Creating Killer Diagrams

with

Microsoft Visio 2007
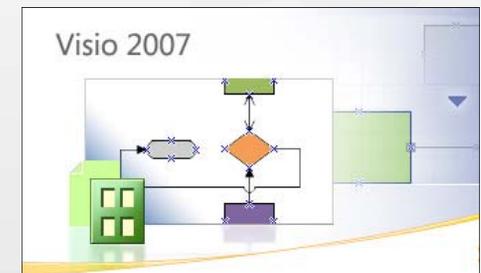
A Workshop

Instructor: David Newbold

An Information Commons Class

University of California, San Diego

UCSD
Biomedical Library

Visio 2007

What is Visio?

Microsoft Visio is a diagramming program
designed to assist users
in the creation and illustration of
idea's, processes, and systems.

What does Visio do?

Through the use of Visio templates the user can create:

Calendars

Timelines

Organizational Charts

Networking Diagrams

Building plans

Pert Charts

Gantt Chart

Brainstorming diagrams

Block Diagrams

Charts & Graphs

Electrical & Mechanical Engineering Diagrams

Flowcharts

Maps

Networking Diagrams

Data Base Diagrams

Business Process Diagrams

The user also has the option to create a new blank Visio Drawing and use the shapes and symbols from the above templates to create their own diagram.

Workshop Syllabus

1. Introduction
   a. Description
   b. Applications

2, Visio Elements
   a. Interface Elements
   b. Nature of Shapes
   c. How to Use Text
   D. Borders and Titles

3. Creating Diagrams
   a. Creating Flow Charts
   b. Creating Organizational Charts

4. Enhancing Appearance

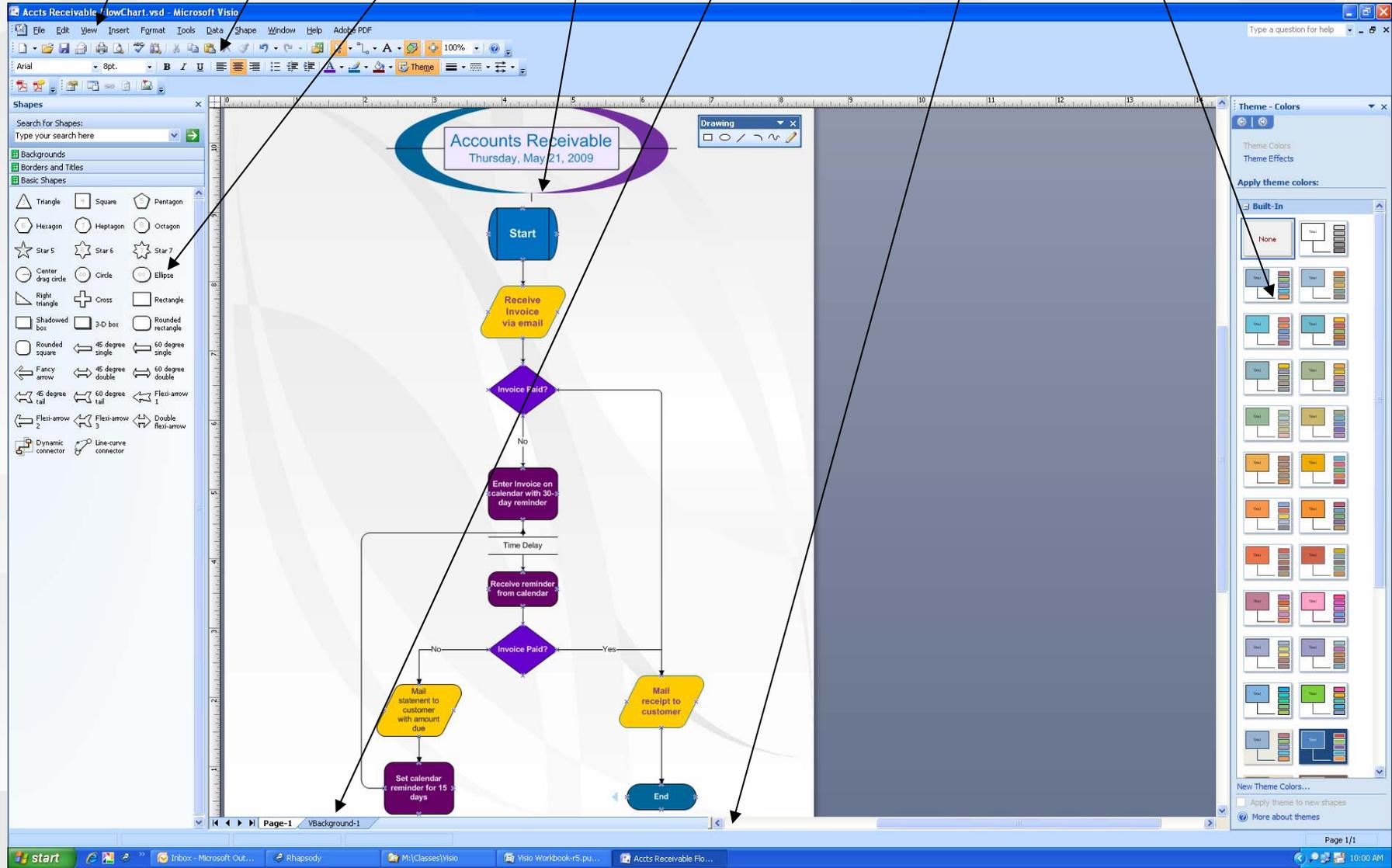5. Other Sources of Information

Table of Contents

The Visio Interface

The Menu Bar   Toolbars   Shapes Window   Drawing Window   Page Tabs   Status Bar   Theme Window

Shapes

Visio shapes are pre-drawn picture elements that can be dragged and dropped into a diagram to visually communicate information and processes.

1-D and 2-D Shapes

- There are two types of shapes in Visio: one-dimensional shapes (1-D shapes) and two-dimensional shapes (2-D shapes).

  1-D shapes connect things

  2-D Shapes represent things

- 1-D Shapes ~

  - have only 2 handles when selected
  - have a beginning point ▣ and an ending point ⊞
  - typically are lines.
  - are used to connect 2-D shapes

- 2-D Shapes ~

  - have 8 handles ■
  - have 2 dimensions: length and width, which are adjustable
  - Are typically used to represent things
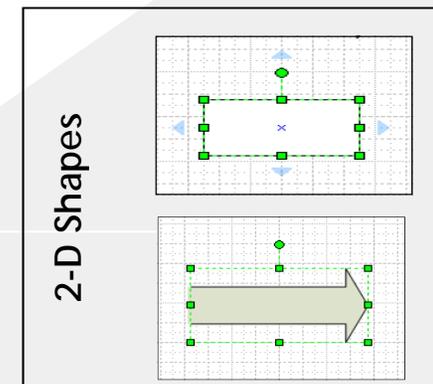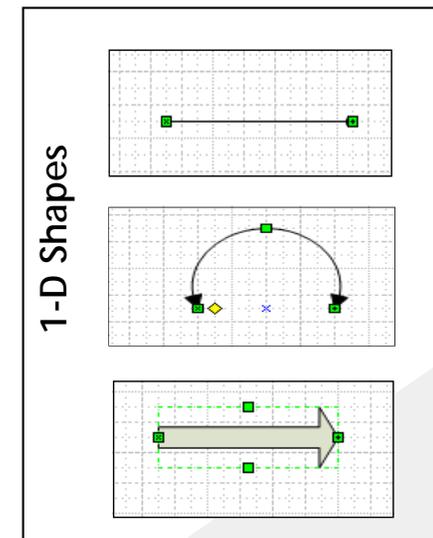
1-D Shapes

2-D Shapes

Shape Handles

Selection Handles

Appear on a shape as red or green boxes.
The user can resize shapes or connect shapes, using these handles.

Connection points

This appears as a blue x on a Visio shape.
At these points Visio allows the user to glue connectors or lines.
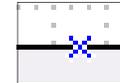
Rotation Handles

Appears as a green or red circle on Visio shapes.
This handle is used to rotate shapes.
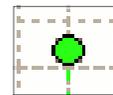
Control Handles

Appears as a yellow diamond on some Visio shapes.
This handle is used to control a shapes appearance and
Can sometimes make the shape appear 3 dimensional.
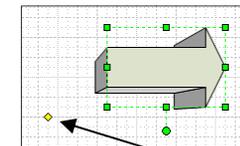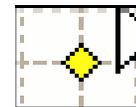
Control Handle controls the gray area which makes the arrow appear 3 -dimensional.

Eccentricity Handles

This appears as a green circle with a plus symbol inside.
This handle is used to extend 1-D shapes.

Eccentricity Handle

Connection Point

Control Handle

Eccentricity Handle
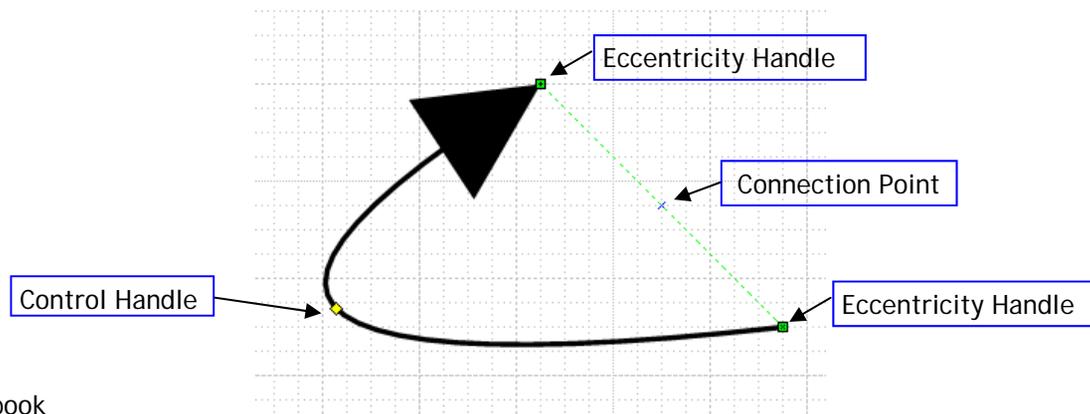
More About Shapes

- ## About Stencils and Shapes

    1. **Shapes window:** This window contains stencils.

