

Chapter 6

Essential Graphics Tools

In this chapter, you'll learn about:

- ♦ Recommended painting programs
- ♦ Recommended screen capture utilities
- ♦ Recommended image viewers/converters
- ♦ Recommended palette tools
- ♦ Other useful graphics utilities

Criteria for My Recommendations

After spending countless hours scouring Internet software download sites, auction sites, and flea markets for graphics software that can handle the tricky business of creating arcade game graphics, I managed to find a number of tools that had all or most of the features outlined in Chapter 5.

In order to make the “cut,” each program had to pass a rigorous evaluation process. Among the criteria examined were:

- Interface and ease of use
- Performance and stability
- Compatibility
- Unique or special features
- Availability and support
- Cost
- Gripes

Interface and Ease of Use

This looks at the overall quality of the program’s interface. It considers such factors as the layout of the drawing area, the intuitiveness and placement of tools, and its consistency. These criteria are very important. A program with a poorly designed interface tends to be more difficult to use and can make you less productive than a program that has a well-designed interface.

Ease of use examines how easy the program is to use. Creating game artwork is challenging enough without forcing you to struggle with learning how to use yet another piece of software. Since everyone approaches arcade game graphics design with different levels of experience, it’s crucial for a painting program to address the needs of both beginners and advanced users alike. This means it should have features that are friendly to new users without being overly obtrusive to experienced users.

Performance and Stability

Performance looks at how well a particular painting program runs on different systems. A program may provide every feature under the sun but if it doesn’t run fast or smoothly on your computer, it really isn’t worth using. For a program to be truly useful, it needs to be able to run well on both lower-end (i.e., 386, 486) and higher-end (i.e., Pentium, Pentium II, etc.) computer hardware at an acceptable level of performance.

Stability considers how prone the particular application is to errors and crashes. Some programs are bug-ridden and can crash your entire system while others are almost legendary in their ability to keep on working in a reliable fashion no matter what you throw at them. For obvious reasons, stable programs are preferable to unstable ones, not only because they're less likely to crash but also because they're less likely to take your artwork with them!

Compatibility

This criterion examines whether or not a program is compatible with standard, commonly available hardware and operating systems. A particular program might be loaded with features, have a great interface, and be fast, but if it doesn't run on your system, then all of its advantages are lost.

For testing compatibility, I used two different computer systems. At the low end, I used a generic PC compatible with a 133Mhz Pentium processor, 64 MB of RAM, and a 2 MB S3 Trio64 video card that ran Windows 95 OSR2. Meanwhile, at the high end, I used a 300Mhz Pentium II, Compaq PC with 192 MB of RAM, and an 8 MB Matrox Millenium video card that ran Windows NT 4.0 with SP 4.



NOTE: Since I ran my initial tests, Windows 2000 was released. Although I have managed to test some of the software mentioned here under this new operating system, I have not been able to test everything. As a result, I only mention compatibility with Windows 2000 on a case-by-case basis.

Unique or Special Features

This criterion looks at any extra or special features that a particular program might have. These features aren't essential to do graphics work but are certainly nice to have. However, I figured that I'd mention them anyway, especially since there may be a time when you find that you need to use one. The more the merrier, I always say.

Availability and Support

Availability looks at the program's availability in the marketplace and how easy it is to find and acquire a (legal) copy. Obviously, the more difficult it is to obtain a particular program, the less likely it is for you to be able to use it. I gave special preference to those programs that were easily found on the Internet since it offers us more immediacy when it comes to obtaining software.

Similarly, if a program isn't well supported or frequently updated, the chances are that the program bugs won't be fixed on a timely basis and its functionality won't be extended to meet your requirements down the road.

Cost

Cost considers the price of the software in question. I felt this was important to mention since many of us, including yours truly, are on tight budgets!

There's a wealth of powerful graphics software out there and contrary to popular perceptions, most of it is free or modestly priced. Therefore, unless you're desperate, have special needs, or like to waste money, there's really no reason to spend a lot of money for a good piece of graphics software.

In general, I only considered and evaluated programs that cost under \$200 US. Most of them cost much less and quite a large number were free altogether. The issue of cost was, in fact, the only reason I didn't recommend Adobe's excellent *Photoshop* program in this book. As powerful and feature-rich as this program is, it just costs too much, especially if creating arcade games is a hobby rather than a livelihood.



NOTE: As this is a book with several months of production time, it's impossible to record the most accurate prices for the products reviewed in this chapter. As a result, you should always visit the appropriate vendor's Web site to get the latest pricing information.

Gripes

In addition to the other criteria mentioned here, I include my personal gripes with each program under a separate heading. This section also includes a list of features and/or program options that aren't supported but should be.

Finally, the programs themselves were categorized as follows:

- Recommended DOS painting programs
- Recommended Windows painting programs
- Recommended DOS screen capture utilities
- Recommended Windows screen capture utilities
- Recommended DOS image viewers/converters
- Recommended Windows image viewers/converters
- Recommended palette tools



NOTE: For clarification on what each of these different categories are, please consult Chapter 5.

Recommended DOS Painting Programs

- *Deluxe Paint IIe*
- *GrafX2*
- *Improcess*
- *NeoPaint*

Deluxe Paint IIe

Latest Version (at time of writing): 3.0

Native Platform: DOS but compatible with Windows 3.1, 95, 98, and NT 4.0

Type: Commercial

Publisher/Author: Electronic Arts

System Requirements: PC compatible, DOS 2.1 or better, 640 KB RAM, VGA or SVGA graphics card, and mouse

