
Presentation

Presentation refers to how data is shown on screens and windows. Consider what the user needs to do with the data. Does the user need to compare bits of information? Does the user need to make selections based on certain criteria? Appropriate display of information can make a major difference in how useful the user perceives the interface to be. This section was developed with information from three sources: Microsoft's Web site (<http://www.microsoft.com/win32dev/uiguide/default.htm>); "The Windows Interface Guidelines for Software Design" published by Microsoft Press; and "GUI Design Essentials" by Weinschenk, Jamar and Yeo. Please refer to these publications for additional information or clarification. This document should be considered the "GUI Look and Feel Standard" to follow for presentation issues in all application developed by the DENR ITS department. If an area is not covered here or any of the other three sections (Interaction, Structure, Re-Use) of the Standards, then refer to one of the three sources mentioned above.

Screen Layout

Screen layout principles have been with us for many years. Instead of becoming outdated, however, they have become even more important as more and more visual elements are added to screens. Make sure you follow the basics of good screen layout in your design. Users may decide that an entire application is unfriendly if the major screens are cluttered and hard to follow.

Standard Screen Size

All screens should be developed keeping in mind the target hardware. Typically, today, this should be a minimum of 800 pixels by 600 pixels (800x600).

Standard DENR Login Screen

Please see the Re-Use Section for a sample of the Standard DENR Login Screen.

Form Name Convention

Each form should have a unique name displayed on the top row of the form and should be descriptive in nature. The display of additional titles and/or names elsewhere on the form is redundant and should not occur.

Organize windows and dialogs to match work flow

Which windows you have, how much they do, and the order they are in, should match how the users are doing their work.

Use an appropriate amount of information

Each window or dialog should represent one task or subtask in the user's workflow. If a task is complicated, use more than one window—one for each subtask.

Find a home base

A home base is the screen or window users come back to again and again while working on a particular task. Decide on a window that will serve as the user's home base. The home base might be a screen of data, a list, or a form with or without data. Home base is not necessarily the first window they see when they enter the application or a particular task. Users might go through a series of selection and list screens before reaching the home base.

If at all possible, do not make home base a blank screen with a menu bar, as shown in Figures 10.1 and 10.2. It should be a screen with meaningful information for the task they are performing, for example, a list of contracts or a blank invoice form, ready to be filled in, as shown in Figures 10.3 and 10.4.

Having a home base helps users remember what to do, gives them a concrete and visual anchor point, and helps them to alleviate the feeling of being lost in the interface.

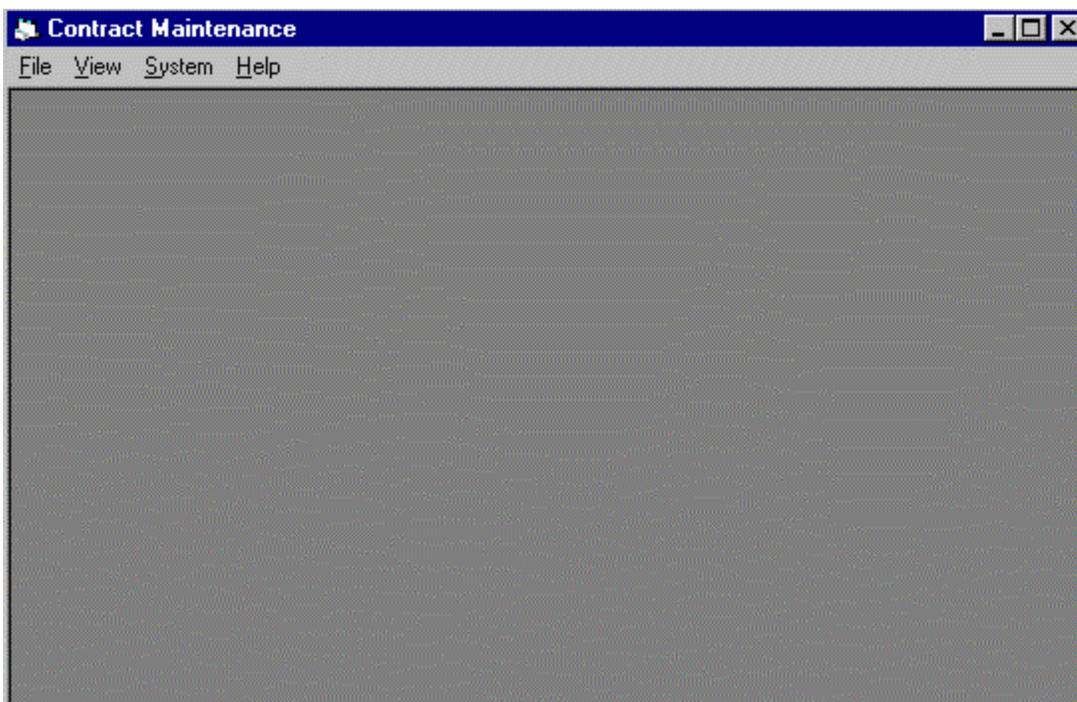


Figure 10.1 Don't use a blank screen as a home base.