    2. **Stencils:** Stencils contain shapes.

    3. **Shapes:** Shapes are Visio's building blocks and are contained in stencils.
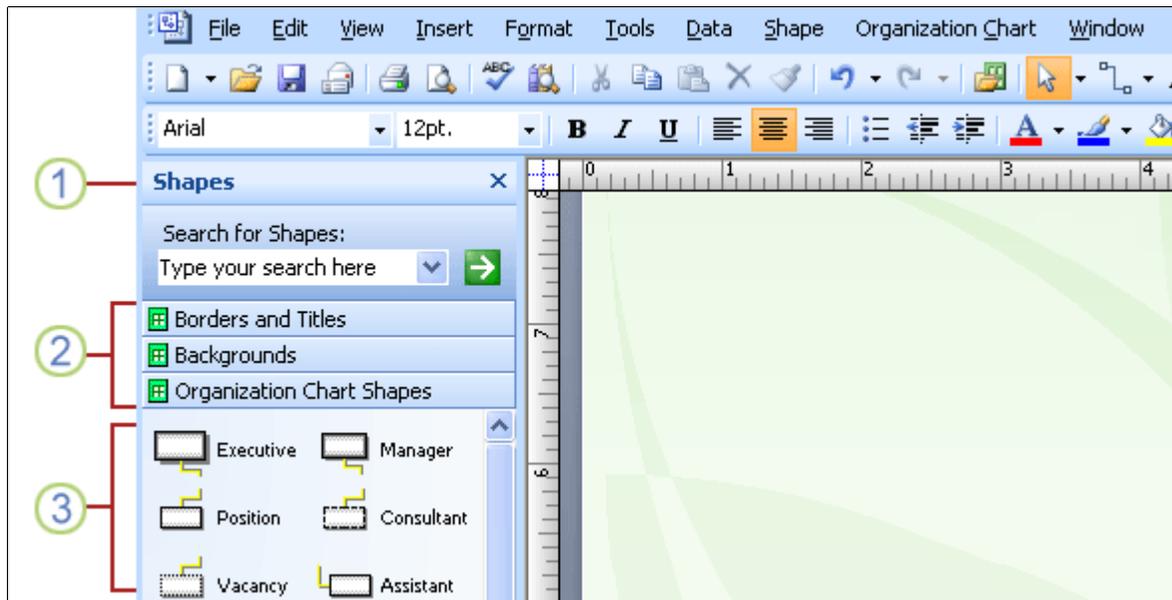
The illustration shows the Organization Chart stencil and its shapes. Notice the two other stencils: Borders and Titles and Backgrounds. To see the shapes in either of those stencils, you'd just click on the name of the stencil.

Getting shapes

- with templates
    - when first opening Visio, click on "Getting Started," samples, or stencil categories.
    - then the stencil that most closely meets your criteria
- by searching
    - Type one or two words in the **Search for Shapes** box.
    - Visio creates a temporary stencil to hold the shapes it finds
- by browsing the stencils
    - Start with: *File>Shapes*
- by drawing your own
- inserting pictures
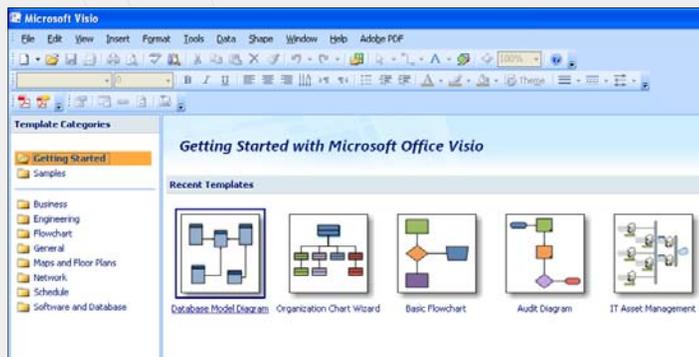
Searching
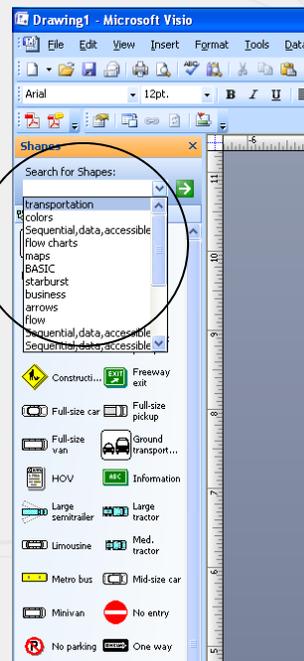
Browsing Stencils

Templates
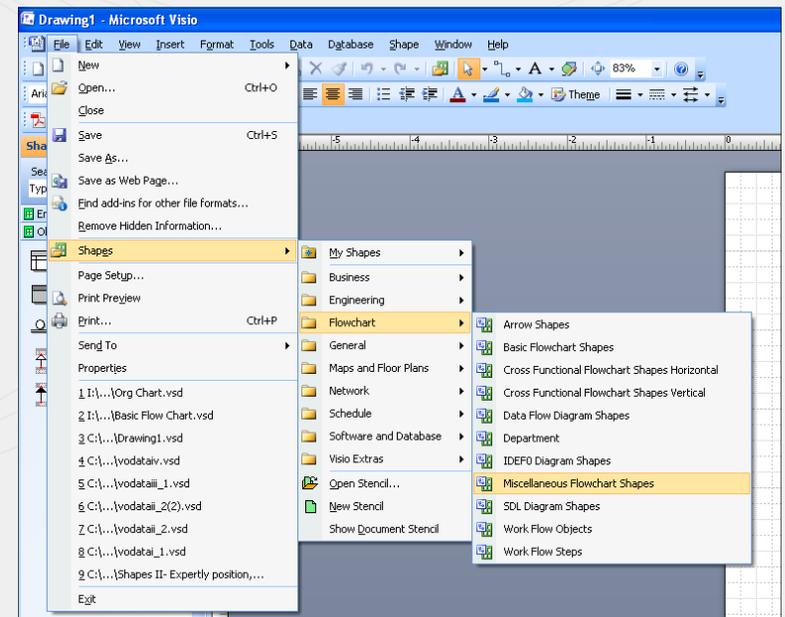
Types of Connectors

Connectors in Visio are used to define relationships between two shapes. You can connect shapes in Visio through the use of straight line connectors, line-curve connector or dynamic connectors.

Straight Line Connectors

Connects two shapes together with a straight line.
This connector will shorten, lengthen and change its angle if one of the connected shapes is moved.

Dynamic Connectors

This type of connection tool allows the user to move objects in the Visio Drawing window and still maintain a clear connection between shapes.

The dynamic connector automatically bends, stretches and moves around other shapes in the drawing window.

Line Curve Connectors

Line-Curve connector: Connects two shapes together with a curved line.
This connector will shorten and lengthen if one of the connected shapes is moved.
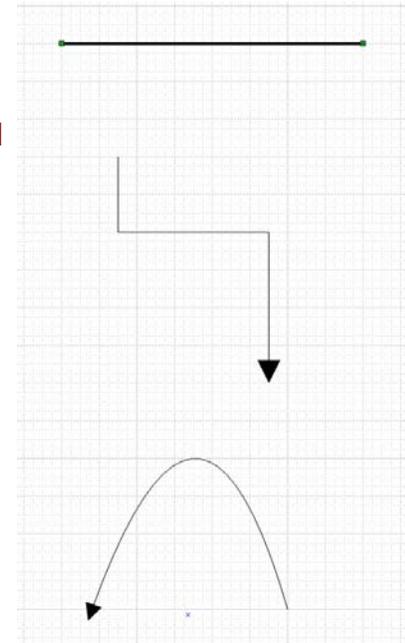
Two Ways of Making Connections

There are two ways to connect shapes using Visio 2007:

- **Point-to-point connection**: in this form of shape connection the connector will stay on the point where the user originally place the connection when a connected shape is moved.

    1. Place two shapes in your drawing window.
    2. **Note**: *Visio is a drag and drop program, so to place a shape on the drawing choose the shape and drag it to the drawing window and release the mouse*
    3. Click on the *Dynamic Connection* tool
    4. Drag the connection tool to the connection point on the first shape, then to the connection point on the second shape.
    5. The connection end will turn red when the shape is connected
    6. Your two shapes are now connected point-to-point.

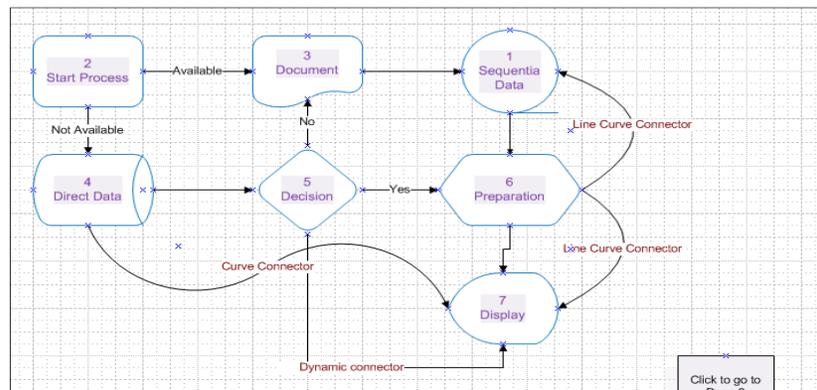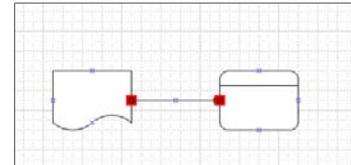- **Shape-to-shape connection**: in this form of shape connection the connector will move around the shape maintaining a connection when a shape is moved.