URL (at time of writing): N/A

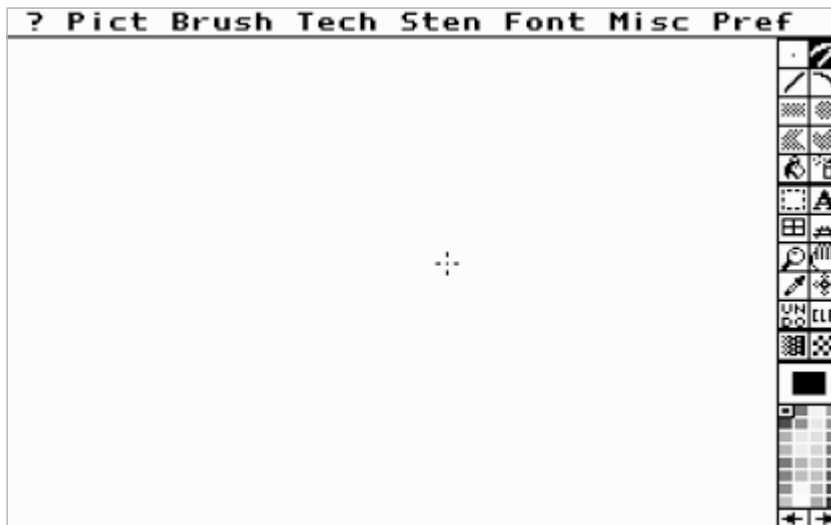


FIGURE 6-1: *Deluxe Paint IIe*

Deluxe Paint has long been a favorite in game development circles, making its first appearance on the Commodore Amiga in 1985. As its popularity increased, versions of it were eventually released on other popular platforms, including the Apple IIGS (1986), the PC (1988), and the Atari ST (1990).

There have been three PC versions of the program developed since its introduction: *Deluxe Paint II* (1988), *Deluxe Paint Animator* (1993), and *Deluxe Paint IIe* (1993). *Deluxe Paint II* was the original release and lacked many of the features that would eventually make *Deluxe Paint* so powerful. *Deluxe Paint Animator* and *Deluxe Paint IIe* both share the same core features but *Deluxe Paint Animator* also includes a powerful animation facility and only supports images with a 320x200 screen resolution. Finally, there is *Deluxe Paint IIe*. It is the most capable of the three and the one I decided to review here.

TABLE 6-1: *Deluxe Paint IIe* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Its drawing screen is refreshingly uncluttered and lets you get to work right away. All of the program's tools and functions are easily and readily accessible.
Performance and stability	Excellent	Works very well on older systems, especially slower 386, 486, and Pentium class machines. Very stable.
Compatibility	Very good	Appears to be fully compatible with modern 32-bit operating systems like Windows 95, 98, and NT 4.0. It also is one of the few graphics programs that runs reliably under Windows 3.1.
Unique or special features	Very good	<ul style="list-style-type: none"> ■ Has a special Perspective tool that lets you manipulate image blocks along the X-, Y-, and Z-axes in order to create 3D-like backgrounds. ■ Supports all program tools while zoomed. ■ Includes a Symmetry tool that allows you to produce symmetrical shapes and patterns by mirroring and duplicating pixels as you draw them. ■ Automatically creates backups of your images. This is useful in case you make a fatal mistake on your current masterpiece.
Cost	Fair	Expect to pay about \$30-100 for used copies depending on source.
Availability and support	Poor	<i>Deluxe Paint</i> is no longer marketed or supported by its publisher, Electronic Arts. However, it can still be obtained from software dealers who specialize in discontinued or second-hand software. In addition, it can occasionally be found on various Internet auction sites.
Gripes	Fair	<ul style="list-style-type: none"> ■ Provides only sketchy native support for common SVGA display modes. This means that some users won't be able to reliably access display modes with screen resolutions above 320x200 unless you use a third-party VESA driver.

Criteria	Rating	Comments
		<ul style="list-style-type: none"> ■ Only provides users with two drawing screens. This limits your ability to work on multiple images at once and copy elements between them. ■ Only supports the PCX and LBM file formats. ■ Uses a proprietary text font format for its Text tool. As a result, it's impossible to add new fonts to the program and the included fonts lack significant variation in style compared to what's available with TrueType fonts.

TABLE 6-2: *Deluxe Paint* Feature Summary

Drawing Tools and Effects	Supported	Comments
The Pencil tool		Not implemented. However, its Brush tool offers something similar.
The Brush tool	✓	Supports multiple brush widths.
The Airbrush tool	✓	Allows you to control the size and flow of the spray.
The Line tool	✓	Can also produce connected line segments and control the width of the line.
The Curve tool	✓	Can produce two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Can produce both filled and unfilled rectangles as well as squares. Supports gradient fills for this tool.
The Ellipse tool	✓	Can produce filled and unfilled ellipses as well as rotated ellipses. Supports gradient fills for this tool.
The Polygon tool	✓	Can produce both filled and unfilled polygon shapes. Supports gradient fills for this tool.
The Fill tool	✓	Can fill in areas with solid colors, patterns, and gradient fills. Allows you to fill in objects using straight, shaped, ridged, radial, and contoured gradients.
The Selection tool	✓	Can perform cut, copy, and paste operations. In addition, it also supports block resizing, rotation, bending, shearing, halving, doubling, flipping, and converting objects into single colors, as well as the loading and saving of blocks.
The Lasso tool	✓	Offers the same features as the Selection tool. The Lasso tool always operates on blocks transparently.
The Zoom tool	✓	Can magnify screen sections up to 2, 3, 4, 6, and 8 times their original size. Allows you to use all available tools while in magnification mode.
The Navigator tool	✓	Allows you to view the entire screen and scroll around the entire image.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Eye Dropper tool	✓	Includes the standard functionality for this tool.
The Palette Selector	✓	Provides all major features including the ability to define colors, swap color values, copy color values, and define color gradients. It doesn't allow you to load or save color palettes, however.
Brighten		Not implemented.
Darken		Not implemented.
Smooth	✓	Includes the standard functionality for this tool.
Smear	✓	Includes the standard functionality for this tool.
Invert		Not implemented.
The Translucency tool	✓	Allows you to specify the level of translucency.
The Stencil tool	✓	Includes a simple but powerful Stencil function that gives you full control over individual colors and the ability to load and save stencils for future use.
The Anti-alias tool	✓	Works with all drawing tools. Uses a single anti-aliasing algorithm but usually produces very effective results.
The Colorize tool	✓	Works exceptionally well, particularly on color gradients of the same intensity.
The Shade tool	✓	Includes the standard functionality for this tool.
The Grid tool	✓	All tools can snap to the grid, and grid spacing is definable both interactively with the mouse and through dialog box values.
The Eraser tool		Not implemented.
The Clear tool	✓	Includes the standard functionality for this tool. Can be undone with the Undo tool.
The Undo tool	✓	Provides an "undoable" undo function. However, it doesn't support an undo history so you can't undo successive operations.
The Text tool	✓	Includes the standard functionality for this tool. Utilizes a proprietary font format, which makes adding fonts to the program impossible. Supports bold, italic, and underline type in these point sizes: 8, 12, 18, 24, 36, 48, 56, 72, and 96. Doesn't support leading, kerning, or tracking control.
Industry standard file formats	✓	Loads and saves both PCX (8-bit only) and IFF/LBM (8-bit only). Comes with a separate utility to do other file format conversions. All images are limited to 256 (8-bit) colors.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
Multiple display mode support	✓	Included video drivers support most common VGA and SVGA graphics cards in display modes of 320x200 to 1024x768 in 256 colors. However, many of these built-in drivers are obsolete and you'll probably need a third-party VESA driver to get most of them to work.
Multiple work screen support	✓	Only supports two work screens. This is enough for some users but too limiting for others.
Keyboard shortcuts	✓	Offers extensive support for keyboard shortcuts. Virtually every program feature has a keyboard shortcut associated with it.
Coordinate tracking	✓	Includes the standard functionality for this tool.