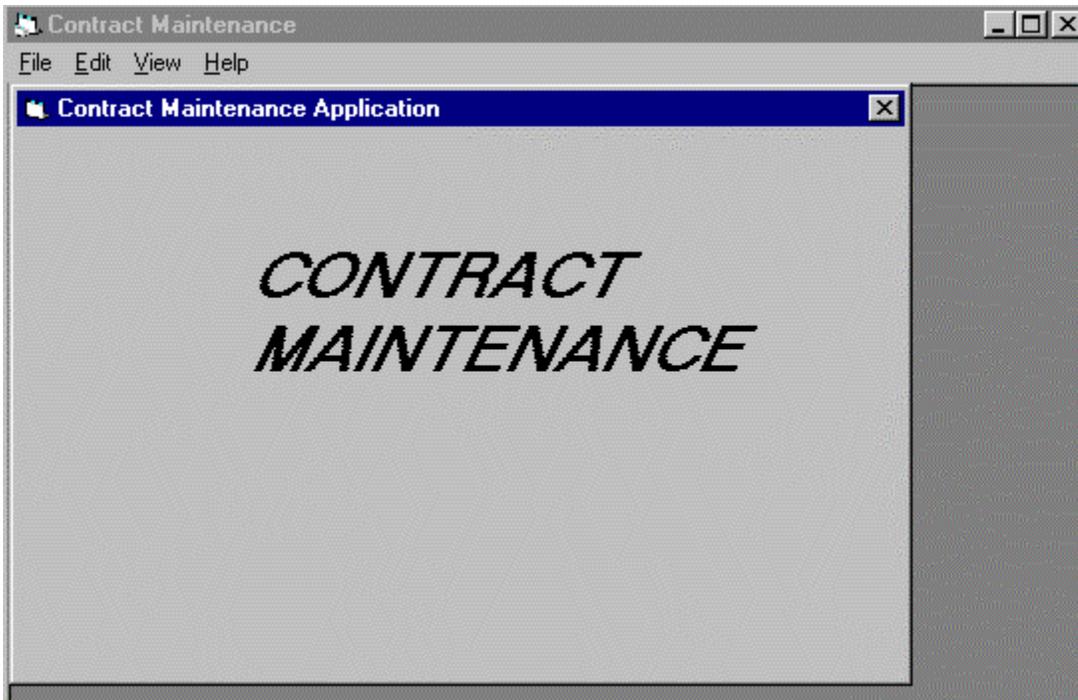


Figure 10.2 Don't use a blank form with a title as a home base.

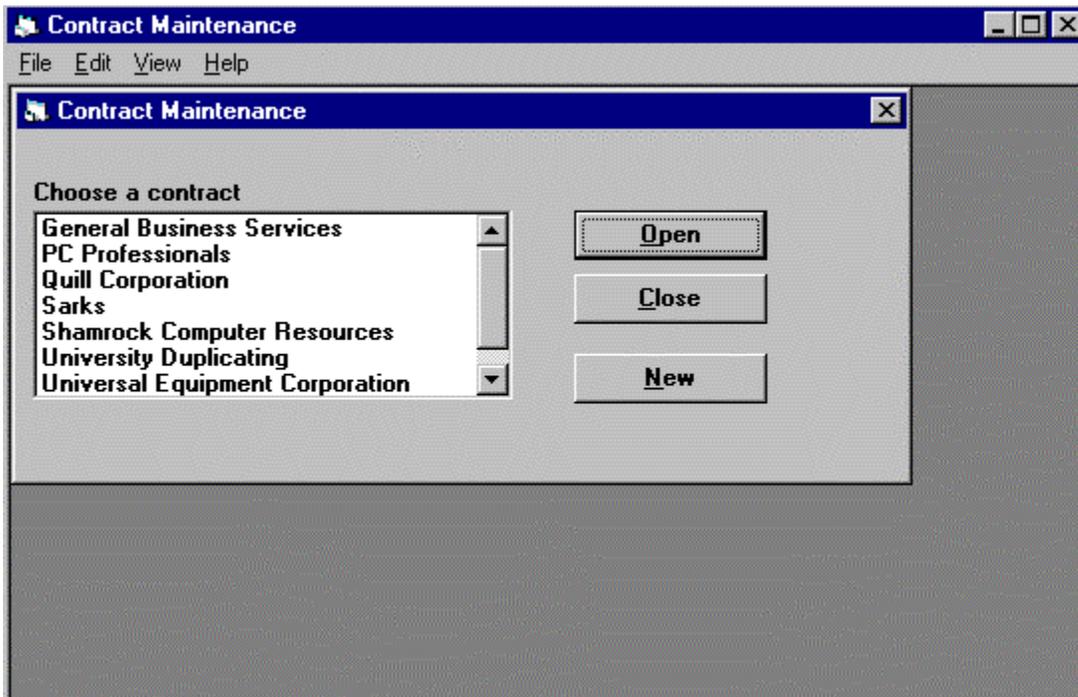


Figure 10.3 A list can be a home base.

