving or changing the shape of an object; see *Chapter 3 Working with Objects and Object Points* for more information. Glue points are used to fix or glue a connector to an object so that when the object moves, the connector stays fixed to that object.

All Draw objects have glue points, which normally are not displayed and only become visible when the **Connectors** icon ▤ on the Drawing toolbar is selected. Note that the Connectors icon changes shape depending on the last connector tool used.

To add, customize or delete glue points to an object, go to **View > Toolbars > Gluepoints** on the main menu bar to open the Gluepoints toolbar (Figure 8). This toolbar only becomes active after you click on the **Glue Points** icon ✏ on the Drawing toolbar or select **Edit > Glue Points** on the main menu bar, or right click on a selected connector and select **Edit Points** from the context menu.
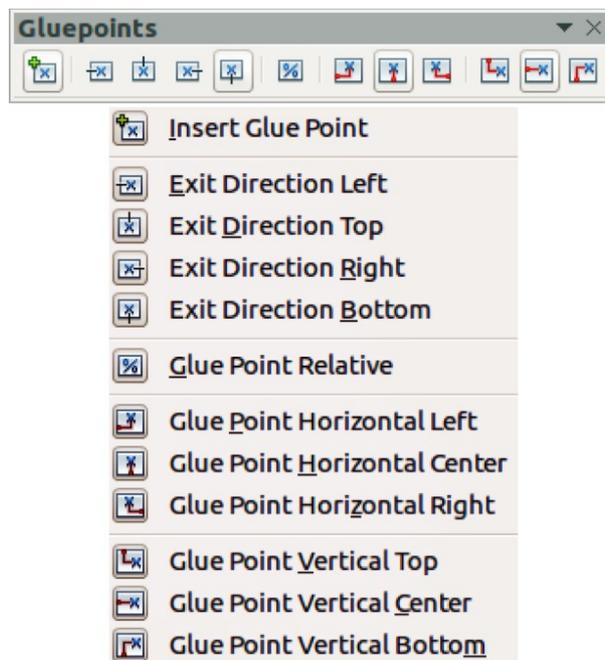

Figure 8: Gluepoints toolbar

Types of glue points

When the Gluepoints toolbar opens, only the six tools on the left of the toolbar are active. The remaining six tools on the right of the toolbar only become active when the **Glue Point Relative** icon is deselected.

With reference to Figure 8, the following briefly describes the function of each tool on the Gluepoint toolbar.

- **Insert Glue Point** – inserts a glue point where you click in an object.
- **Exit Direction Left** – connector attaches to the left edge of the selected glue point.

- **Exit Direction Top** – connector attaches to the top edge of the selected glue point.
- **Exit Direction Right** – connector attaches to the right edge of the selected glue point.
- **Exit Direction Bottom** – connector attaches to the bottom edge of the selected glue point.
- **Glue Point Relative** – maintains the relative position of a selected glue point when you resize an object. This tool is selected by default when the Gluepoint toolbar opens. The following six tools only become active when this tool is deselected.
- **Glue Point Horizontal Left** – when the object is resized, the current glue point remains fixed to the left edge of the object.
- **Glue Point Horizontal Center** – when the object is resized, the current glue point remains fixed to the center of the object.
- **Glue Point Horizontal Right** – when the object is resized, the current glue point remains fixed to the right edge of the object.
- **Glue Point Vertical Top** – when the object is resized, the current glue point remains fixed to the top edge of the object.
- **Glue Point Vertical Center** – when the object is resized, the current glue point remains fixed to the vertical center of the object.
- **Glue Point Vertical Bottom** – when the object is resized, the current glue point remains fixed to the bottom edge of the object.

Note	Each glue point you have added can have only one horizontal position and one vertical position. Only one of the horizontal position tools and one of the vertical position tools can be selected and used at any one time.

Adding glue points

By default, most objects normally have four glue points. To add extra glue points to an object or to an object that does not have glue points, proceed as follows:

1) Make sure no objects are selected and click on the **Glue Points** icon or select **Edit > Glue Points** on the main menu bar, or right click on a selected connector and select **Edit Points** from the context menu.

2) If the Gluepoints toolbar (Figure 8 on page 7) does not open, go to **View > Toolbars > Gluepoints** on the main menu bar.