GrafX2

Latest Version (at time of writing): 2.0 Beta 96.5%

Native Platform: DOS, but compatible with Windows 3.1, 95, 98, NT 4.0, and 2000

Type: Freeware

Publisher/Author: Sunset Design Software

System Requirements: PC compatible, DOS 5.0 or better, 5 MB of RAM, VGA or SVGA graphics card, and mouse

URL (at time of writing): <http://www-msi.ensil.unilim.fr/~maritaud/sunset/grafx2.html>



FIGURE 6-2: GrafX2

Two members of a French demo-coding group developed *GrafX2* back in 1996. Their unique perspective as both talented programmers and artists enabled them to produce one of the most exciting and original painting programs to appear on the PC platform in many years. While *GrafX2* is new to me, it apparently has been a favorite among European demo group artists for some time.

If it's ever completed and developed to its potential, it stands to surpass even *Deluxe Paint IIe* as the leader in PC-based painting software.

TABLE 6-3: *GrafX2* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Its drawing screen is clear and uncluttered so you'll be able to start drawing immediately. All of <i>GrafX2</i> 's tools are easy to find and are well positioned within the tool bar. Makes good use of keyboard shortcuts.
Performance and stability	Excellent	<i>GrafX2</i> accesses the computer's graphics hardware directly so it runs at exceptional speed, even on slower systems, without requiring lots of memory. However, it experiences some stability issues that will lead it to crash in certain situations.
Compatibility	Very good	Works very well with Windows 95, 98, NT 4.0, and 2000, making it the perfect complement to your Windows game development efforts. Unfortunately, this great program isn't compatible with systems running Windows 3.1.
Unique or special features	Good	<ul style="list-style-type: none"> ■ Provides a tiling function that lets you easily create tiled graphics. This feature is useful for testing background images, etc. ■ Can reduce colors in images, i.e., reduce a 128-color image to 64 colors with good results. ■ Supports all program tools while zoomed. ■ Can be optionally configured to create backups of your images. This is useful should you make a fatal mistake when working on your current masterpiece.
Cost	Excellent	Free.
Availability and support	Good	Free for all to download although it's not that easy to find. The program is also still under development, but so far, it has been well supported by its authors.

Criteria	Rating	Comments
Gripes	Fair	<ul style="list-style-type: none"> ■ Doesn't allow you to create rectangles with filled color gradients. ■ Doesn't have a Text tool. Therefore, there's no easy way to add text to an image with this program. ■ Doesn't yet allow you to apply special effects to the whole picture at once and certain block functions such as free-rotate and block distort aren't yet implemented. ■ Doesn't provide an Anti-alias or a true Colorize function.