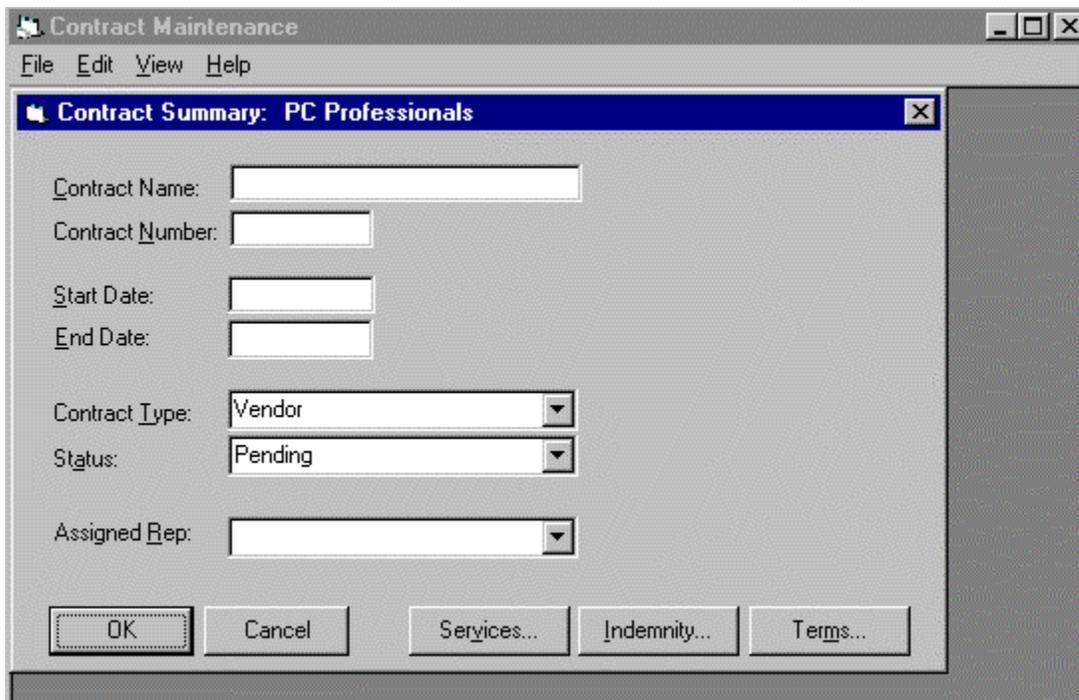


Figure 10.4 A blank form ready to be filled in can be a home base.

Organize information within a window

Information should be placed in a window or dialog box so that it flows well with the task the users have to perform. The most common or critical information should be at the top left of the window or dialog. The flow of the window should then move from top to bottom or left to right.

Choose a horizontal or vertical flow

Decide whether you will use a horizontal or vertical flow of information for each window or dialog. Not every window or dialog has to have the same flow—decide separately for each window or dialog box. However, do not use a mix of horizontal and vertical flows on one window or dialog box.

Figure 10.5 shows a horizontal flow that starts in the upper left and moves to the right. The most common or critical information appears in the top row. Less common or critical information appears in a second row. Buttons to control the window or dialog box are on the top right. Use white space between rows to show the horizontal flow.

Figure 10.5 Windows 95 horizontal flow.

Vertical flow starts in the upper left and moves down, as shown in Figure 10.6. The most common or critical information appears in the left column. Less common or critical information appears in a second column. Buttons to control the window or dialog box are centered on the bottom. Use white space between columns to show the vertical flow.

Figure 10.6 Windows 95 vertical flow.

Group similar data

Group similar data together (see Figure 10.8). Use frames and white space to show the groupings. Label the groups.



The screenshot shows a dialog box titled "Membership Information: Tom Jones". The data is organized into four distinct groups, each enclosed in a rectangular frame:

- Name:** Last Name: Jones, First Name: Tom, Middle Name: Williams.
- Address:** Street: 56787 Olympia Rd., City: Abington, State: WI, Zip: 45889.
- Phone Numbers:** Home: (715) 534-2356, Work: (715) 534-4980, Fax: (715) 534-4990.
- Membership:** Member Since: 12/10/91, Status: Active (dropdown menu).

On the right side of the dialog, there are three buttons: "OK", "Cancel", and "Subscriptions...".

Figure 10.8 Similar data grouped.

Minimize different margins

Line up data elements and groups to minimize the number of different margins on the screen.

Fonts

With graphical user interfaces you have more choices in how to display text. This section summarizes good font decisions.

Use a sans serif font

Use a sans serif font for text and labels, as shown in Figure 10.9. Sans serif is easier to read on screen. Times New Roman is an example of a serif font (see Figure 10.10). It has "feet" on the letters. Arial is an example of a sans serif font. It does not have "feet" on the letters.

Membership Information: Tom Jones

Name

Last Name: Jones

First Name: Tom

Middle Name: William

Address

Street: 56787 Olympia Rd.

City: Abington

State: WI Zip: 45889

Phone Numbers

Home: (715) 534-2356

Work: (715) 534-4980

Fax: (715) 534-4990

Membership

Member Since: 12/10/91

Status: Active

OK Cancel Subscriptions...

Figure 10.9 Use a sans serif font.

Membership Information: Tom Jones

Name

Last Name: Jones

First Name: Tom

Middle Name: Williams

Address

Street: 56787 Olympia Rd.

City: Abington

State: WI Zip: 45889

Phone Numbers

Home: (715) 534-2356

Work: (715) 534-4980

Fax: (715) 534-4990

Membership

Member Since: 12/10/91

Status: Active

OK Cancel Subscriptions...