3) Select the object and then the **Insert Glue Point** icon , or right click on a glue point you have previously inserted and select **Insert Point** from the context menu.

4) Move your cursor to a position where you want the glue point on an object and click to insert the glue point.

5) To move a glue point to another position, click on the glue point and drag it to its new position.

Tip	When adding, moving or customizing glue points, it is recommended to use the zoom function to make it easier to work with glue points. See *Chapter 3 Working with Objects and Object Points* for more information.

Customizing glue points

Only glue points that have added to an object can be customized. The default glue points included with an object cannot be customized.

1) Make sure no objects are selected and click on the **Glue Points** icon ![icon] or select **Edit > Glue Points** on the main menu bar, or right click on a selected connector and select **Edit Points** from the context menu.

2) If the Gluepoints toolbar (Figure 8 on page 7) does not open, go to **View > Toolbars > Gluepoints** on the main menu bar.

3) Make sure the object is not selected and double-click on a glue point that you have added to select the glue point.

4) Select the exit directions you want to use for connectors and double-click again on the glue point to customize the glue point.

5) To use horizontal and vertical positioning, click on the **Glue Point Relative** icon or right-click on the glue point and select **Adapt Position to Object** from the context menu to deselect this tool.

6) Select the horizontal and vertical positioning tools you want to use and double-click on the glue point to customize the glue point. Only one horizontal positioning tool and one vertical positioning tool can be used at any one time.

Deleting glue points

Only glue points that have added to an object can be deleted. The default glue points included with an object cannot be deleted.

1) Make sure no objects are selected and click on the **Glue Points** icon ![icon] or select **Edit > Glue Points** on the main menu bar.

2) Make sure the object is not selected and double-click on a glue point that you have added to select the glue point.

3) Right-click on the glue point and select **Cut** from the context menu, or press the *Delete* key on the keyboard, or go to **Edit > Cut** on the main menu bar.

Connector text

Text can be easily added to connectors, then formatted or edited to make, for example, your flowchart or organization chart easier to follow. See *Chapter 2 Drawing Basic Shapes* and *Chapter 9 Adding and Formatting Text* for more information on working with text.

Adding text

1) Select the connector.and the control points become active.

2) Click on the **Text** icon ![icon] or **Text Vertical** icon ![icon] on the Drawing toolbar and a flashing text cursor appears close to the connector. The Text Formatting toolbar replaces the Line and Filling toolbar.

3) Use the Text Formatting toolbar or **Format** and **Tools** on the main menu bar to change the default format of the text.

4) Type the text and, when you have finished typing the text and using the text tools, move the cursor away from the objects and connector and click to end the text mode. The Line and Filling toolbar then replaces the Text Formatting toolbar.

Formatting and editing text

1) Click on the connector text to enter text editing mode. The Text Formatting toolbar replaces the Line and Filling toolbar under the menu bar.
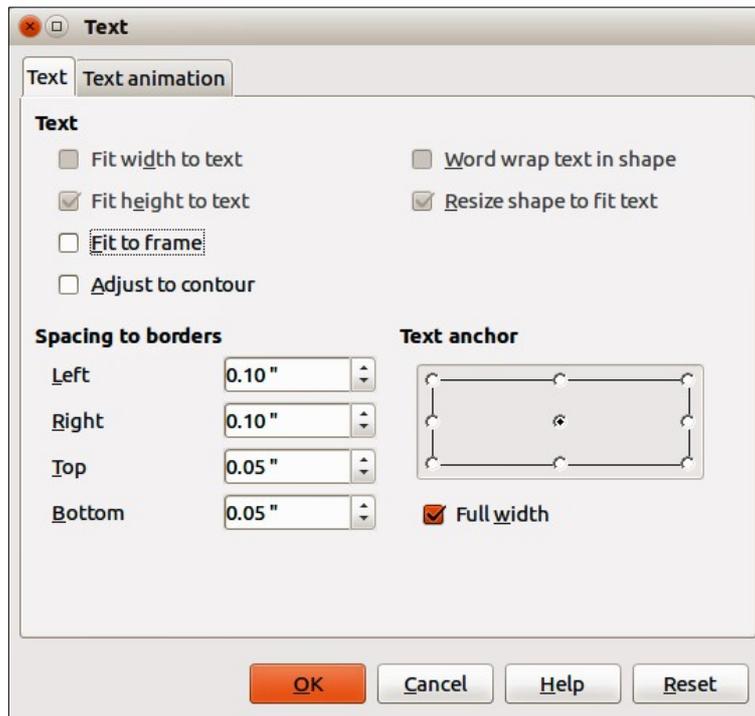

Figure 9: Text dialog

2) Perform any changes to the text using the text tools provided on the Text Formatting toolbar or **Format** and **Tools** on the main menu bar. You can also right-click on the text and select text tools from the context menu.