TABLE 6-4: GrafX2 Feature Summary

Drawing Tools and Effects	Supported	Comments
The Pencil tool		Not implemented. However, its Brush tool offers something similar.
The Brush tool	✓	Also supports multiple brush widths.
The Airbrush tool	✓	Allows you to control the size and flow of the spray.
The Line tool	✓	Can produce both connected line segments and continuous line segments.
The Curve tool	✓	Can produce two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Can produce both filled and unfilled rectangles. You can't draw squares with it. Doesn't allow you to create rectangles with gradient fills.
The Ellipse tool	✓	Only allows you to draw circles but lets you create circles with gradient fills.
The Polygon tool	✓	Can produce both filled and unfilled polygon shapes. Doesn't support gradient fills.
The Fill tool	✓	Can fill in areas with solid colors, patterns, and gradient fills. Only allows you to use radial gradient fills but allows you to define the angle of the fill.
The Selection tool	✓	Can perform cut, copy, and paste operations. In addition, this program also supports block resizing, rotation (limited to 90- and 180-degree increments), and flipping.
The Lasso tool	✓	Provides the same basic features as the Selection tool. The Lasso tool always operates on blocks transparently.
The Zoom tool	✓	Can magnify screen sections up 2, 3, 4, 6, 8, 12, 14, 16, 18, and 20 times their original size. Also allows you to use all tools while in magnification mode.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Navigator tool	✓	Allows you to view the entire screen and scroll around the entire image.
The Eye Dropper tool	✓	Includes the standard functionality for this tool.
The Palette selector	✓	Provides all major features including the ability to define colors, swap color values, copy color values, and define color gradients. In addition, it lets you invert color values (reverse their order), swap entire ranges of color, convert the palette to grayscale, undo any palette changes, and return the current palette to its default state. It also lets you count the number of colors used in an image and perform color reduction. Supports the Microsoft PAL format.
Brighten		Currently not implemented.
Darken		Currently not implemented.
Smooth	✓	Includes the standard functionality for this tool and provides three different algorithms for the smoothing process.
Smear	✓	Includes the standard functionality for this tool.
Invert		Currently not implemented.
The Translucency tool	✓	Allows you to specify the level of translucency and choose from either additive or subtractive translucency.
The Stencil tool	✓	Includes a simple but powerful Stencil function that gives you full control over individual colors and the ability to load and save stencils for future use.
The Anti-alias tool		Currently not implemented.
The Colorize tool	✓	Not the same as in <i>Deluxe Paint</i> . Doesn't preserve the original object's color intensity.
The Shade tool	✓	Includes the standard functionality for this tool.
The Grid tool	✓	All tools can snap to the grid, and grid spacing is definable both interactively with the mouse and through dialog box values.
The Eraser tool		Not implemented.
The Clear tool	✓	Includes the standard functionality for this tool. Can be undone with the Undo tool.
The Undo tool	✓	Provides an "undoable" undo function. However, it doesn't support an undo history so you can't undo successive operations.
The Text tool		Currently not implemented.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
Industry standard file formats	✓	Loads and saves PCX, BMP, GIF, and IFF/LBM images. All images are restricted to 256 (8-bit) colors. The program also allows you to save color palettes in Microsoft's PAL format.
Multiple display mode support	✓	Provides extensive display mode support. The program is capable of generating and supporting up to 60 different VGA and SVGA display modes, including many non-standard Mode X display modes that are useful to game programmers.
Multiple work screen support	✓	Like <i>Deluxe Paint</i> , it supports two work screens with the ability to copy color palettes between them.
Keyboard shortcuts	✓	Offers extensive support for keyboard shortcuts. Virtually every program feature has a keyboard shortcut associated with it. The program comes with a special configuration utility that allows you to redefine the keyboard shortcuts.
Coordinate tracking	✓	Includes the standard functionality for this tool.



NOTE: You can find *GrafX2* on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

Improces

Latest Version (at time of writing): 4.2

Native Platform: DOS, but compatible with Windows 3.1, 95, 98, and NT 4.0

Type: Freeware

Publisher/Author: John Wagner

System Requirements: PC compatible, DOS 3.0 or better, 640KB RAM, VGA or SVGA graphics card, and mouse

URL (at time of writing): <http://homepages.together.net/~jwag/freesoft-ware.html>

FIGURE 6-3: *Improces*

Improces is a program that you'll either love or hate. It's been around for years and has so many features that it's often hard to classify it as strictly a painting program.

Programmer John Wagner created *Improces* in 1991 in order to fully exploit the power of the PC's impressive VGA graphics capabilities. In many ways, he succeeded. As a graphics package, *Improces* straddles many different areas within the graphics field; it's part painting program, part image editor, and part image processing program.

Unfortunately, while these multiple personalities make *Improces* a very powerful program, they also contribute to its well-deserved reputation for being cumbersome and difficult to use.

TABLE 6-5: *Improces* Overview

Criteria	Rating	Comments
Interface and ease of use	Poor	Not very easy to use overall. Many of the program's features aren't very intuitive or easy to use.
Performance and stability	Excellent	Runs smoothly on slow PC systems (i.e., 286 and 386 systems). Users with faster systems will find the program's performance proportionally faster. Appeared to be very stable on all systems tested.
Compatibility	Very good	Works quite well under Windows 3.1, 95, 98, and NT 4.0. It also appears to be compatible with most VGA and SVGA cards, although your actual experience may vary depending on your particular hardware setup.

Criteria	Rating	Comments
Unique or special features	Very good	<ul style="list-style-type: none"> ■ Includes a simple but effective sprite animation facility where you can test the animations you create. It supports variable playback speeds in two different directions and allows you to preview animations of up to 12 frames in length. ■ Provides a number of image processing tools, giving it much of the same capability of programs costing much more. ■ One of the few programs that can generate plasmas, or fractal-like color patterns, which are useful for game title and background screens. ■ Allows you to create graphics in several common Mode X display modes. ■ Can use both ZSoft and Borland Stroked fonts with its Text tool.
Cost	Excellent	Free.
Availability and support	Fair	The program is relatively easy to find online; however, the author no longer updates or supports the program.
Gripes	Poor	<ul style="list-style-type: none"> ■ Doesn't offer an undoable Undo function. What's more, its standard Undo function is very limited in terms of what painting operations it will reverse. ■ Has a poorly designed interface. ■ Uses a custom video driver that doesn't work with some graphics cards in screen resolutions above 320x400. ■ Its implementation and support of multiple screens is inconvenient to work with. ■ The Text tool is rather limited in function. Compared to other programs mentioned here, it's difficult to use and edit text. ■ Doesn't provide an Anti-alias or a Colorize function. ■ Doesn't work with all tools while zoomed.