Figure 10.10 Don't use a serif font.

Do not use italics or underlining

Italics and underlining can make text hard to read on a screen.

Avoid using colored fonts

The easiest type to read is black type on a white or gray background. If you mix colors of fonts on one screen, the colored text will be harder to read than the black text. If you do use a colored font for a special purpose, consider bolding it to make it easier to read. A red font can be used to identify required fields.

Use bold for emphasis

Use bolding to emphasize certain body text. Do not use color for emphasis because users typically assume color is a cue for text with a different or specific purpose, such as a label or a hypertext link.

Avoid changing font size

Avoid using font size to get attention. Many different font sizes on one screen can be distracting, as depicted in Figure 10.11.

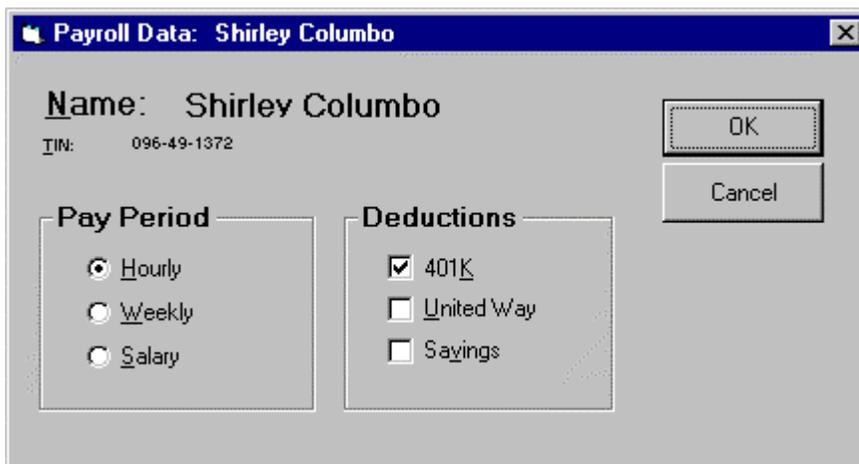


Figure 10.11 Don't use too many different font sizes.

Use at least an eight-point font

Many people have a hard time seeing fonts less than eight-points. An eight-point sans serif font is the minimum for screen legibility, assuming a seated user at normal viewing distance. Compare the three font sizes used in Figures 10.12 through 10.14.

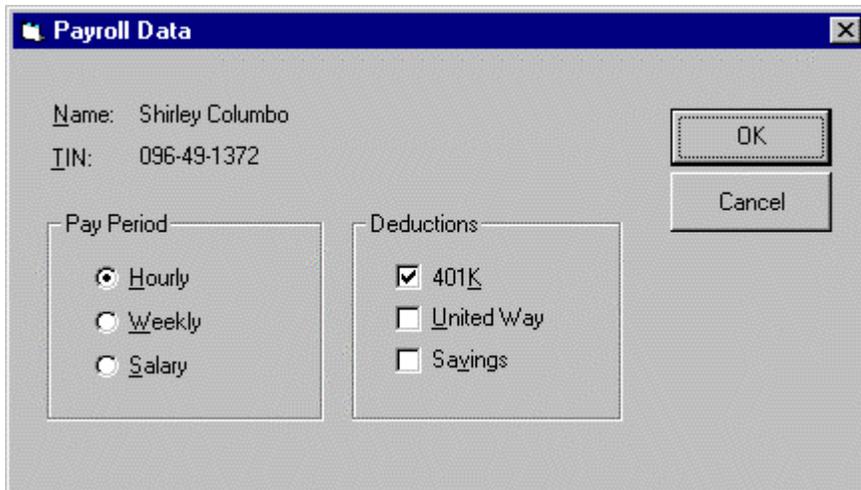


Figure 10.12 An eight-point sans serif font.

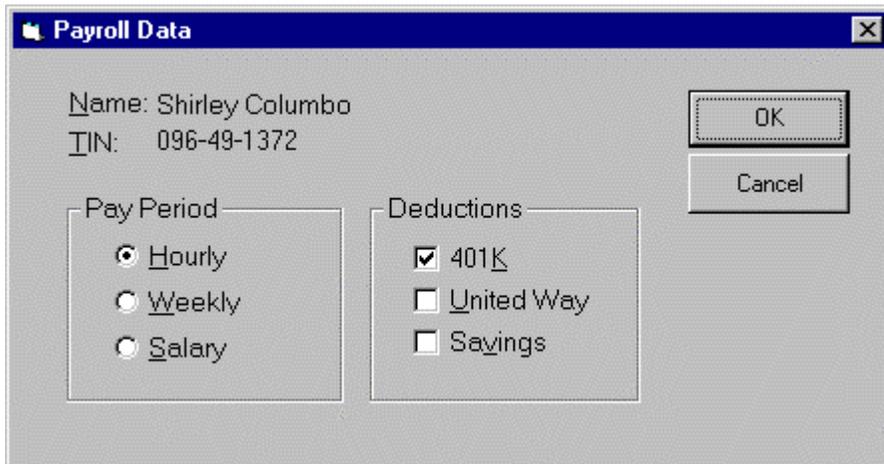


Figure 10.13 A ten-point sans serif font.

