Color Design for System 7.0

The appearance of system 7.0 is enhanced by using the color capabilities of the Macintosh. The use of color makes the interface more visually pleasing. The color also distinguishes the active window from other windows and enhances user controls on the window frame. It's important to recognize that color in the interface is applied to help users focus their attention on their work and not to draw attention to the interface itself. This section describes the use of color in the Macintosh interface and provides recommendations about how you can add color to your icons and applications.

The windows and dialog boxes in system 7.0 are designed for aesthetic consistency across all monitors from black-and-white displays to 8-bit color displays. For display on color monitors, color and shades of gray have been added to the frames of windows and to user controls. The window background remains white on all systems and the window contents remain black and white. This updated design takes advantage of the color capabilities of the Macintosh but maintains the consistency of the Macintosh interface. On color screens, the racing stripes in the title bar and the scroll bars are gray. The user controls, close box, size box, zoom box, and scroll box are colored to make them more apparent. The borders of inactive windows are gray and recede into the background so that the active window's black frame emphasizes its position in front of the other windows.

For system 7.0 the standard window definition functions have been changed to display color windows and dialog boxes. Some control definition functions have been updated to display in color the window's scroll bars, scroll arrows, scroll box, close box, size box, and zoom box. If you use the standard window definition functions and standard control definition functions, your application's windows will match the appearance of system 7.0 system windows. If you create your own windows, be compatible with system 7.0 by using the standard window color table and the guidelines described in this section. Be aware that users can change the colors of windows and dialog boxes by using the **Colors** control panel. If you use the default window color table, you can be sure that the colors you use are consistent with any color that the user has access to with the **Colors** control panel. You can use the **Palette Manager** to associate a color palette with a window definition. See the **Palette Manager** for more information.

General Color Design Guidelines

Always design for black and white first and then colorize that design. This method ensures that your design looks good on all Macintosh computers. One example of why this is important is the text selection mechanism. On a color monitor you might be tempted to change the color of text to indicate its selection; however, this technique would not translate to a black-and-white monitor. In addition, a significant percentage of the population (up to 10 percent of the male population) has color deficiencies and would not recognize the use of color to indicate selection. Therefore, you should never use color as the only means of communicating important information. Color should always be used redundantly.

Keep black-and-white designs two-dimensional. It's important to maintain the visual consistency of the Macintosh interface across applications and computer systems. Do not cause unnecessary visual clutter by trying to mimic color effects, such as shadows, in black-and-white designs.

> **Note:** This guideline does not apply to keyboard icons discussed in the **Worldwide Software Development** section. In that section, specific patterns represent colors for black-and-white versions of the keyboard icons.

Maintain a close visual relationship between a black-and-white design and its colorized version. Users should be able to easily recognize standard interface elements and icons across all monitor types. Users can have several monitors connected to a computer and several computers on which they use your applications. Your application should look consistent when a user changes the bit-depth of a monitor or when the user moves your icon or window from a color monitor to a monochrome monitor.

Use as few colors as possible in your designs. The fewer colors you use, the less flashing occurs when the screen's color table updates during screen redrawing. Using fewer colors also results in less visual clutter on the screen. If you use a graphics application to do design work, make sure that the colors you use are available in the default color tables. For more information about color palettes and color tables, see the **Palette Manager**.

Use light or subtle colors for large areas. Also use subtle colors to avoid visual clutter on the screen. To extend the range of light or subtle colors available, you can create colors that are lighter than those in the default color tables by using a 50 percent pattern of the color and white.

Use bright colors sparingly and only in small areas. Bright colors attract the eye and can distract the user from the information that you're trying to convey. Bright colors can be effective in the contents of a window, such as in a chart. However, if bright colors appear all over the screen, it becomes difficult for the user to focus attention. You can use bright colors for small details. An example of this technique is the system 7.0 hardware icons (such as the hard disk icon) that use red and green pixels to represent the Apple logo.

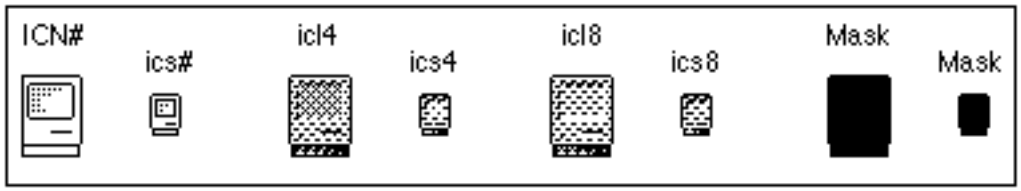
For display on color screens in system 7.0 use true gray wherever you previously used a 50 percent gray pattern. Use true gray in menus for the dotted separator lines between groups of items and for dimmed menu items.