    1. Place two shapes in your drawing window.
    2. Click on the Dynamic Connection tool
    3. Drag the connection tool so it is positioned over the center of the first shape until a red box appears around the shape.
    4. Hold down the left mouse button and drag the connection symbol to the center of the second shape and wait till a red box appears around the second shape
    5. Release the mouse.
    6. Your two shapes are now connected shape-to-shape.
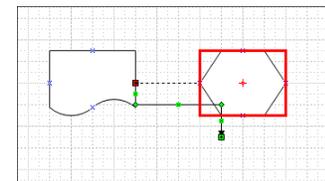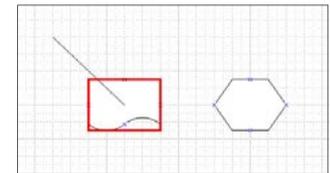
Auto Connecting Shapes

While dragging shapes onto the page . . .

1. Drag a shape from a stencil onto the drawing page and position it near another shape.
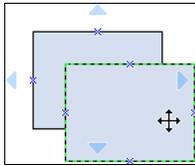
2. While still holding down the mouse button, move the pointer over one of the blue triangles. The triangle turns dark blue.
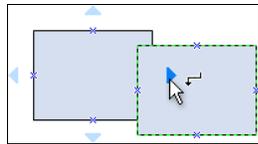
3. Release the mouse button. The shape is placed on the drawing page, and a connector is added and glued to both shapes
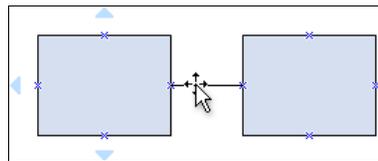
Tip: If you don't like dragging shapes, you can achieve the same result by first selecting a shape in the stencil, resting the pointer over a shape in your drawing, and then clicking one of the blue triangles that appear near that shape.

Using AutoConnect with shapes already on the page
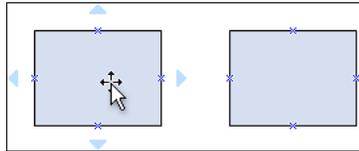
Rest the pointer over the shape that you want to connect *from*.
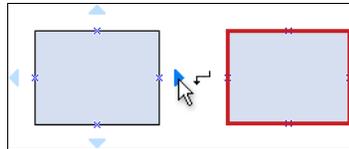
Position the pointer over the blue triangle that is closest to the shape that you want to connect *to*.
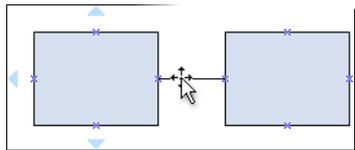
The triangle turns dark blue, and a red box appears around the shape that you want to connect to.

Note   If a red box does not appear around the shape that you want to connect to, the shape may be too far away. Move the shape closer and try again, or <u>use</u> <u>the Connector tool</u>. Click the blue triangle. A connector is added and glued to both shapes.

Enable or Disable AutoConnect

You can enable or disable the AutoConnect feature in all Visio drawings, or in only the current drawing.

Enable or disable AutoConnect in all Visio drawings

1. On the **Tools** menu, click **Options**.

2. Click the **General** tab.

3. Under **Drawing window options**, select the *Enable AutoConnect* **check box**.
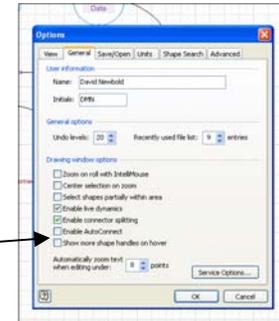
Enable or disable AutoConnect in the current drawing

1. On the **Standard** toolbar, click the **AutoConnect** tool.

2. **Note:** If clicking the **AutoConnect** tool does not enable AutoConnect, make sure the **Enable AutoConnect** check box is selected in the **Options** dialog box.
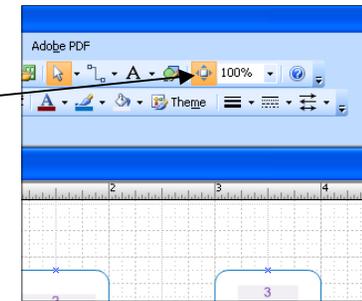
Rulers and gridlines

- When you position shapes on the page — or when you first add shapes to the page — use the grid lines to keep them straight. And keep an eye on the grid to make sure that your shapes are evenly spaced.

- The rulers are also invaluable. Use them to see the exact distance between shapes or to know just how big a certain shape is. These numbers are especially important if you are creating a detailed office layout or building plan that will control physical measurements.

- By default, shapes **snap** to the grid lines and the measurement lines on the rulers. This behavior makes it much easier to position shapes. You don't have to do fussy hand work to get a shape in the right place. It puts itself where you want it, and stays there unless you move it.
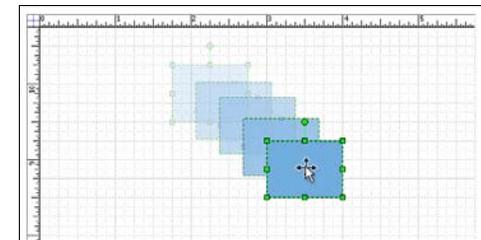
Guides

- Even more visible than the grid lines are the **guides**: vertical or horizontal lines that you can place on a page.

- You drag them from a ruler, and by default they appear blue, as in the illustration.

- Guides help you organize your diagrams according to their content.

- If you know that your flowchart shows three processes, for example, you can evenly space three vertical guides on the page.

- Then you can position the shapes running down each one. (In case you're wondering, guides don't show up on printed diagrams. They're your secret.)

- Guides are also handy to mark off the margins of the page as well.
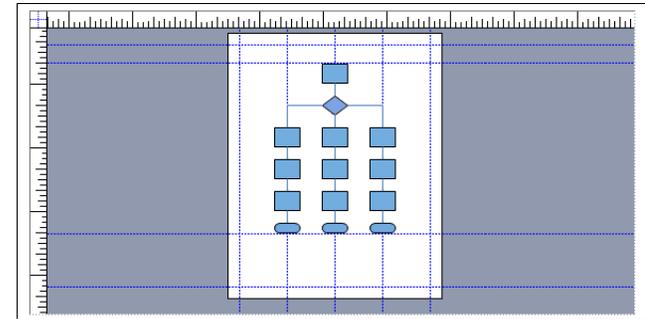
Size & Position window

- The location of a shape is stated in terms of X and Y coordinates.

- The X coordinate is the position on the horizontal ruler at the top of the page.

- The Y coordinate is the position on the vertical ruler at the left of the page. The point where these meet is the shape's pin .

- For most shapes, the pin is the center of the shape.

- To move the shape, type in new numbers for the coordinates.
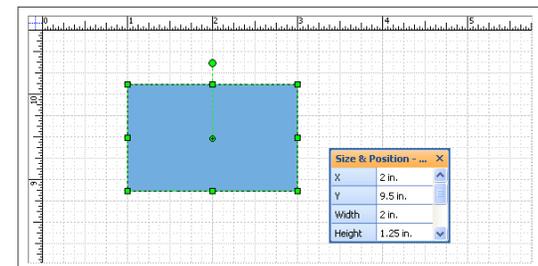
Moving Shapes

Aligning Shapes

- Select the shapes you want to align
- Select Shapes menu > Align > alignment option
- Your shapes are aligned

Distributing Shapes

- Select the shapes you want to distribute
- Select Shapes menu > Distribute > distribute option
- Your shapes are evenly distributed
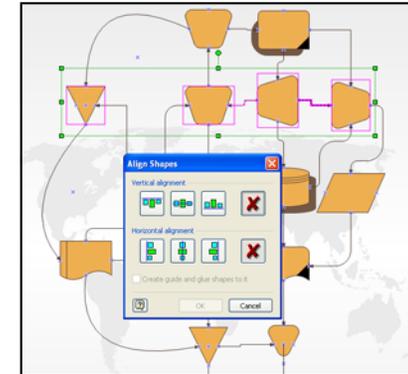
Rotating Shapes & Flipping shapes

- Select the shape you want to rotate or flip
- In the Shapes menu, select Rotate or Flip
- Select the relevant Rotate or Flip command
- Your shape is rotated or flipped
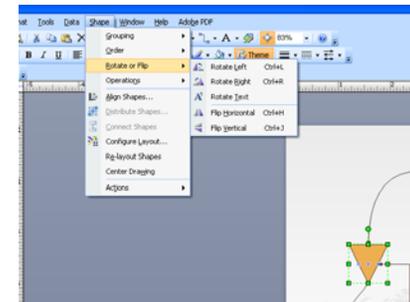
Stacking Shapes

- By default, Visio puts shapes in a stacking order as you add them to the page.
- The rule to remember, for how Visio establishes the stacking order, is "The last one in wins."
- What that means is, the last shape you place on the page is highest in the stacking order.
- In this example, the computer is on the top of the other shapes because it was the last one added to the page.
- To change a shape's position in the stacking order, select the shape, and then point to **Order** on the **Shape** menu. You'll see four options. **Bring to Front** or **Send to Back** move a shape all the way in the stacking order.
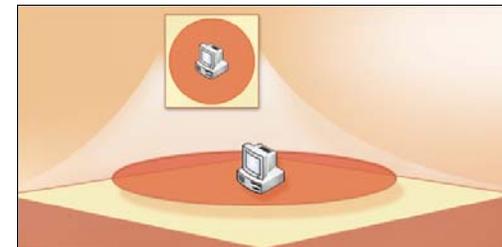
Grouping Shapes

- The first step in grouping shapes is to select the shapes. You can do this by holding down the SHIFT key while you click them, or by dragging a selection net around them.

- When you've got the shapes selected, on the **Shape** menu you click **Grouping** and then click **Group**. That's it: the shapes are now grouped.

- You can do anything to a group of shapes that you can do to a shape: resize it, rotate it, align it with others, and so on. Visio treats a group as one big 2-D shape.