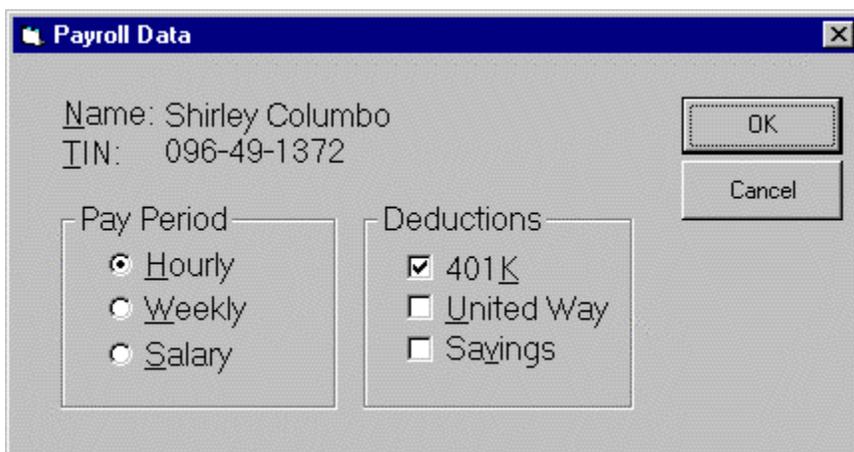


Figure 10.14 Don't use a twelve-point sans serif font.

Minimize the number of different fonts

Limit the number of font types. Try to use one font type for all text. Figure 10.15 shows what happens when you use too many font types.

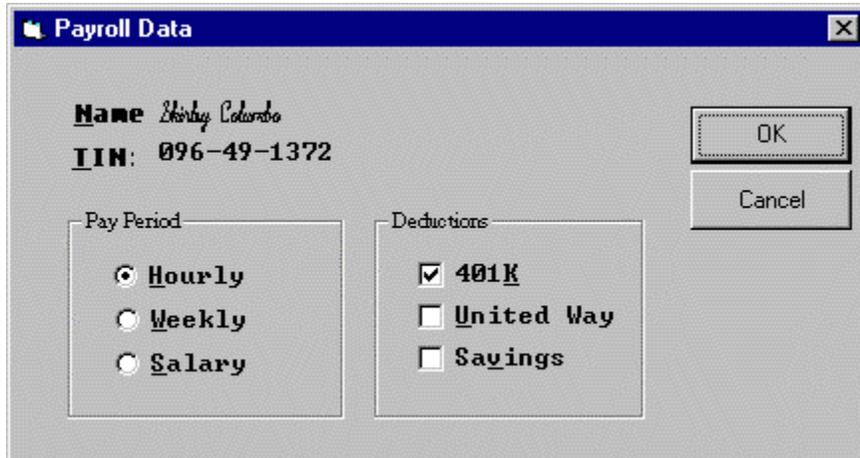


Figure 10.15 Don't use too many font types.

Color Choices and Combinations

You now have the capability of using color in your interfaces. Often, however, color decisions distract users rather than enhancing usability.

Use color to get attention

Putting something in a different color on a screen is attention getting. Use color when it is critical that users notice a certain part of the screen.

Use color purposefully

Color is a powerful attention-getting technique. Use it sparingly or it loses its effectiveness. Do not use it only for aesthetic purposes. Every time you use color it should be for a specific attention-getting reason.

Combine color with redundant highlighting

You cannot rely on users recognizing a particular color—for instance, some people have impaired color perception or can change their color palettes. Therefore, you should always combine color with redundant highlighting. For example, make a part of the screen blue and boxed.

Be aware of color blindness

Nine percent of men and two percent of women have some form of color blindness or color confusion. Do not rely on color alone to provide critical cues.

Watch out for color customizing

People can often change their color palettes. Do not refer to parts of the screen by specific color, for instance, "Enter data that is required into the green box." You cannot be sure that the box will always be green.

Use colors consistently

Decide on the specific meanings of colors within an application and use them and their redundant highlighting consistently.

Use color in toolbars sparingly

Because of their typically small size, using color in toolbar graphics is often more of a distraction than it is useful. Use color in toolbar graphics only to distinguish certain aspects of the graphic (different bars on a bar chart icon) or to establish a particular meaning (red in a stop sign).

Follow cultural color meanings

Be aware of the cultural meanings of colors for your particular users. In the United States, for example, some colors have particular meanings as shown in Table 10.1.

Color	Meaning
Red	Danger, stop, hot, or financial loss
Yellow	Warning or caution
Green	Go or OK
Blue	Cool
Black	Financial profit

Table 10.1 Colors and their meanings in the United States.

Do not violate these meanings and make sure you follow any additional meanings your users have. Be aware of international color associations—they vary from culture to culture.

Use light backgrounds for main areas

The best colors to use for screen and window backgrounds are off-whites and light grays. If you need to use a color other than these, use a pale yellow or pale blue.

Avoid red and blue combinations

Red and blue together, either as background/foreground or in adjacent areas, is very hard on the eyes. The combination of red and blue should be avoided.

Avoid blue text

Recent research shows that saturated blue text is hard to read. Use black text on a light screen.

Use enough contrast

Choose colors for your background and foreground that have enough contrast between them. For example, do not use a light blue background with medium blue text.