TABLE 6-6: *Improces* Feature Summary

Drawing Tools and Effects	Supported	Comments
The Pencil tool	✓	Draws lines in solid colors.
The Brush tool	✓	Supports multiple brush widths.
The Airbrush tool	✓	Allows you to control the size of the spray.
The Line tool	✓	Allows you to create connected line segments and control the width of the line.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Curve tool	✓	Supports two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Lets you draw both filled and unfilled rectangles as well as squares. Doesn't support gradient fills.
The Elipse tool	✓	Lets you draw filled and unfilled ellipses as well as rotated ellipses. Doesn't support gradient fills.
The Polygon tool	✓	Allows you to draw both filled and unfilled polygon shapes. Doesn't support gradient fills.
The Fill tool	✓	Lets you fill areas with solid colors, patterns, and gradient fills. Also allows you to fill in objects using straight, ridged, and radial gradients. Produces great results but is difficult to use.
The Selection tool		Has a limited copy and paste function and doesn't quite work as you would expect it to.
The Lasso tool		Not implemented.
The Zoom tool	✓	Only supports 4x magnification. Doesn't allow you to use other tools or functions except the ability to change the current drawing color.
The Navigator tool		Not implemented.
The Eye Dropper tool		Not implemented.
The Palette selector	✓	Only allows you to change color values and color gradients. Supports color palette reduction.
Brighten	✓	Includes the standard functionality for this tool.
Darken	✓	Includes the standard functionality for this tool.
Smooth	✓	Known as Average and Median. Can work on either block selections or the entire image.
Smear		Not implemented.
Invert	✓	Includes the standard functionality for this tool.
The Translucency tool		Not implemented.
The Stencil tool		Not implemented.
The Anti-alias tool		Not implemented.
The Colorize tool		Not implemented.
The Shade tool		Not implemented.
The Grid tool	✓	Doesn't support grid snapping but can draw fixed grids of 128x128 pixels in size.
The Eraser tool		Not implemented.
The Clear tool	✓	Includes the standard functionality for this tool.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Undo tool	✓	Very limited. Only works after certain operations and doesn't support an undoable Undo.
The Text tool	✓	Supports both ZSoft bitmapped fonts and Borland Stroked fonts. Only provides limited text editing capabilities. Doesn't support leading, kerning, or tracking control.
Industry standard file formats	✓	Can load PCX, GIF 87a, and TGA files. Can save files in PCX, GIF 87a, and TGA formats as well.
Multiple display mode support	✓	Supports most common display modes and Mode X screen resolutions at a maximum of 256 colors.
Multiple screen support	✓	Supports multiple work screens but implements them in a weird way. As a result, using multiple screens isn't as fast or convenient as with other packages described here.
Keyboard shortcuts	✓	Supports only limited keyboard shortcuts.
Coordinate tracking		Not implemented.



NOTE: You can find *Improcos* on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

NeoPaint

Latest Version (at time of writing): 3.2d

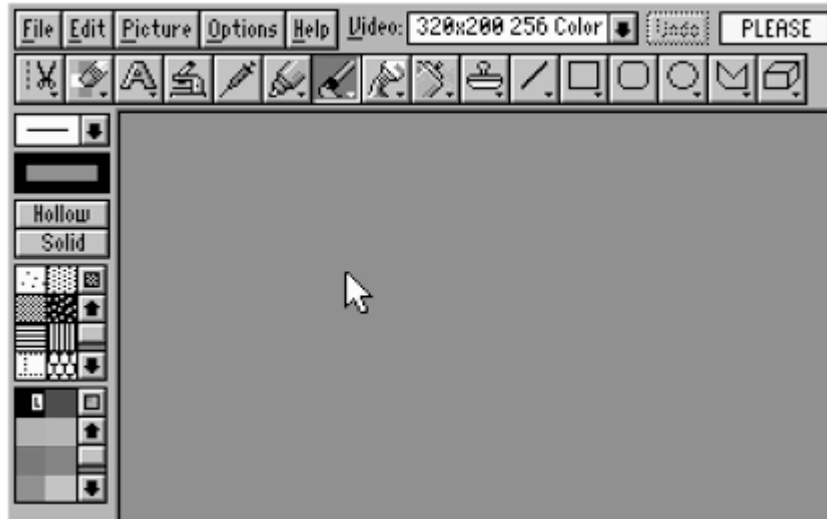
Native Platform: DOS, but compatible with Windows 3.1, 95, 98, and NT 4.0

Type: Shareware

Publisher/Author: NeoSoft, Inc.

System Requirements: PC compatible, DOS 3.1 or better, 640 KB RAM, VGA or SVGA graphics card, and mouse

URL (at time of writing): <http://www.neosoftware.com/np.html>

FIGURE 6-4: *NeoPaint*

NeoPaint is a general-purpose painting program that also happens to be a reasonably decent tool for creating arcade game graphics.

NeoPaint first appeared in 1994 and has since undergone several revisions and enhancements. Over the years it's garnered a rather large following among game developers due to its wide availability, impressive features, low cost, and sleek Windows-like interface.

TABLE 6-7: *NeoPaint* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	The program rises above the rest of crowd in the sophistication of its interface. Its programmers went to the trouble of developing an entire, mouse-driven windowing system to ensure that <i>NeoPaint</i> would be easy to use for users of all levels.
Performance and stability	Good	<i>NeoPaint</i> 's custom windowing system eats up a surprising amount of computer resources. This makes it somewhat slower in graphics operations when compared to the other programs reviewed here, especially when running on slower machines. Despite this, <i>NeoPaint</i> has proven itself to be a very stable and reliable program.
Compatibility	Excellent	<i>NeoPaint</i> is one of the most stable DOS graphic programs I've ever used. It's never crashed, and it seems to run great under all versions of DOS and Windows that I tested.

Criteria	Rating	Comments
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Does a great job of managing multiple work screens. You can easily create and manage dozens of screens simultaneously without problems. ■ Unique among DOS-based graphics packages in that it supports display modes from 320x200 to 1024x768 and color depths of 4, 8, 16, and 24 bits, provided you have compatible display hardware. ■ Adding text with <i>NeoPaint</i> is very easy thanks to its Windows-like font selection dialog and sophisticated text editor. It even allows you to import small text files! ■ Supports a wide array of popular graphics formats, including Windows BMP. ■ Provides a large number of image processing functions and special effects. ■ Provides good support and compatibility with most VGA and SVGA cards. ■ Includes (as an external program) a DOS screen capture utility.
Cost	Excellent	\$45 (US)
Availability and support	Good	Easily found online and well supported. However, it probably won't be upgraded given the recent release of the Windows version of the program.
Gripes	Fair	<ul style="list-style-type: none"> ■ Doesn't provide an undoable Undo function. ■ Many of its various filters and special effects are slow, particularly on older machines. ■ Doesn't allow you to use all of its drawing tools when using the Zoom tool. ■ Offers a limited gradient fill capability. All of its gradient fill angles are predefined. ■ Handles image blocks in a cumbersome fashion. It takes several steps to perform the same action that other programs can perform in one. ■ Selecting palette colors is a somewhat tedious process. ■ Doesn't provide an Anti-alias or a Colorize function.