- **Tip**   The shortcut key for grouping is CTRL+SHIFT+G. (Think "G for Group.")
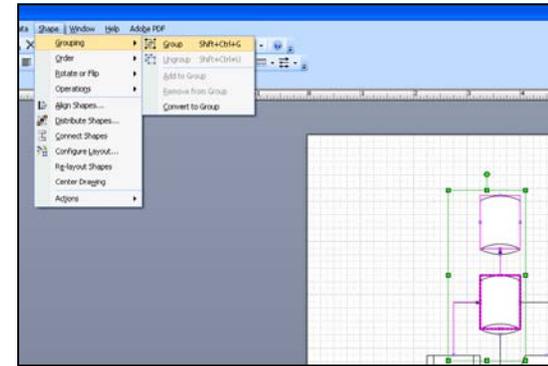
Text

Text in Shapes

- Click and type to add text, and
- Double-click a shape to edit text

Text-Only Shape

- To define the area for the text, you first use the **Text Tool** to click and drag a bounding box.
- Visio will zoom in so that you can see what you are typing.
- The bounding box establishes the area that the text will occupy.
- It can be wide or skinny, long or short. It's up to you.
- The only thing it can't be is round or curvy. It can only be rectangular.
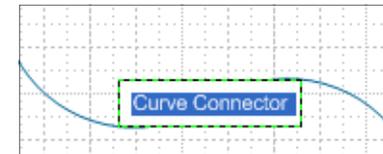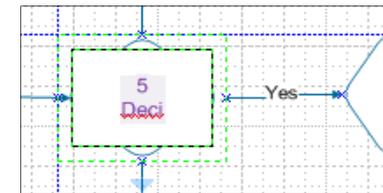
Text in Grouped Shapes

- Click the group of shapes with the **Pointer Tool**.
- Click again to select one of the shapes in the group.
- Click the **Text Tool** button.
- Add or change the text as you see fit
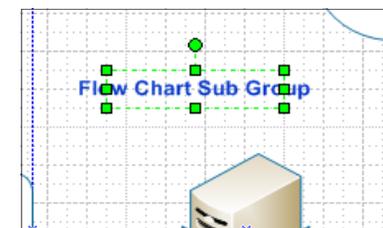
Basic Flowcharts

Flowcharts are diagrams that show the steps in a process. Basic flowcharts are easy to create and, because the shapes are simple and visual, they are easy to understand.

The Basic Flowchart template in Microsoft Office Visio 2007 comes with shapes that you can use to show many kinds of processes, and it is especially useful for showing basic business processes like the proposal development process shown at the right.

Through the use of this tool the user can create flowcharts, top-down diagrams, information tracking diagrams, process planning diagrams, and structure prediction diagrams.
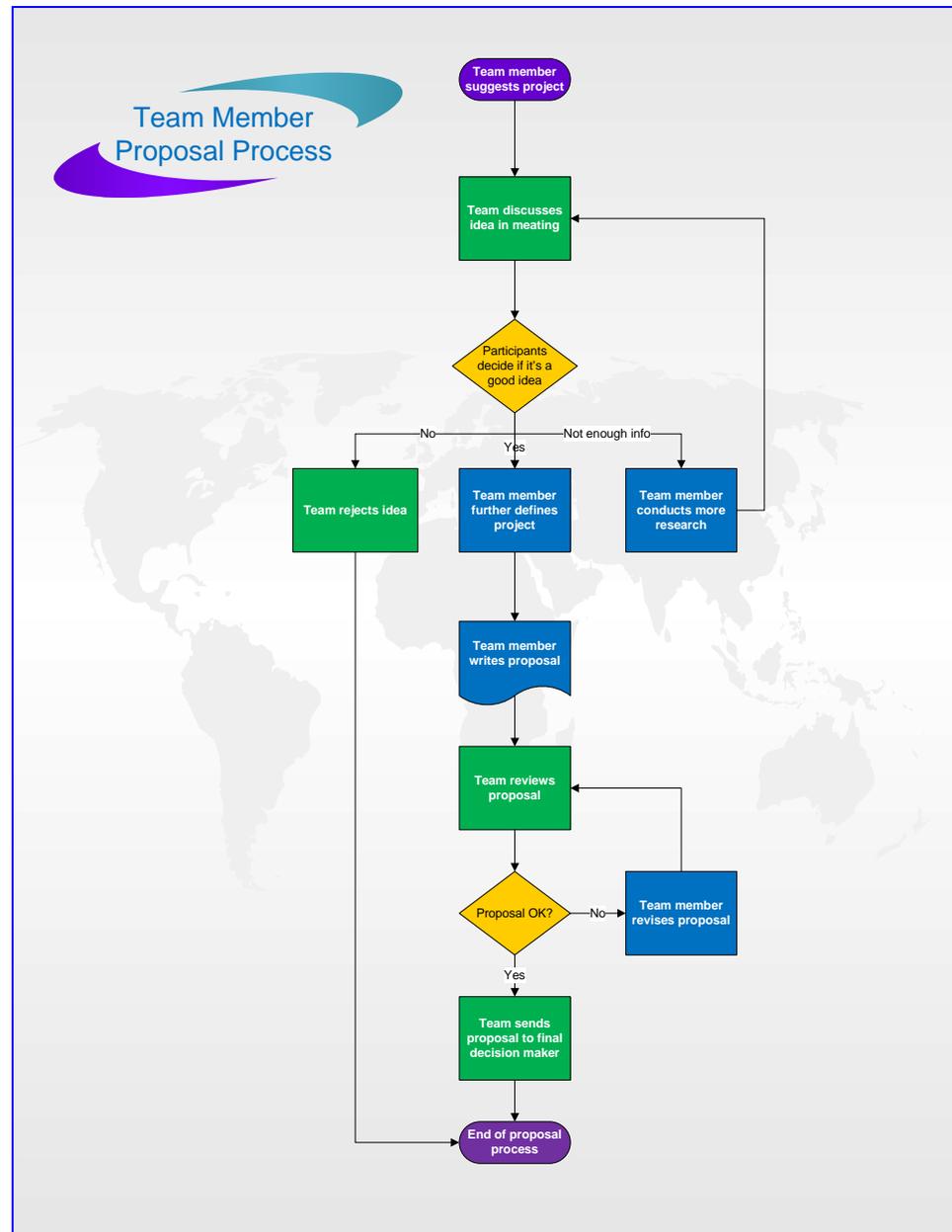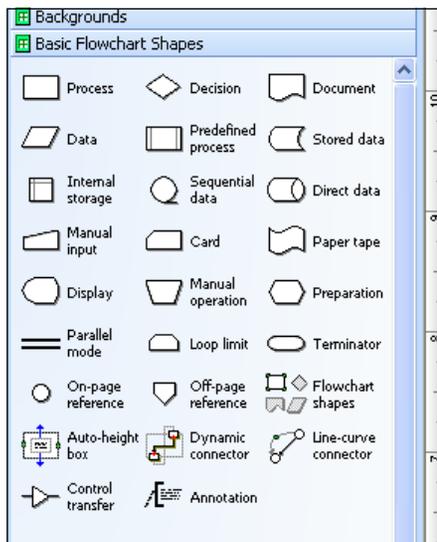
Creating a Basic Flowchart

- Open Visio

- Under Category choose, Flowcharts

- Visio will now open a blank drawing with the Flowchart Shapes relevant to the flowchart you have chosen.

- Next, drag a flowchart shape onto the drawing.

- Repeat this action as many times as necessary to complete your flowchart.

- To connect the shapes you have placed on your document, use the connection tools.

- When connecting one shape to another, click the connection tool of your choice, and then drag from the connection point on the first shape to the connection point on the second shape.

- To add text to your Basic Flowchart, select a shape, start typing your text, when finished typing click out side of the shape.

Flow Chart Examples

Accounts Receivable
Monday, June 01, 2009

```
Start
  ↓
Receive Invoice via email
  ↓
Invoice Paid? ──Yes──→ Mail receipt to customer ──→ End
  │ No
  ↓
Enter Invoice on calendar with 30-day reminder
  ↓
Time Delay
  ↓
Receive reminder from calendar
  ↓
Invoice Paid? ──Yes──→ (to Mail receipt to customer)
  │ No
  ↓
Mail statement to customer with amount due
  ↓
Set calendar reminder for 15 days
  ↑ (loops back to Time Delay)
```

Going Home

```
Leaving the office
  ↓
Check traffic and weather
  │ Yes
  ↓
Weather Clear? ──No──→ Take Alternate "A" Home
  │ Yes
  ↓
Before 5:00 p.m.? ──No──→ Take Alternate "A" Home
  │ Yes
  ↓
Check for congestion on Primary Route
  ↓
Primary Congested? ──No──→ Take the Primary Route Home
  │ Yes
  ↓
Divert to Alternate "B"
  ↓
Arrive Home Safely
```