Avoid light text on dark

Avoid using light-colored text on a dark background. This combination appears to blur. It is better to use light-colored backgrounds with dark foregrounds. For example, use a light gray background with black text.

Use grayware first

Design in grayware first, adding color as needed. Use light colors for backgrounds and black for text. Although developers often consider this boring, it is best for users over the long run. Save color for when you really need to get someone's attention. Different shades of gray can be very effective in delineating areas on a screen.

Let users customize color

It is OK to let users customize the colors of an application, but do not use this as a reason for not choosing good color combinations. Users should not have to customize their screen appearance just because you picked poor colors.

Use color palettes

Provide a few color palette choices for users. This enables them to change all the colors quickly, and ensures that general principles for color use are not violated.

Provide a reset

If you let users customize colors make sure you have an obvious and easy way for them to return to the original (default) colors.

Consider showing results before setting

In some cases it may be beneficial to show users the results of their color decisions before they apply them. You can do this by providing a preview function with which they can see the color changes on a small sample screen before finishing the color dialog.

Default Colors

The following default color schemes should be used.

ELEMENT	TYPE	COLOR VALUE
Form	BackColor	&H8000000F&
Form	FillColor	&H00000000&
Form	ForeColor	&H80000012&
Label	BackColor	&H8000000F&
Label	ForeColor	&H80000012&
Text Box	BackColor	&H80000005&
Text Box	ForeColor	&H80000008&
Frame	BackColor	&H8000000F&
Frame	ForeColor	&H80000012&
CommandButton	BackColor	&H8000000F&
CommandButton	Maskcolor	&H00C0C0C0&
CheckBox	BackColor	&H8000000F&
CheckBox	ForeColor	&H80000012&
CheckBox	Maskcolor	&H00C0C0C0&
OptionButton	BackColor	&H8000000F&
OptionButton	ForeColor	&H80000012&
OptionButton	Maskcolor	&H00C0C0C0&
ComboBox	BackColor	&H80000005&
ComboBox	ForeColor	&H80000008&
ListBox	BackColor	&H80000005&
ListBox	ForeColor	&H80000008&

Designing or Choosing Graphics

Is a picture worth a thousand words? Only if it is well designed and well used. Here are some ways to make graphics powerful and effective.

Use graphics for a purpose

Decide how a graphic will be used before designing or choosing the graphic itself. Three common uses are:

- **Application icons.** These usually appear on the desktop. Clicking them launches the application.
- **Button images.** These are simple pictures that are placed on buttons, usually grouped together on a toolbar. Clicking them starts an action in the application, such as printing.
- **Descriptive graphics.** These graphics describe and support the user's task, for example, a picture of a house in a real estate application.

Use button images as shortcuts

Use graphics on command buttons when you want users to find critical or frequently used objects or actions without searching through menus.

Use graphics when a picture is worth...

Some ideas are best and most quickly portrayed with a picture rather than words, for instance, drawing tools or text justification commands.

Use graphics for international use

If you are designing for international and multilingual audiences, consider using graphics to eliminate the need to translate words. However, there are some guidelines to keep in mind when selecting graphics for international audiences:

- Make sure the graphics are widely understood. Test them with different groups.
- Do not use any offensive gestures. For example, a pointing finger is considered offensive in some cultures.
- Use representations that are universally held. For example, scales to show balancing are not a universal representation.

Decide on an approach

When designing a set of graphics you can use one of several different approaches. These are described in Table 10.2.

Approach	Example of Approach	Example Graphics
Object	A picture of a disk to represent an actual disk	
Action	A picture of someone running to indicate speed	
Tool representing action	A ruler to indicate measuring	
The result	Showing italicized text	Result
Physical analogy	Magnifying glass to show enlargement or zooming in	
Commonly used symbol	International "Don't Do" symbol	
Letter	The letter "i" for information	i

Table 10.2 Examples of different icon approaches. All pictures in this example are from *The Icon Book and Disk: Visual Symbols for Computer Systems and Documentation* by William Horton (John Wiley & Sons, 1994).

Develop a cohesive set

Develop sets or families of graphics using the same approach described in the table above. Graphics for an entire application may involve several sets or families. Keep the number of different subsets to a minimum. For example, for editing a document you could use tools to represent actions such as scissors for cutting or a magnifying glass for enlarging.

Include just enough detail for recognition

If you are designing your own graphics, use just enough detail so that users can recognize the graphic. Avoid using too much detail or making the graphic look like a photograph.

Watch out for picture size

Often pictures that are easily identifiable when they are large become incomprehensible when they get turned into a smaller than postage stamp size picture on a toolbar.

Use standard graphics

If possible, use standard graphics that have already been tested. Check your platform's guidelines book and your programming tools for standard graphics.

Consider changing the graphic's state

Consider having a button image change to represent a new idea. For example, a closed file folder representing a file, which then changes to an open file folder representing an open file.

Be consistent

Once you have chosen or designed a graphic, use it consistently. For example, do not use different representations of a phone in different places in your application.