3) Right-click on the connector text and select **Text** from the context menu or go to **Format > Text** to open the Text dialog (Figure 9) where you can change the **Text anchor** and **Spacing to borders**.

Note	A connector has an invisible rectangle around it. **Text anchor** will position the text within this invisible rectangle and **Spacing to borders** will create margins between the text and the borders. These options are in addition to the standard text tools.

4) Click on the **Text Animation** tab where you can animate the text. However, this is not recommended unless you are going to display the drawing as part of a presentation. See the *Impress Guide* for more information on text animation.

5) When you have finished formatting and editing your text, move the cursor away from the objects and connector and click to end the text mode. The Line and Filling toolbar then replaces the Text Formatting toolbar.

Flowcharts

For drawing flowcharts (also known as flow diagrams), Draw has a **Flowchart** toolbar that includes a large selection of flowchart tools to help you to easily draw a flowchart.(Figure 10). Click on the small triangle to the right of the **Flowchart** icon on the Drawing toolbar to open the Flowchart pop up toolbar. Note that this icon changes shape depending on the last flowchart tool used.

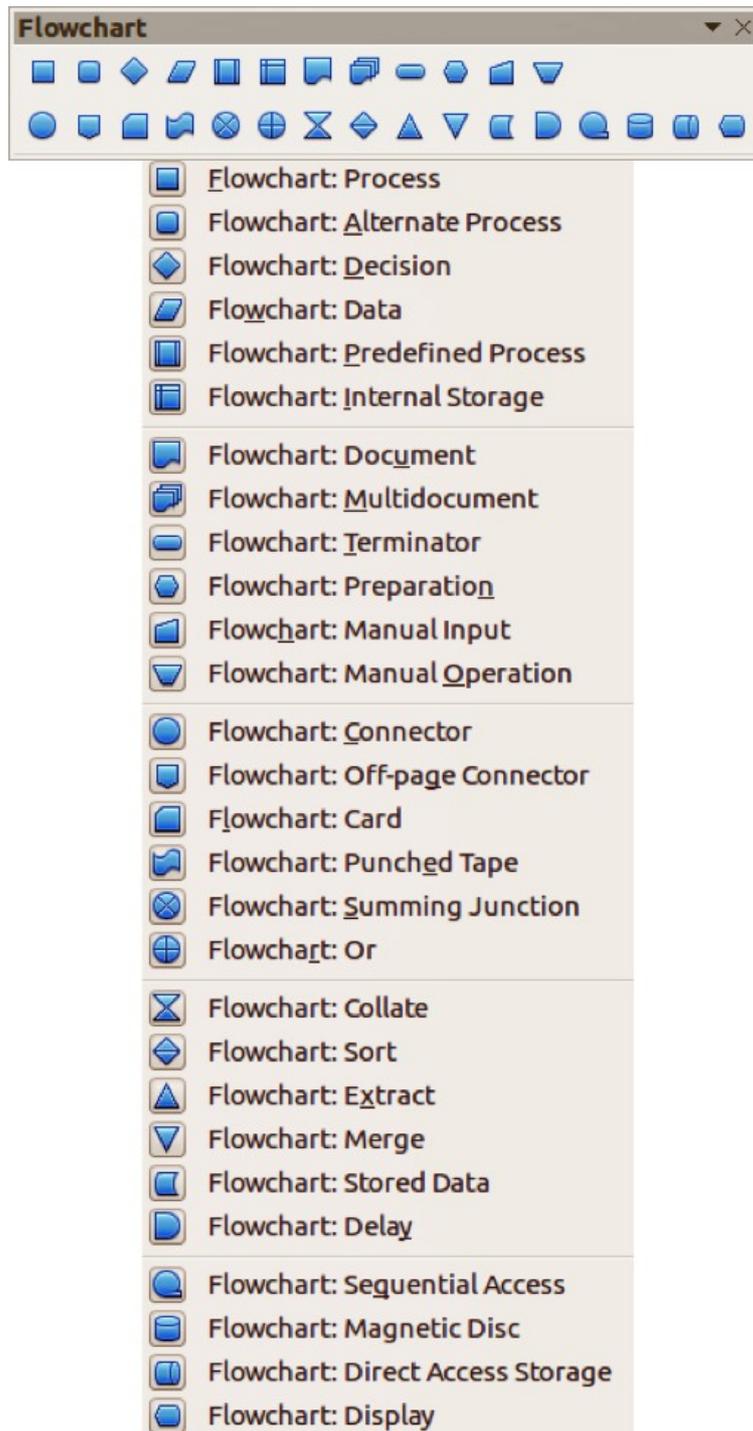| Note	This toolbar can become a floating toolbar by clicking on the bottom of the pop-up toolbar and dragging it into your workspace.