Use a consistent light source. On the Macintosh screen the light source always comes from the upper-left corner of the screen. Therefore windows and other elements have drop shadows on the lower-right side. Use the light source consistently, so that shading is consistent throughout the interface.

The Icon Family

In previous versions of system software, you provided a black-and-white 32-by-32 pixel icon for your application that was automatically reduced to 16-by-16 pixels when necessary. In system 7.0, you can provide multiple versions of an icon in black and white and in color. You can provide a family of icons that includes a 32-by-32 pixel and a 16-by-16 pixel icon, in 1-bit color (black and white), 4-bit color, and 8-bit color. The 32-by-32 pixel icons appear on the desktop and, if the user chooses by Icon from the View menu, these icons also appear in Finder windows. The 16-by-16 pixel icons appear in the menu as the **Application** menu's title when your application is active. They also appear next to your application's name in the **Application**

menu and in Finder windows when the user chooses by Small Icon from the View menu. The user can also set the icon size to 16-by-16 pixels or 32-by-32 pixels in other views. For localized keyboards and keyboard layouts, you provide a 16-by-16 pixel icon only, in 1-bit, 4-bit, and 8-bit color. The Figure below shows a family of icons for system 7.0.



An icon family

See the **Finder Interface** for information about which icons you need to provide and how to create a bundle resource for your application.

The monitor displays the highest-quality icon that its screen allows. That is, if you provide an 8-bit color icon, a 4-bit color icon, and a black-and-white icon, the user sees the 8-bit color icon on the monitor that supports 8-bit color. If you provide an 8-bit icon but not a 4-bit icon, the black-and-white icon is displayed on the 4-bit monitor. If you provide a 4-bit icon but not an 8-bit icon, then the 4-bit icon is displayed on both 4-bit and 8-bit monitors. If you do not provide a color icon, then the Finder displays the black-and-white version of the 32-by-32 pixel icon on all types of monitors.

Black-and-White Icons

As stated previously, you should begin by designing a black-and-white icon. In general, you should use an outline of one black pixel to create the icon border. Use a minimal number of black pixels in the icon so that the icon's appearance is noticeably different when selected. The Figure below shows an example of a well-designed icon that changes significantly during selection.

A well-designed icon and its selected version

If you use too much black or 50 percent gray in your icon, the icon does not appear significantly different when the pixels are reversed for selection. The Figure below shows an example of an icon with too much black and 50 percent gray.

A poorly designed icon and its selected version

Small Icons

In system 7.0 you can provide a 16-by-16 pixel icon that you scale to size rather than relying on the Operating System to algorithmically reduce your 32-by-32 pixel icon. If you do not provide a small icon, the Finder reduces the larger icon based on an algorithmic formula that makes the icon look rough and

creates less pleasing visual results.

You should provide a small version of your 32-by-32 pixel icon that you scale. Preserve as many graphical elements of the icon as possible. In essence you provide the same icon in a smaller scale. You can fine-tune the small icon by adding and removing pixels. Do not eliminate significant elements, or the smaller version of the icon may look different from the larger version. If you have difficulty distinguishing the consistency or inconsistency, it's a good idea to consult with a graphic designer to design or review your icons.

Color Icons

System 7.0 ships with full-color icons that appear on color monitors. Your application can also provide color icons.

Do not design a color icon that's substantially different from your black-and-white icon. When you add color to an icon, it's best to leave the one-pixel black outline and fill the icon in with color. Coloring or graying the icon's outline makes the icon appear less distinct on the desktop. Remember that the user can change the background color of the desktop as well as its pattern, so your icon may not be displayed against the background on which you designed it. If you use ResEdit 2.1 to create your icons, it provides a way to look at your icon against different backgrounds to see whether your design is effective in various environments such as black-and-white displays or color displays of different bit depths.

If you use ResEdit 2.1 to design and create your icons, the Finder icon family editor provides easy access to the 34 colors used for icon design in system 7.0 in a palette with the standard 256 colors. Choose Apple Icon Colors from the **Color** menu. This command sets the palette in the editor (which is similar to the palette in most graphics applications) to contain the 34 colors used for Finder icons. See *ResEdit Reference* for information on using ResEdit 2.1.

If the default color table colors are not available, the system software gracefully degrades to black and white, starting with comparable 8-bit colors, then using 4-bit colors if possible, and finally displaying the element in black and white if no other choice exists. The system software will not substitute colors that are not visually close to colors that you assigned. The selection mechanism for color icons lowers the brightness of colors to indicate selection. This means that the colors appear darker when selected. On a color monitor, a black-and-white icon turns gray when selected. On a monochrome monitor, a black-and-white icon uses reverse video to show selection. In order for selected items to appear distinct from unselected ones, use light colors for large areas.