Standard Workflow Diagram

```
Clip    Shell    Shell    Spring    Refill
        Top      Bottom   Wire

        Assemble          Form Spring

        Check Clip                  Assemble
        Clearance
                                    Hold for
                                    Shell Tops

                                    Assemble

Ace Pen Manufacturers
Manufacturing Process
                                    Finished
                                    Goods
```
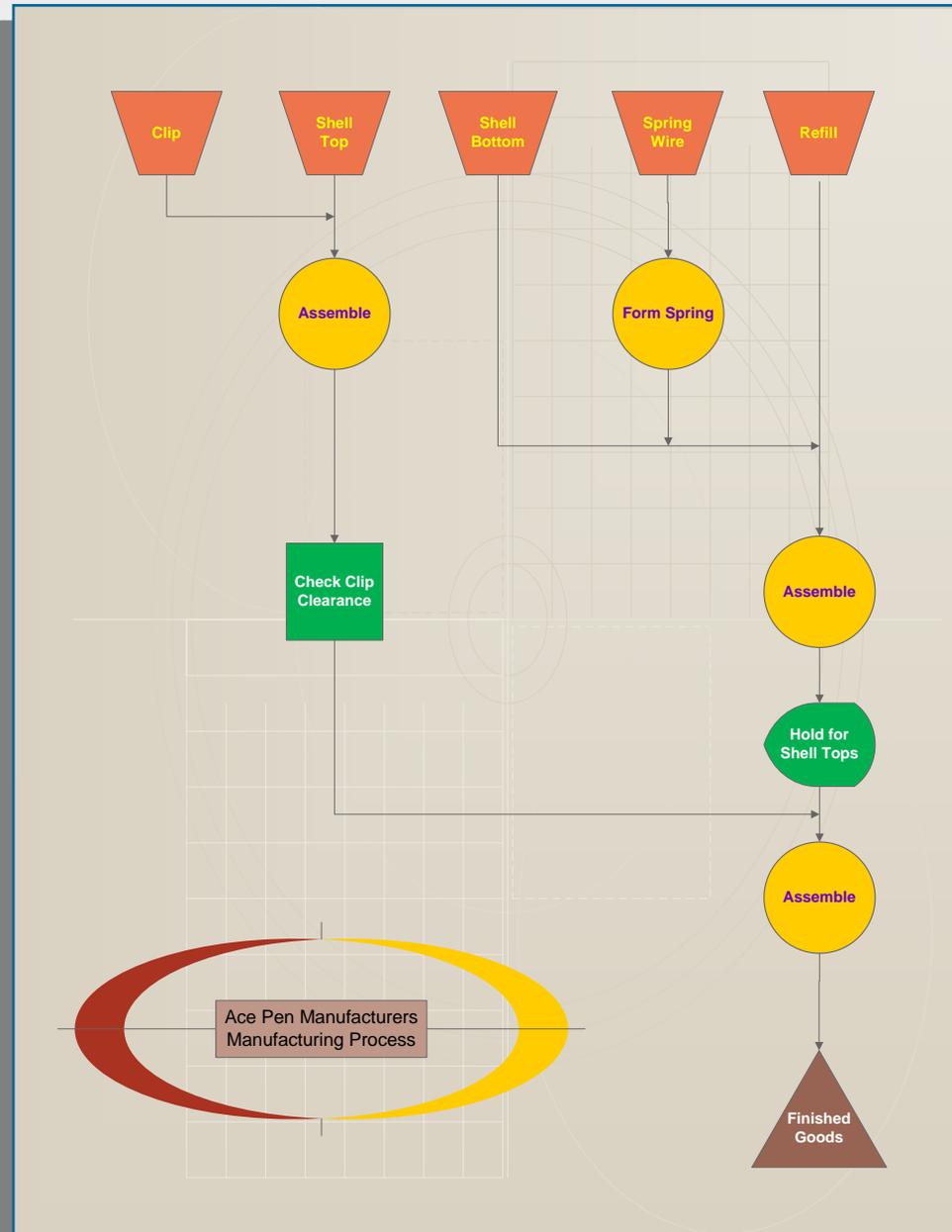
Cross Functional Workflow Diagram

Process: Hospital Key Patient Processes

Admitting	Management	Physicians & Nurses	Accounting
Schedule Patients			
Register Patients			
Receive Patients	Manage Patient Medical Info		
	Assure Quality	Care for Patients	
		Release Patients	Generate Billing Records
			Collect Payment

Glendale Central Hospital Patient Processing
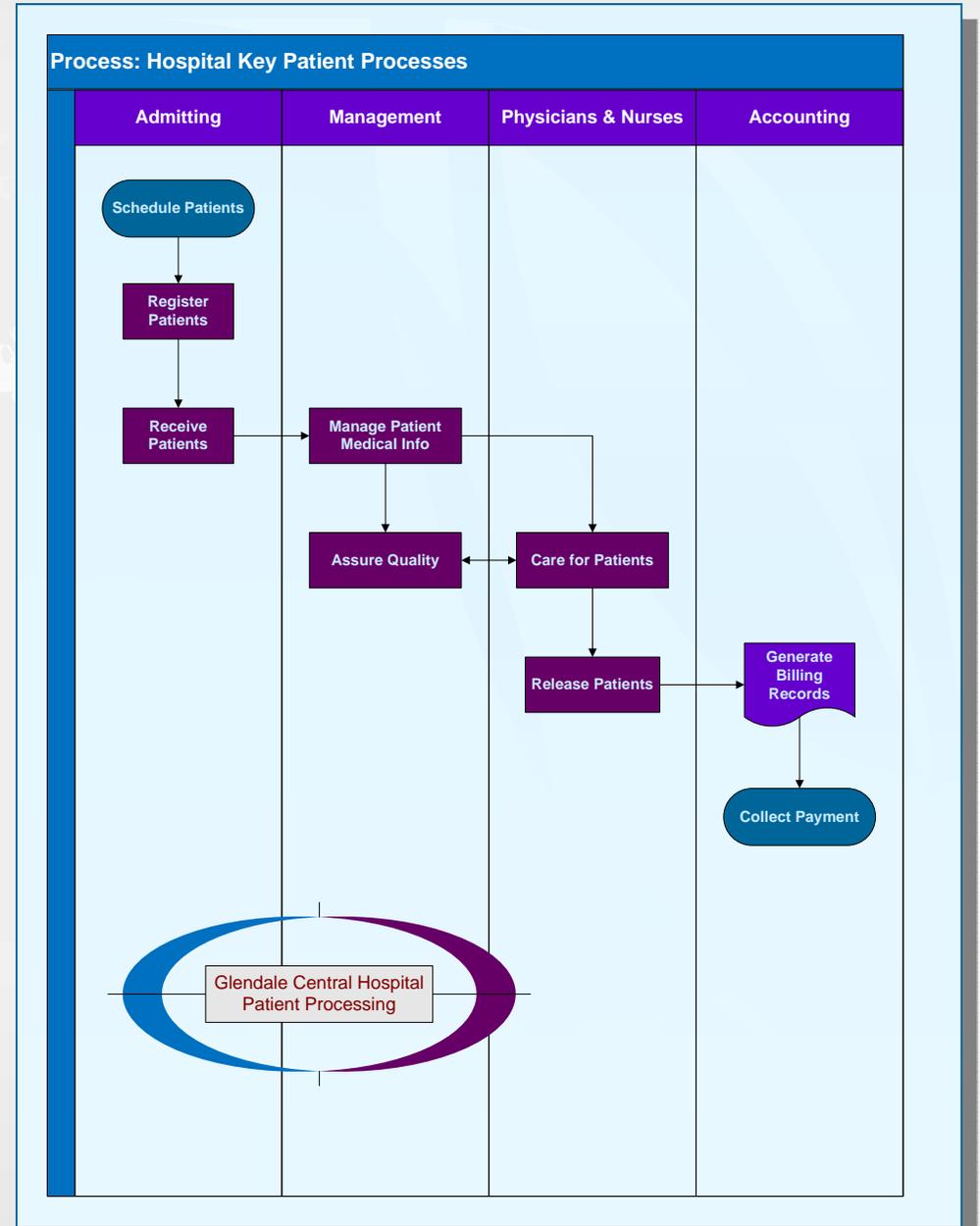
Workflow Diagrams Using "Department" Stencil