TABLE 6-8: NeoPaint Feature Summary

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Pencil tool	✓	Includes the standard functionality for this tool.
The Brush tool	✓	Provides several brush sizes, shapes, and effects, including charcoal, magic marker, and ink. Also supports multiple brush widths and brush cloning, a feature typically found only in image editors.
The Airbrush tool	✓	Allows you to control the size of the spray.
The Line tool	✓	Can produce connected line segments and control the width of the line.
The Curve tool	✓	Supports two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Can produce both filled and unfilled rectangles as well as squares.
The Ellipse tool	✓	Can produce filled and unfilled ellipses as well as rotated ellipses.
The Polygon tool	✓	Can produce both filled and unfilled polygon shapes as well as gradient fills. Also lets you create basic 3D shapes.
The Fill tool	✓	Can fill in areas with solid colors, patterns, and gradient fills. Also allows you to fill in objects using straight, shaped, ridged, and radial gradients. However, these gradients use predefined fill directions and are much more limited than those featured in <i>Deluxe Paint</i> and <i>GrafX2</i> .
The Selection tool	✓	Can perform cut, copy, and paste operations. In addition, it also supports block resizing, rotation, bending, shearing, halving, doubling, flipping, and converting objects into single colors, as well as loading and saving blocks.
The Lasso tool	✓	Same features as the Selection tool. The Lasso tool always operates on blocks transparently. Offers several variations of this tool for maximum flexibility.
The Zoom tool	✓	Can magnify screen sections from 2 to 100 times their original size. Unfortunately, it doesn't allow you to use all tools while zoomed.
The Navigator tool	✓	Allows you to view the entire screen and scroll around the entire image.
The Eye Dropper tool	✓	Includes the standard functionality for this tool.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Palette selector	✓	Includes the standard functionality for this tool. Also supports copying of colors and the loading and saving of palettes but not in the Microsoft .PAL format.
Brighten	✓	Allows you to brighten regions as well as the entire image.
Darken	✓	Allows you to darken regions as well as the entire image.
Smooth	✓	Allows you to smooth regions as well as the entire image.
Smear	✓	Includes the standard functionality for this tool.
Invert		Not implemented.
The Translucency tool		Not implemented.
The Stencil tool		Not implemented.
The Anti-alias tool		Not implemented.
The Colorize tool		Not implemented.
The Shade tool		Not implemented.
The Grid tool	✓	Includes the standard functionality for this tool.
The Eraser tool	✓	Includes the standard functionality for this tool.
The Clear tool	✓	Includes the standard functionality for this tool.
The Undo tool	✓	Includes the standard functionality for this tool. Doesn't support undoable Undos, however.
The Text tool	✓	Provides sophisticated text handling. Compatible with GEM bitmapped fonts. Allows you to import ASCII text files. Doesn't support leading, kerning, or tracking control, however.
Industry standard file formats	✓	Can load PCX, TIFF, or BMP files. Can save PCX, TIFF, and BMP files.
Multiple display mode support	✓	Supports display modes with 4-, 8-, 16-, or 24-bit color depth, provided your video card has the proper drivers.
Multiple screen support	✓	Additional screens are limited only by available memory. Provides an elegant system of managing multiple screens.
Keyboard shortcuts	✓	Makes extensive use of keyboard shortcuts. However, many are not intuitive.
Coordinate tracking		Not implemented.



NOTE: You can find a trial version of *NeoPaint* on the CD-ROM included in this book. Please refer to Appendix B for more information.

Other Useful DOS Painting Programs

There were a number of DOS-based painting programs that met most of my review criteria but ultimately weren't recommended for various reasons. Nevertheless, they are mentioned here and include such programs as:

- *DN Paint*—A free painting program with some extremely powerful tools and features. It looks like a promising addition to your creative toolbox if you can get it to run on your system!
- *VGA Paint 386*—A free *Deluxe Paint* clone that shares much of the original's powerful functionality.



NOTE: Some or all of these programs are included on the book's accompanying CD-ROM. Refer to Appendix B for additional details.

Recommended Windows Painting Programs

- *NeoPaint for Windows*
- *Paint Shop Pro*
- *Pro Motion*

NeoPaint for Windows

Latest Version (at time of writing): 4b

Native Platform: Windows 95, 98, NT 4.0, and 2000

Type: Shareware

Publisher/Author: NeoSoft, Inc.

System Requirements: PC compatible, Windows 95, 98, or NT 4.0, and an SVGA graphics card