One technique for enhancing the appearance of your icons is to smooth angular or curved lines by coloring pixels on jagged edges. Designers refer to this technique as *anti-aliasing*. Change the pixel color where you can see a visual break in the outline of a black-and-white icon.

The Finder uses only one mask for each size in the icon family, so make sure that all your icons have the same outline shape. Do not add pixels or shadows to the outline shape of color icons. The Finder uses the icon mask for alignment and transformation effects, so make sure that the mask and all your icons are appropriate for each other.

Consistent Use of Icons

Use icons consistently throughout your designs. For example, if you reuse icon elements when you modify the generic document icon to represent your own application's files, make sure that they match. For example, the Macintosh computer inside the System Folder icon is the same as the Macintosh that appears as the Finder icon and as part of the Installer icon. The file server icon contains the same gray document icon and the same purple folder icon that appear on the desktop. Do not invent new icons to represent known entities such as folders and documents.

Customized Icons

You can provide the following customized icons if you support the associated features. You can customize these icons to represent your application, just as you can customize document icons.

- **Document icon.** This icon represents a document created with your application. You can customize this icon so that it relates to your application icon by adding graphics to it. Be sure to maintain the outline of the document. See the **Finder Interface** for more information about displaying customized icons.

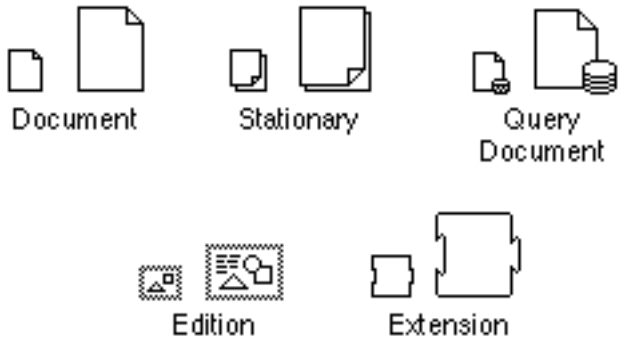
- **Stationery icon.** This icon represents a stationery pad that the user creates from a document. You can customize the stationery icon for each document icon by adding graphic elements to the stationery document page. See the **Finder Interface** for more information about stationery.

- **Query document icon.** This icon represents a file that contains information that the **Data Access Manager** uses to transmit a query to a database. You can customize this icon by adding graphics to the document page. Be sure to maintain the outline of the icon and the volume symbol that represents the database. See the **Data Access Manager** for more information on query documents.

- **Edition icon.** This icon represents an edition file that is created when a user chooses **Create Publisher** from the **Edit** menu. You can customize this icon by putting a different graphic inside the rectangle. Maintain the horizontal orientation and the double-dotted line of the icon that identify it as an edition icon. See the **Edition Manager** for more information.

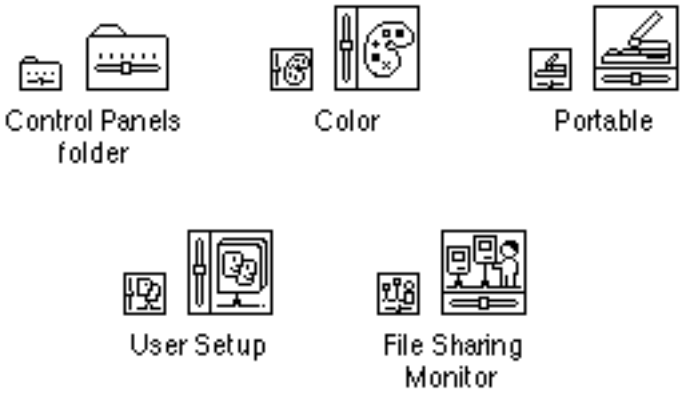
- **Extension icon.** This icon represents a system extension. You can customize this icon by adding a graphic to the puzzle piece. You can display the puzzle piece in a horizontal or vertical orientation with the protruding part facing any direction. See the **Finder Interface** for more information on displaying customized icons.

If you support these features but do not provide customized icons, the Finder displays default icons for these objects, depicted in the Figure below. See the **Finder Interface** or information on how to use the bundle resource to associate these icons with your application.



Default system icons in black and white

If you develop control panels, you must provide an icon family for each control panel. The control panel icon is a square panel with an indicator on it to identify it. The indicator also appears on the Control Panels folder. You can add a graphic to the square to customize the icon. You can display the icon in either a horizontal or vertical orientation. The Figure below shows some examples of control panel icons in both orientations.



Examples of control panel icons