Block Diagram

Network Diagram

Workstation

Workstation

Mainframe

Printer

PDA

My Network

Scanner

PC

Laptop

Server

My Computer
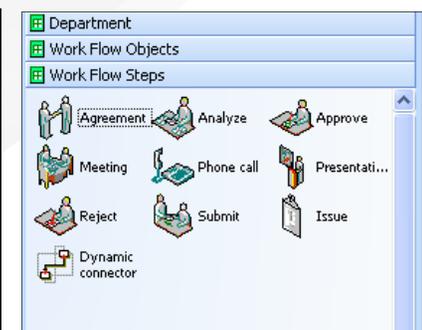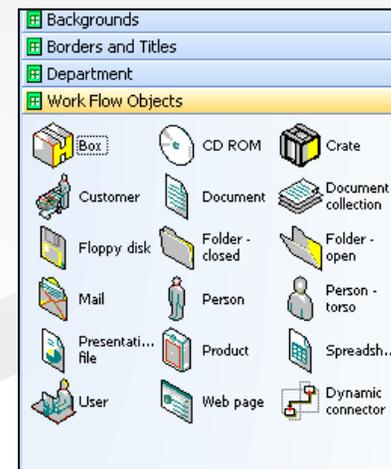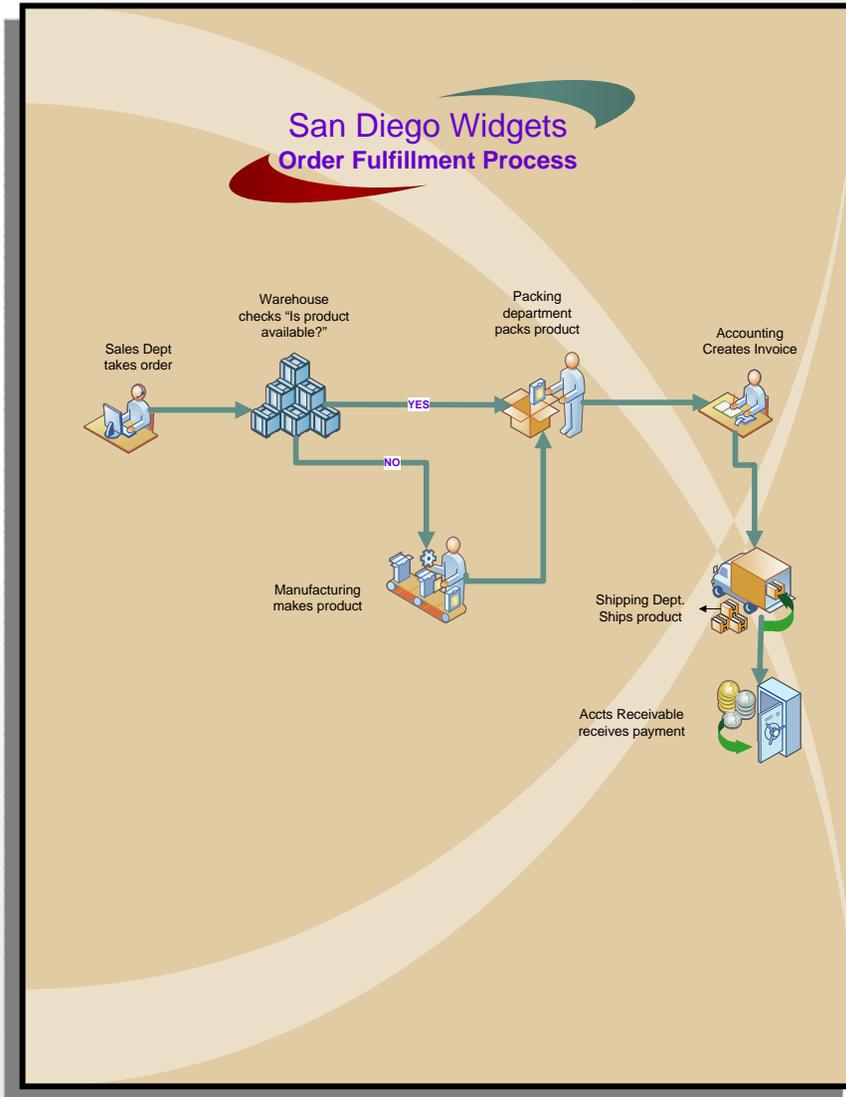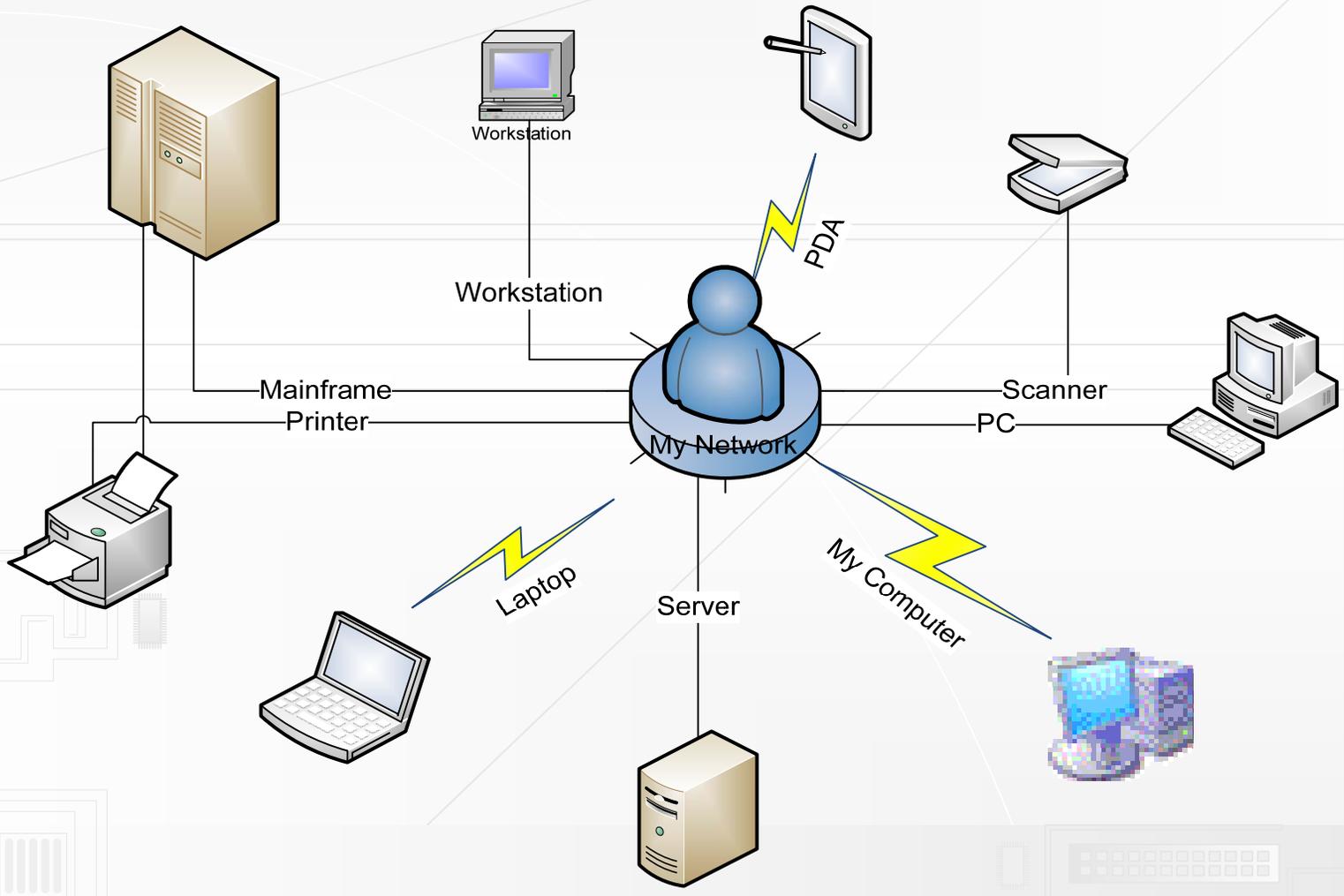
Numbering Shapes

To create a numerical order to your Flowchart shapes:

- Select the shapes you wish to number.

- Go to Tools, Add-ons, Run Add-ons

- The add-ons dialog box will open, select Number Shapes ... then click ok.

- The Number Shapes Dialog Box will appear. In this box, under "Operation", click "Auto Number".

- Insure the "Selected Shapes" serial button is selected under "Apply To" menu, then Click OK.

Adding Pages

When a Flowchart becomes too large you may need to create another drawing to continue the thought pattern.

To do this you:

- Locate the Off-Page Reference shape

- Drag it to the first page of your flowchart near the last shape you placed on you page.

- This shape acts like a hyper-link between page one of your flowchart and page two.

- Visio will open the Off-Page Reference Dialog box.

- Click ok, and the Off-Page Reference shape will appear on your drawing and will create the new page it is connected to.

- To move between pages using the Off-Page Reference shape, double click on the shape.

Microsoft Visio Workbook

The Best Way Home

1 Leaving the Office

2 Check Traffic and Weather

3 Weather Clear?

4 No

5 Before 5:00?

No

No

6 Check for Congestion on Primary Route

7 Primary Congested?

No

Yes

8 Take Alternate "A" Home

9 Divert to Alternate "B"

10 Take the Primary Route Home

11 Arrive Home Safely

Off Page Ref

Off Page Ref

Open Garage

Drive in
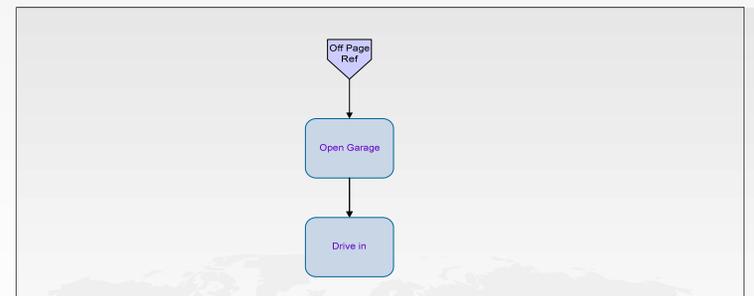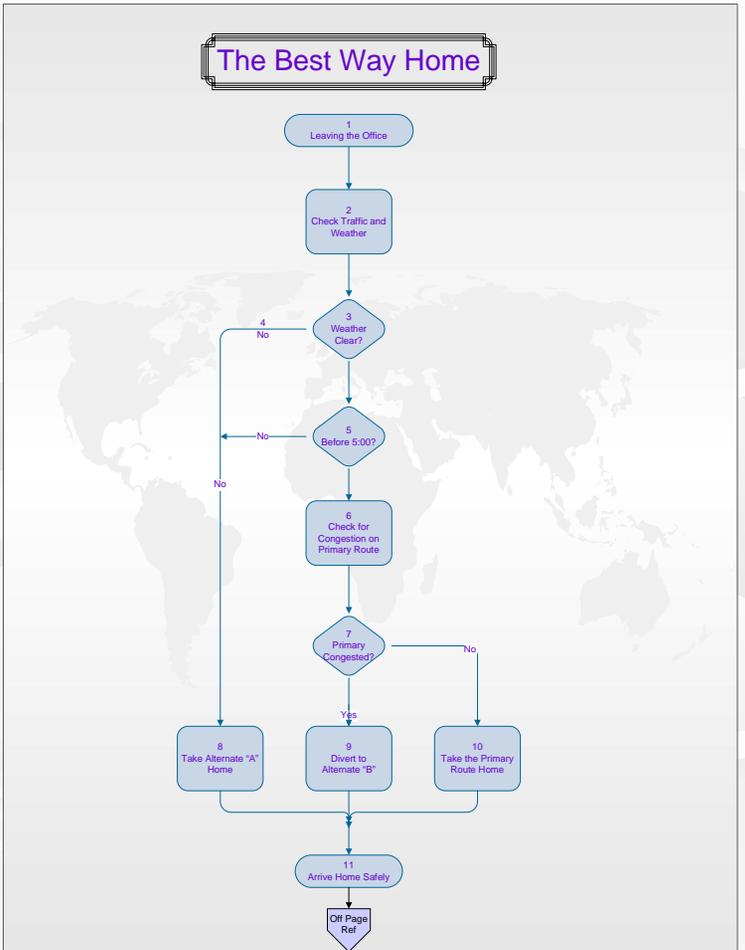
Page 2

Organizational Charts

An organization chart is a diagram that shows the structure of an organization and the relationships and relative ranks of its parts and positions/jobs

Creating a Single page Organizational Chart:

1. Open Visio

2. Under Category choose, Organizational Chart

3. Visio will open a blank drawing with the Org Chart Shapes menu open on the left side of the screen and the Org. Chart Toolbar floating on your screen.

4. Depending on your type of organization, drag the most appropriate organizational shape onto the drawing. (there are seven different organizational chart shapes (see following page for blow-up): Executive, Manager, Position, Staff Position, Consultant, Assistant and Vacancy, and each has a slightly different appearance)

5. To show an association between two shapes you can first drag the second shape on top of the first, Visio will create the connection or you can connect them through the use of the dynamic connector or dotted-line report symbol.