URL (at time of writing): <http://www.neossoftware.com/npw.html>

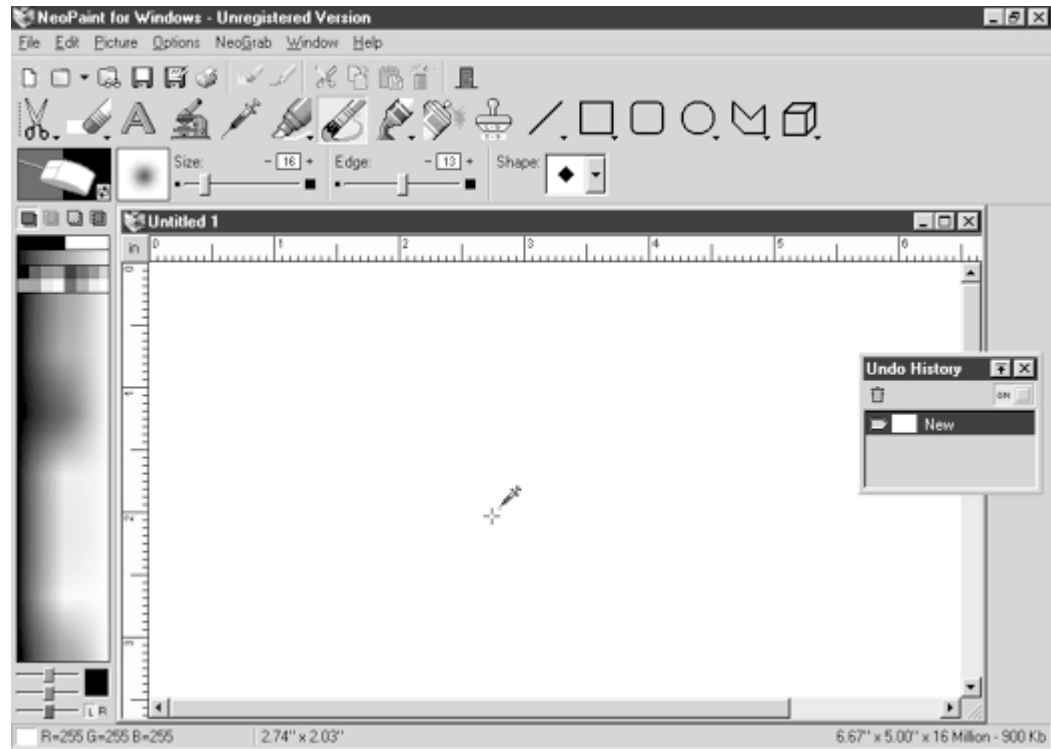


FIGURE 6-5: NeoPaint for Windows

At first glance, *NeoPaint for Windows* just looks like a 32-bit Windows conversion of *NeoPaint for DOS*. But despite sharing many of the original's features and interface elements, the two are really different programs.

NeoPaint for Windows expands on the original DOS version's feature set and improves on it in a number of areas. Among its improvements are a fully Windows compliant interface, support for more graphic file formats, a new and more flexible Zoom tool, better video display mode support, and a slew of new special effects.

In short, *NeoPaint for Windows* is a completely new program that addresses many of the original's shortcomings. If you're interested in a low-cost and feature-rich program for creating game graphics, you should strongly consider using this program.

TABLE 6-9: NeoPaint for Windows Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Interface is a combination of Windows standards and the earlier <i>NeoPaint for DOS</i> product. Some users will recognize the similarities and immediately feel at home, while other users will be distracted by the many options it offers. Despite this, the program features are clearly labeled and all in all, I found it very easy to use.
Performance and stability	Very good	Runs well on slower systems. However, certain tools, most notably large brushes or some special effects, tend to be on the sluggish side. Seems very stable on all systems tested.
Compatibility	Excellent	Compatible with all versions of Windows from 95 through Windows 2000.
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Supports a wide array of popular graphics formats, including Macintosh PICT and Photoshop PSD. ■ Allows you to take screen captures from inside the program. ■ Supports display modes of various color depths and screen resolutions and can promote or reduce colors between different display modes. ■ Supports an undo history that allows certain actions to be easily repeated. ■ Supports a large number of special effects, all of which can be previewed before applying them to your images. ■ Supports all program tools while zoomed. ■ Can import text from external text files. ■ Provides a simple but informative help facility.
Cost	Excellent	\$59.95 (US) or \$34.95 (US) as an upgrade from the original DOS version.
Availability and support	Excellent	Easily found online and relatively well supported.
Gripes	Very good	<ul style="list-style-type: none"> ■ Offers a limited gradient fill capability. All of its gradient fill angles are predefined. ■ Doesn't provide an Anti-alias or a Colorize function. ■ Its interface occupies a large amount of usable screen area.

TABLE 6-10: NeoPaint for Windows Feature Summary

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Pencil tool	✓	Includes the standard functionality for this tool.
The Brush tool	✓	Provides several brush sizes, shapes, and effects, including charcoal, magic marker, and ink. Also supports multiple brush widths and brush cloning, a feature typically found only in image editors.
The Airbrush tool	✓	Allows you to control the size and rate of the spray.
The Line tool	✓	Can produce connected line segments and control the width of the line.
The Curve tool	✓	Supports two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Can produce both filled and unfilled rectangles as well as squares.
The Ellipse tool	✓	Can produce filled and unfilled ellipses as well as rotated ellipses.
The Polygon tool	✓	Can produce both filled and unfilled polygon shapes as well as gradient fills. Also lets you create basic 3D shapes.
The Fill tool	✓	Lets you fill in areas with solid colors, patterns, and gradient fills. Also allows you to fill in objects using straight, shaped, ridged, radial, and contoured gradients but doesn't allow you to adjust the fill angle.
The Selection tool	✓	Includes the standard functionality for this tool and supports a number of image block manipulation functions.
The Lasso tool	✓	Includes the standard functionality for this tool and supports a number of image block manipulation functions.
The Zoom tool	✓	Lets you magnify screen sections from 2 to 51 times their original size. However, it doesn't allow you to use all tools while zoomed.
The Navigator tool	✓	Allows you to view the entire screen at once but uses a crude form of this tool.
The Eye Dropper tool	✓	Includes the standard functionality for this tool.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Palette selector	✓	Provides all major features including the ability to define colors, swap color values, copy color values, and define color gradients. In addition, it lets you undo any palette changes and return the current palette to its default state. It also lets you count the number of colors used in an image and perform color reduction. Also supports the loading and saving of palettes but not in the Microsoft .PAL format.
Brighten	✓	Allows you to brighten regions as well as the entire image.
Darken	✓	Allows you to darken regions as well as the entire image.
Smooth	✓	Allows you to smooth regions as well as the entire image.
Smear	✓	Includes the standard functionality for this tool.
Invert		Not implemented.
The Translucency tool		Not implemented.
The Stencil tool	✓	Doesn't support color-based stencils but does support screen masks in higher-color display modes.
The Anti-alias tool		Not implemented.
The Colorize tool		Not implemented.
The Shade tool		Not implemented.
The Grid tool	✓	Includes the standard functionality for this tool.
The Eraser tool	✓	Includes the standard functionality for this tool.
The Clear tool	✓	Includes the standard functionality for this tool.
The Undo tool	✓	Doesn't support an undoable Undo but does support an undo history, which can simulate some of this functionality.
The Text tool	✓	Includes the standard functionality for this tool. Allows you to anti-alias text and treat text as a block selection for further manipulation. Supports Windows TrueType fonts and can import text from the Clipboard and external text files. Doesn't support leading, kerning, or tracking control.
Industry standard file formats	✓	Can load BMP, PNG, JPEG, GIF 87a/89a, PSD, PCX, TIFF, TGA, and Macintosh PICT. Can save BMP, PNG, GIF 87a/89a, PSD, PCX, TIFF, JPEG, TGA, and Macintosh PICT.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
Multiple display mode support	✓	Supports all display modes supported by Windows and your video hardware.
Multiple screen support	✓	Available work screens are limited only by available memory.
Keyboard shortcuts	✓	Makes extensive use of keyboard shortcuts. Uses a combination of standard Windows keyboard shortcuts and <i>NeoPaint for DOS</i> keyboard shortcuts.
Coordinate tracking	✓	Includes the standard functionality for this tool and allows you to specify the coordinate metric between pixels and inches or centimeters.