Avoid words

A well-designed button image should not need a label. If users can't decipher the pictures, you may need to fix the pictures rather than just adding words. If you do use labels, here are your placement choices:

- Use tooltips. If possible, have the tooltip appear when the cursor passes over the icon, as shown in Figure 10.16.
- Use a label underneath the picture.
- Use a label in microhelp (line at the bottom of the screen). Use this only if you cannot use either of the above choices.



Figure 10.16 Tooltip.

Get appropriate help

Consider bringing in a graphic artist experienced in design for computer screens and the type of picture you need to create. People who are used to designing corporate brochures might not have the skill set and experience to create tiny pictures for toolbars.

Test your graphics

Make sure you test the graphics you design or choose. There are two basic ways to test:

- Give users a particular task and ask them to pick the graphic that they believe performs the task.
- Give users graphics in context and ask them what actions the graphics represent.

Charts and Graphs

Graphical user interfaces allow you to show data visually using charts and graphs.

Use graphs to show relationships

If you need to show relationships among different categories or over time, use graphs rather than tables with specific values, as shown in Figure 10.17. People can grasp trends faster from a graph than from interpreting data in a table.

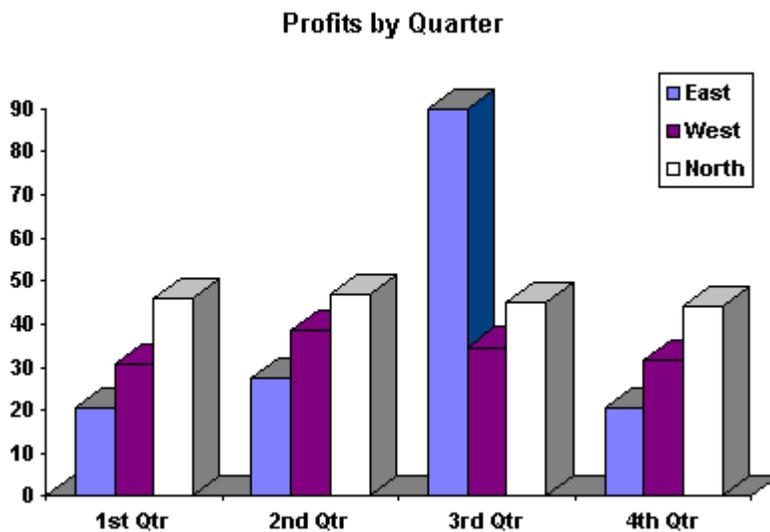


Figure 10.17 Graphs show trends.

Use bar graphs for categories

If you have discrete categories and are trying to show the relationship between them, use a bar graph. Bar graphs can also show multiple relationships between categories (see Figure 10.18).

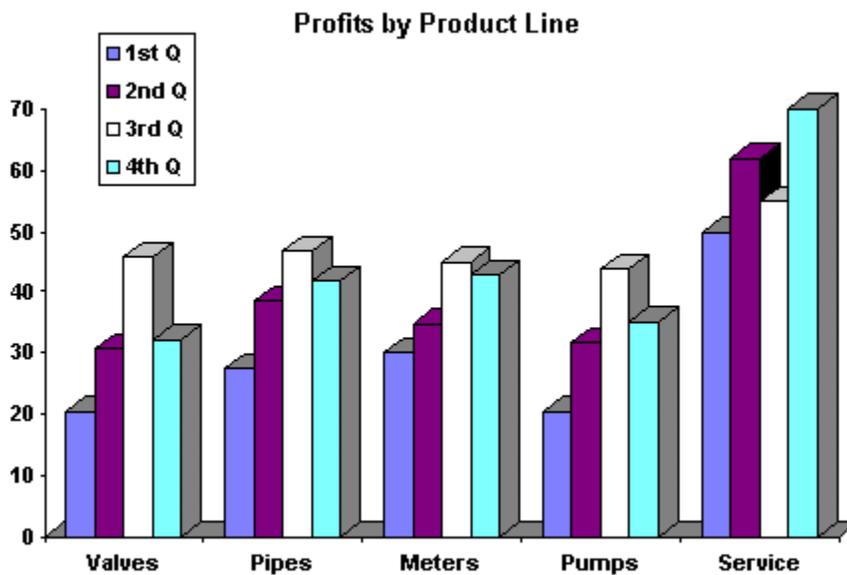


Figure 10.18 Graphs can show multiple relationships between categories.

Use special effects carefully

Use 3-D effects only if they help communicate the information. Avoid fancy formats if they don't help the user understand the data.

Use pie charts for part-to-whole relationships

If you want to show part-to-whole relationships, use a pie chart, as shown in Figure 10.19.

Profits by Product Line

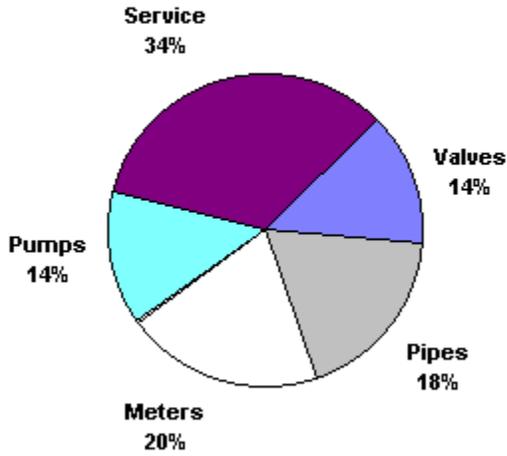


Figure 10.19 Pie charts show part-to-whole relationships.