6. At this point the shape of your organizational chart is up to you. If you wish to add design elements to your org chart, you can click on Borders and Titles tab or the Backgrounds tab.
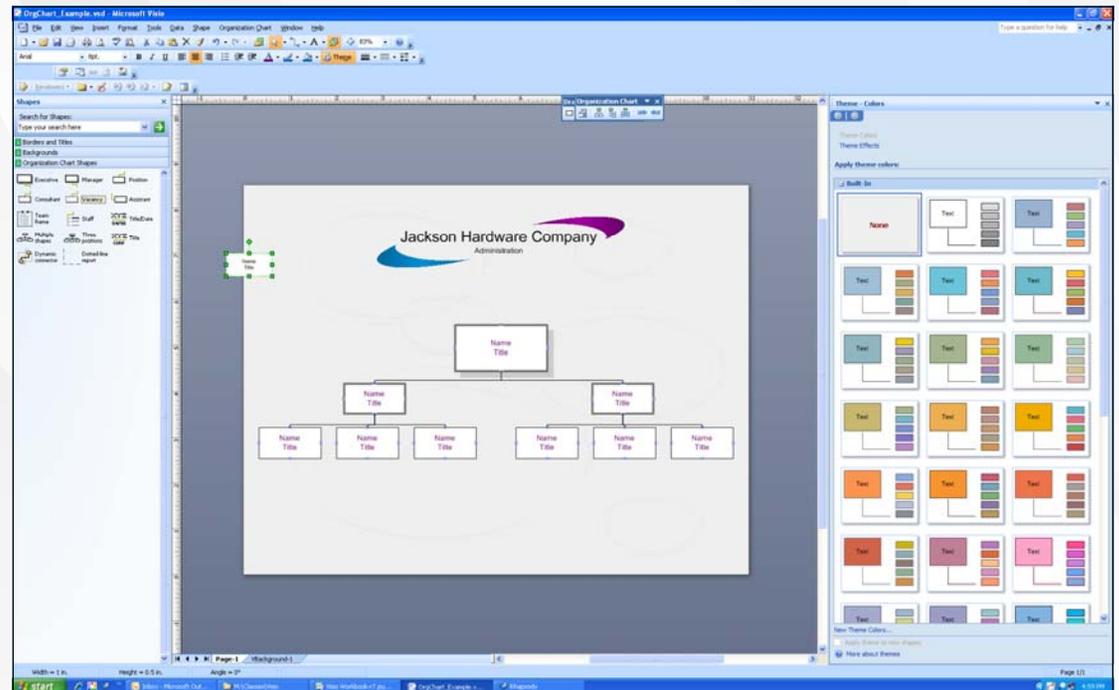
Note: The Organizational Chart Floating menu contains 6 unique (to Organizational Chart) buttons to assist the user in the creation of their organizational chart diagram.

- Re-layout Button
- Horizontal Layout Button
- Vertical Layout Button
- Side by Side Button
- Move Left Button
- Move Right Button

Shapes available in the Organizational Chart Stencil

Biomedical Library Organization Chart

Melissa Just
Director

Jennifer Franson
Administrative Office Manager

Erik Matwijkow
Publications & Travel Assistant

Vicky Anderson
Administrative Asst./ Facilities Liaison

Melissa Just
Director Information and Outreach Services

Jenny Reiswig
Head, Digital Services & Technology Planning

Jeffrey Williams
Head, Collections & Access Services

Craig Haynes
Asst. Director Head, Medical Center Library

Penny Blach
Refernce Librarian

Karen Heskett
Instructional Services Coordinator

Sue McGuinness
Pharmacy Librarian

Nancy Stimson
Outreach Services Cordinator

Dominique Turnbow
Undergraduate Services Librarian

Sami Gholam
IT Support Specialist

David Newbold
Information Commons Manager

Pat Sarchet
Clinical Outreach Librarian

Judea D'Arnaud
III/LPS/Plus Supervisor

Jamie Serb
PLUS Customer Service Coordinator

Cathy Tully
Borrowing Coordinator

David Pollett
Access Services Manager

Jay Daley
Technical Services Assistant

Linh Huynh
Collection Services Workleader

Joe Molinoski
Night/Weekend Manager

Kevin Westerfield
Night/weekend Manager

Sadie Turner
Night/Weekend Assistant

Talitha Matlin
Night/Weekend Assistant

Diane Eels
Public Services Manager

Glenn Sobeck
ILL Manager

Laura Wimberley
Night/Weekend Circulation Asst.

Jaime Quebada
Collections Manager

Mary Wickline
Instruction and Outreach Librarian

Jackson Hardware Company

Administration

Joseph Phillips
President

Peter Wilkins
Sales Manager

Laura Roberts
Office Manager

Bill Hicks
Salesperson

Larry Hill
Salesperson

Phil Johnson
Salesperson

Petrina Bicksly
Accts Receivable

Lilly White
Receptionist

Millie Watson
Accts Payable

Town of Hilton Head Island Organization Chart

Town Council

- **Municipal Judge**
- **Town Manager**
- **Town Attorney**

Town Manager branches:

- **Legal** — **Assistant Town Manager** — **Administration**
  - **Director of Finance**
    - **Accounting**
    - **Revenue Collection**
  - **Director of Administrative Services**
    - **Administrative Support**
    - **Municipal Court**
    - **Operations**
  - **Director of Human Resources**
- **Assistant Town Manager**
  - **Director of Projects & Facilities**
    - **Engineering**
    - **Facilities Management**
  - **Direector of Community Development**
- **Public Safety**
  - **Fire & Rescue**
  - **Police Division**

The Org Chart Menu

Organization Chart menu showing:
- Re-layout
- Best Fit to Page
- Arrange Subordinates...
- Hide Subordinates
- Move Subordinates ▶
- Change Position Type...
- Synchronize ▶
- Import Organization Data...
- Export Organization Data...
- Compare Organization Data...
- Change Spacing...
- Options...

Org chart for Convoluted Administration, Inc.:
- CEO
  - Administrative Assistant
  - General Manager
    - Name / Title
    - Name / Title
    - Consultant
  - Line Manager
    - Name / Title
    - Name / Title
    - Name / Title
   - Vacancy

Enhancing the Appearance of Visio Drawings

Color Themes

- How can you transform a stark depiction of the facts into an attractive piece that will get the reader's attention?

- Use **themes** in Microsoft Office Visio Professional 2007 to add color and style to your diagram with just a few clicks.

- Choose from a gallery of predefined themes, or customize themes with your own background colors, fonts, effects, and more.

- Your diagram will jump off the page, plus you can make it visually consistent with documents you create in other Microsoft Office programs.
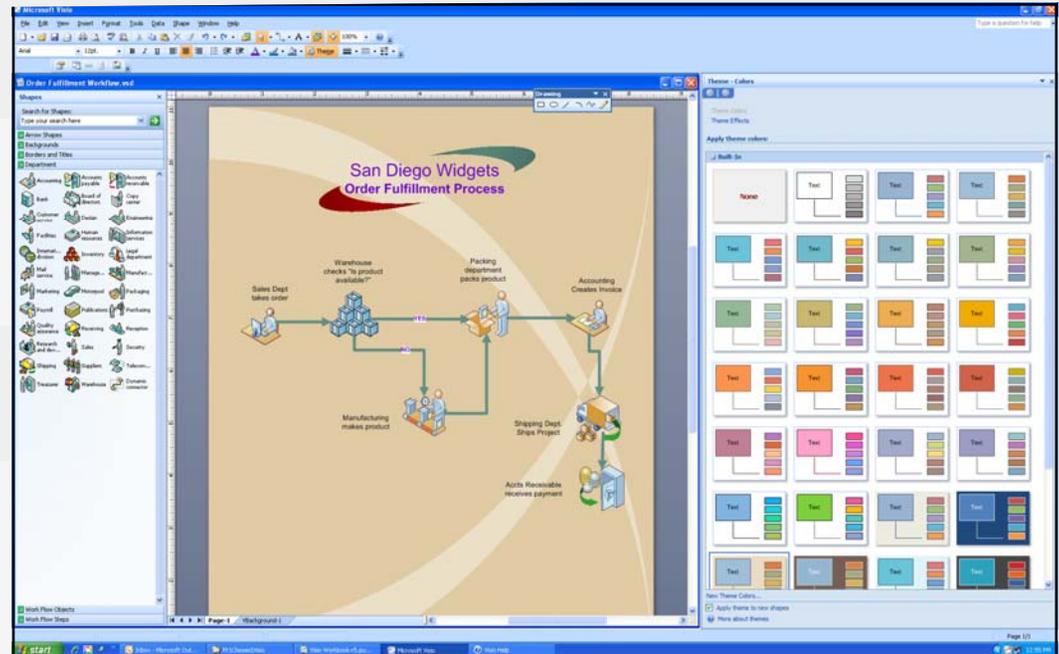
Applying a theme

- On the **Format** menu, click **Theme**. The **Theme - Colors** task pane opens by default. To open the **Theme - Effects** task pane, click **Theme Effects**.

- **Tip**   You can also click the **Theme** tool on the **Formatting** toolbar.

- Do one of the following:

- To apply a theme to the current drawing page, right-click a thumbnail, and then click **Apply to Current Page**.

- To apply a theme to all the pages in your drawing, right-click a thumbnail, and then click **Apply to All Pages**.

- **Tip**   You can also click a thumbnail. Clicking a thumbnail applies the theme either to the current page or to all pages in your drawing, depending on what you did last.

Notes

- To remove the current theme colors or theme effects from all shapes, in the **Theme** task pane, click the **None** thumbnail.

- Some themes apply a background color to your drawing. If you don't want the background color to appear when you print, select the **No Background** check box in the **Print** dialog box.

- To enlarge the thumbnails, right-click a thumbnail, and click **Show Large Previews**.

- After you apply a theme, that theme is applied to any shapes you add to the drawing.

- To temporarily disable this functionality, clear the **Apply theme to new shapes** check box at the bottom of the **Themes** task pane.

Add a Background or Watermark

Add a background or watermark when you want the same graphical elements to appear on more than one drawing page.

Tip: To selectively view, edit, print, or lock shapes on a single drawing page, use [layers](#) instead of back grounds.

Add a background or watermark by using a background shape

- Open the **Backgrounds** stencil if it is not already open. (On the **File** menu, point to **Shapes**, point to **Visio Extras**, and then click **Backgrounds**.)
- Drag a background shape onto your page.

  Note To remove the background shape, drag the **Background none** shape onto your page.