Figure 10: Flowchart toolbar

1) When adding objects to your flowchart, see *Chapter 2 Drawing Basic Shapes* for information on how to draw and resize object shapes.

2) Add text to each flowchart shape to make it easily identified in the flowchart. See *Chapter 2 Drawing Basic Shapes* and *Chapter 11 Advanced Draw Techniques* for more information.

3) Use connections lines in your flowchart. This allows repositioning of an object in your chart while maintaining connections with the other objects in the chart. See "Connectors" on page 4 for more information.

4) Use the zoom, grid and snap functions to help in positioning objects in your flowchart. See *Chapter 3 Working with Objects and Object Points* for more information.

5) Use the alignment and distribution functions to give your flowchart a more professional look. See *Chapter 5 Combining Multiple Objects* for more information.

6) Duplicate objects when you require more than one of the same shape and size. See *Chapter 5 Combining Multiple Objects* for more information.

Organization charts

Draw does not have a toolbar for organization charts, but these charts are easily created using basic shapes, flowchart shapes, connection points and connector lines. Hierarchy in an organization is easily indicated using shading and/or color. When using shading and color in an organization chart, make sure that your selection provides a good contrast between the text and the shading or color to make the chart easy to read on a computer display or in a printed document.

An example of an organization chart is shown in Figure 11. This was drawn using the process shape from the Flowchart toolbar and connection lines.

1) When adding objects to your chart, see *Chapter 2 Drawing Basic Shapes* for information on how to draw and resize object shapes.

2) Add text to each object in the organization chart to make it easily identified in the chart. See *Chapter 2 Drawing Basic Shapes* and *Chapter 11 Advanced Draw Techniques* for mare information.

3) Use connections lines in your organization chart. This allows repositioning of an object in your chart while maintaining connections with the other objects in the chart. See "Connectors" on page 4 for more information.

4) Use the zoom, grid and snap functions to help in positioning objects in your chart. See *Chapter 3 Working with Objects and Object Points* for more information.

5) Use the alignment and distribution functions to give your organization chart a more professional look. See *Chapter 5 Combining Multiple Objects* for more information.

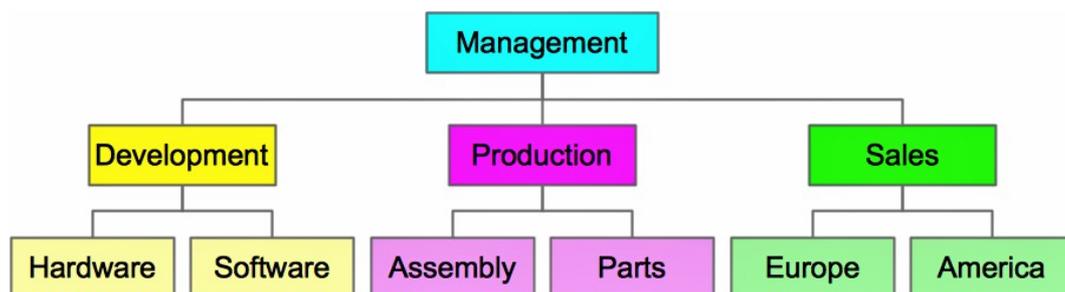6) Duplicate objects when you require more than one of the same shape and size. See *Chapter 5 Combining Multiple Objects* for more information.

Figure 11: Example organization chart