Use line charts for continuous data

If you have continuous data, use a line chart rather than a pie or bar chart. A line chart better shows the cumulative effect (see Figure 10.20).

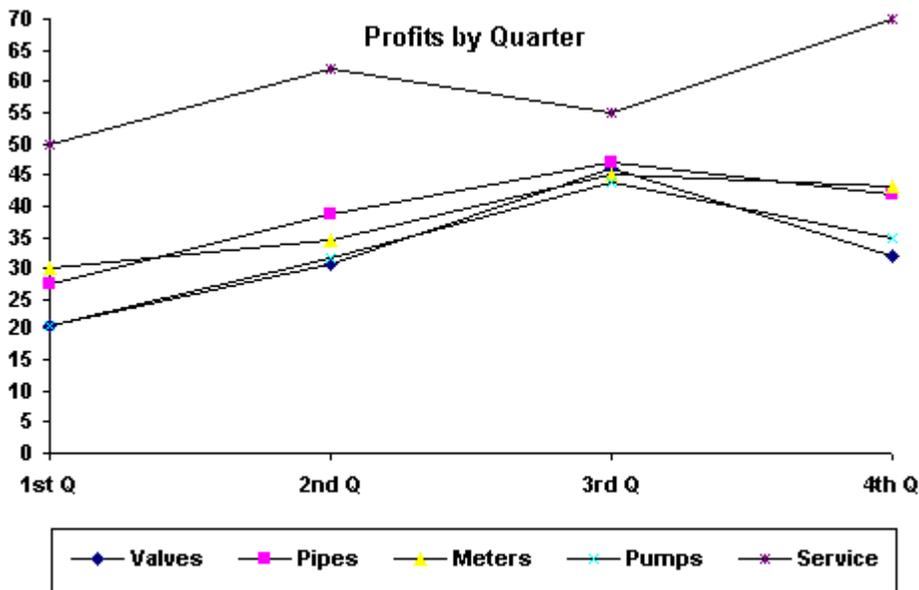


Figure 10.20 Line charts show cumulative effects.

Choose appropriate scales

Choose an appropriate scale for both the X and Y axes of graphs. If the scale is too expanded, you may be exaggerating the effect. If the scale is too small, you may be underreporting the effect.

Consider displaying specific values

If users need to see a specific value as well as a general trend or relationship, show the exact values on the graph itself.

Use visual coding on graphs

Use color, highlighting, shading, or patterns to distinguish parts of a graph.

Use legends for complicated graphs

If graphs have a lot of data and a lot of visual coding, use a legend, as shown in Figure 10.21.

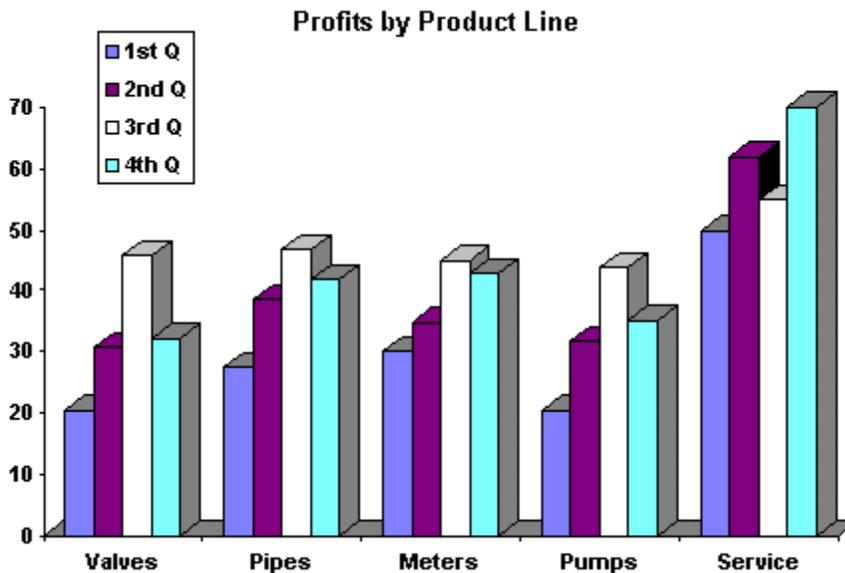


Figure 10.21 Legends help users understand graphs.

Label graphs and data

Label the graph with terminology users will understand. Consider the following labels:

- Graph title
- Lines, bars, or parts of the pie
- X axis

- Y axis

Use primary colors to show differences

Use primary colors like green, blue, and yellow in charts and graphs to make sharp distinctions. For example, use a different color for each bar in a bar chart, or each slice in a pie chart.

Use red cautiously

Avoid using red in a chart or graph unless you mean to imply trouble, danger, stop, or loss.

Use close colors to show transition

Use colors that are close to each other, like medium and light blue, to show a transition, for example, sales increasing step by step from month to month.

Use light backgrounds for tables

Use off-white or light gray as the background for data in a table. Use black text for the foreground. Use color only when you need to highlight a particular cell, row, or column.

Use monochromatic backgrounds for graphs

If colors are used in graphs, use a white, gray, or black background.