Create a custom background or watermark

- Create a background page and assign it to one or more fore-ground pages.

  For example, to turn your company logo into a background, create a background page with your company logo on it. As shown in the following illustration, the logo will appear on each page to which that background page is assigned.

- Right-click a page tab `Page-1` in the lower-left part of the window, and then click **Insert Page**.

- Click the **Page Properties** tab, and then click **Background**.

- Add the shapes and text that you want to appear in the background.
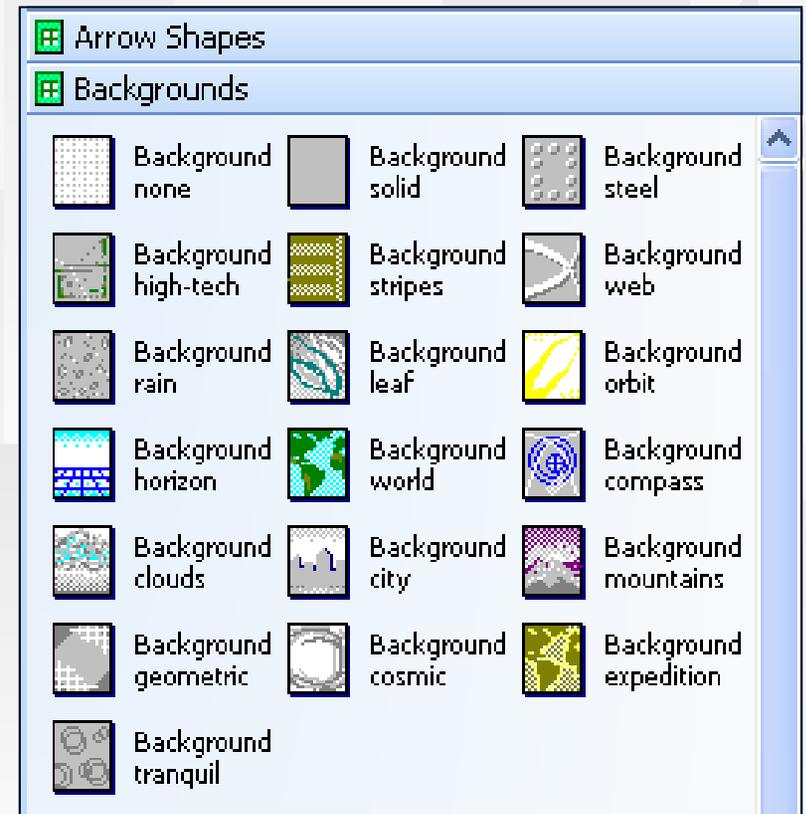
Edit a custom background or watermark

- You edit the shapes on a background page the same way that you edit the shapes on a foreground page.

- Click the background page tab ⟍ Background - 1 ⟋ to display that background in the drawing window.

- Edit the shapes and text in the background.

   Tip: To see how the changes affect the whole drawing, display the background page in one window and the page that it is assigned to in another window.

Assign a custom background or watermark to a foreground page

- On the page to which you want to assign the background, on the **File** menu, click **Page Setup**, and then click the **Page Properties** tab.

- In the **Background** list, click the name of the background that you want to assign.

- The background appears behind the shapes on the foreground page.

   Notes

   - You can assign only one background to a foreground page.

   - When you assign a background to a foreground page, the shapes on the background are visible when you display the foreground page, but you cannot edit the shapes from the foreground page.

Borders and Titles

- Open the **Borders and Titles** stencil if it is not already open. (On the **File** menu, point to **Shapes**, point to **Visio Extras**, and then click **Borders and Titles**.)

- Drag a border or title shape onto your page.
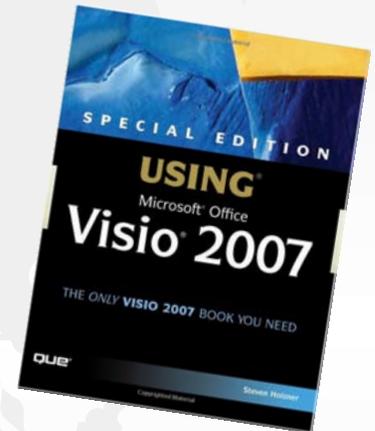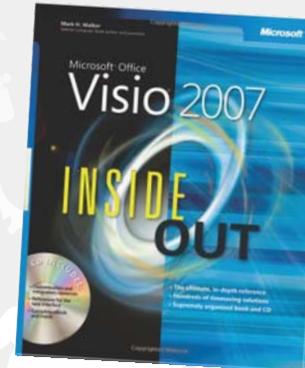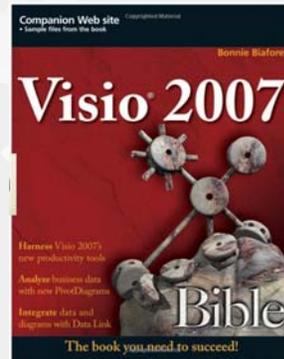
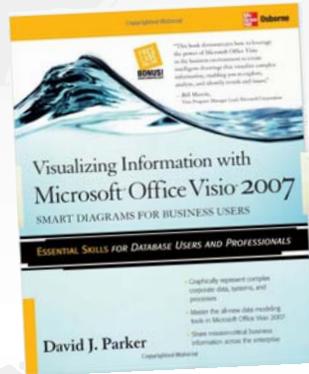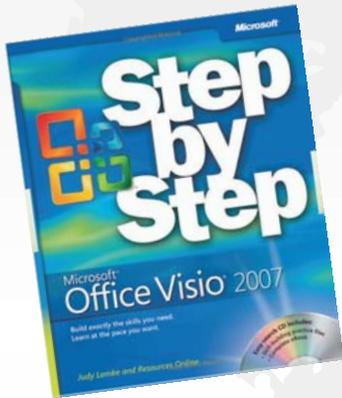- To edit the title, click the title and type.

Shape Sources

- There are numerous sources for additional Visio shapes on the Internet; Here is one of them

http://www.shapesource.com/scripts/prodList.asp?idCategory=21
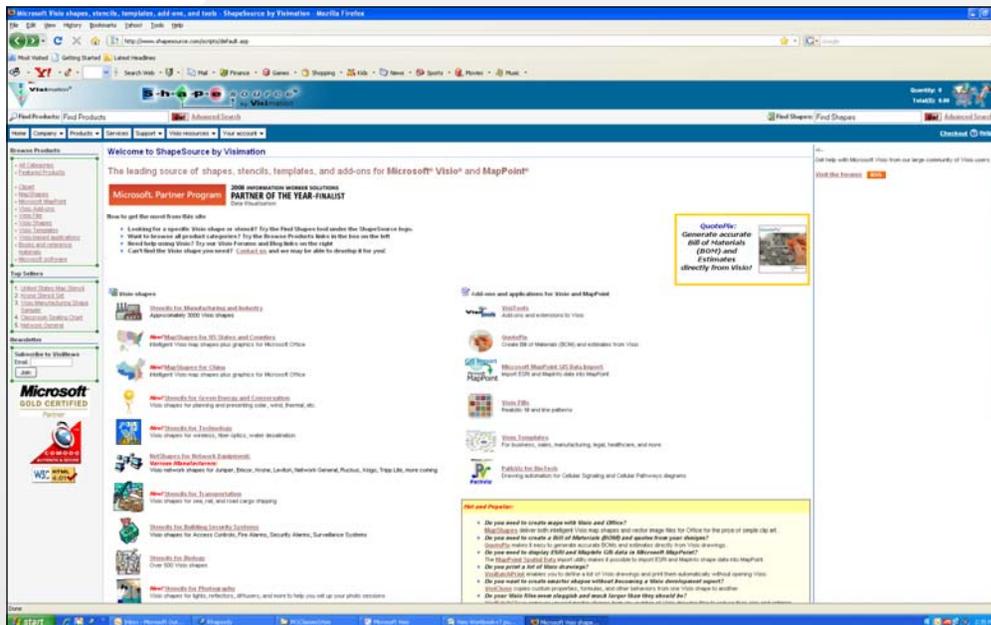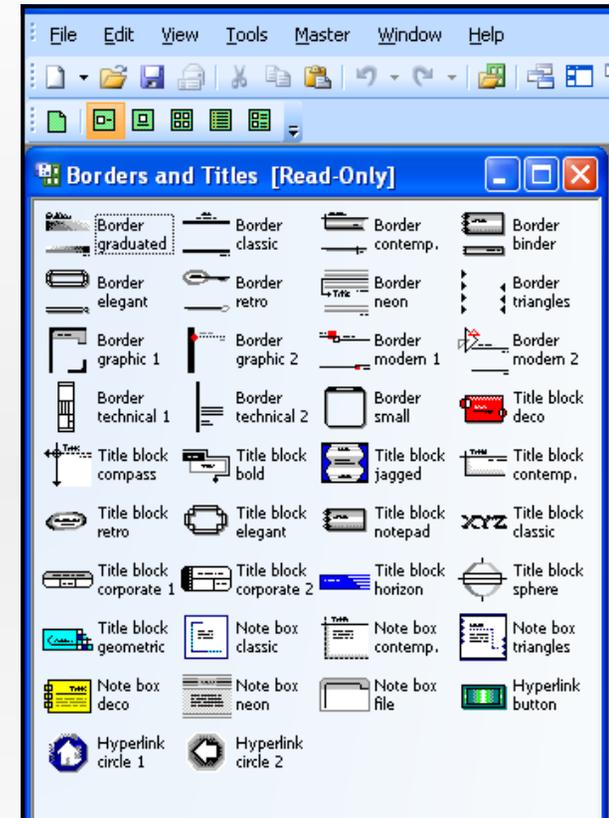
For more information about Visio, consider the following books:

Books About Visio: http://www.amazon.com/s/ref=nb_ss_gw?url=search-alias%3Dstripbooks&field-keywords=Visio+2007&x=0&y=0

For help, advice, or an appointment for tutoring ,
please contact :

David Newbold
Information Commons
Biomedical Library
Telephone: 858-534-3746
Email: dmnewbold@ucsd.edu

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