NOTE: You can find a fully functional trial version of *NeoPaint for Windows* on the CD-ROM included in this book. Please refer to Appendix B for more information.

Paint Shop Pro

Latest Version (at time of writing): 6.02

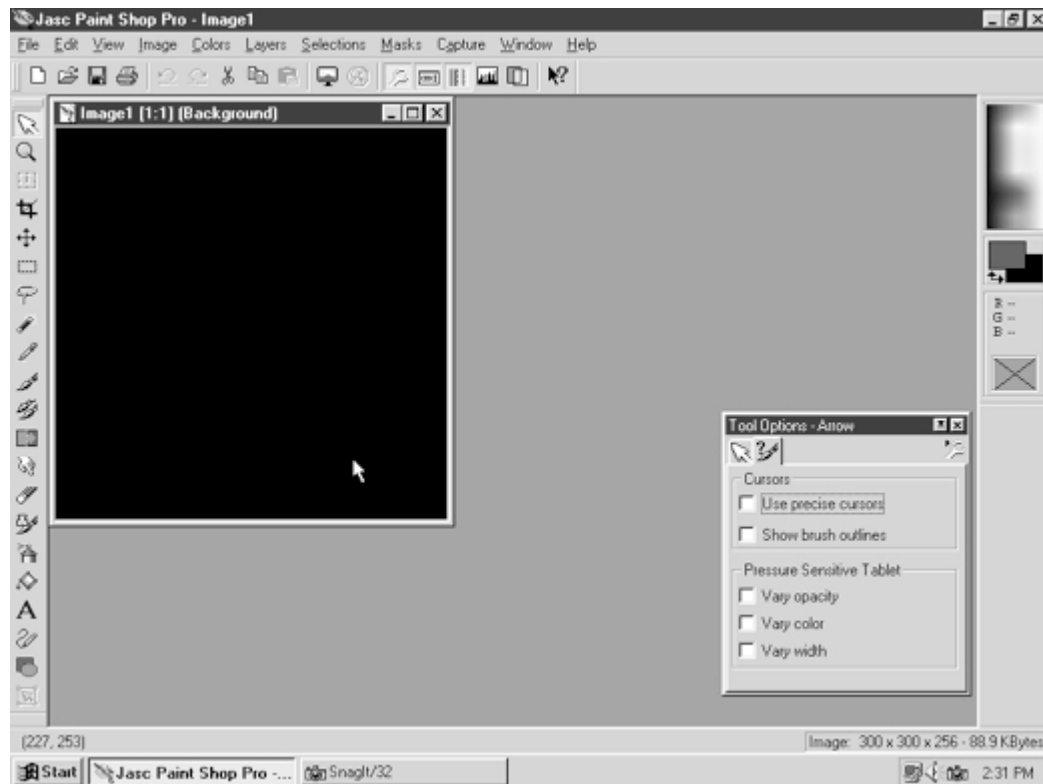
Native Platform: Windows 95, 98, NT 4.0, and 2000

Type: Shareware

Publisher/Author: Jasc, Inc.

System Requirements: PC compatible, Windows 95, 98, NT 4.0, or 2000, mouse, and an SVGA graphics card

URL (at time of writing): <http://www.jasc.com/products.html>

FIGURE 6-6: *Paint Shop Pro*

Paint Shop Pro has been around since the early 1990s and each release of the program has brought new features and capabilities. Now in its sixth incarnation, Jasc's *Paint Shop Pro* is the complete Windows solution for arcade game graphics creation.

Simply put, if you're interested in a program that offers 90% of the power of Adobe *Photoshop* for one-fifth the price, look no further than this program.

TABLE 6-11: *Paint Shop Pro* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	A vast improvement from previous releases of the program. <i>Paint Shop Pro</i> provides intuitive icons and maximizes the available drawing screen.
Performance and stability	Excellent	The program is quick and responsive on all but the slowest systems. Appears very stable on all systems tested.
Compatibility	Excellent	Compatible with all versions of Windows from 95 through Windows 2000.

Criteria	Rating	Comments
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Supports a wide array of popular graphic formats, including Macintosh PICT and Photoshop PSD. ■ Supports layers. ■ Compatible with most Adobe <i>Photoshop</i> plug-ins. This allows it to support a whole host of powerful third-party special effects filters and export file formats, thus greatly expanding the power of the program. ■ Supports a large number of predefined special effects and allows you to preview them before applying them to your image. ■ Supports the drawing of vectorized geometric shapes. This allows shapes to be easily resized and manipulated without resolution-specific distortion. ■ Allows you to take screen captures from within the program. ■ Provides a command history that allows you to repeat or undo sequences of past program operations. ■ Supports display modes of various color depths and screen resolutions and can promote or reduce colors between different display modes. ■ Can perform batch image conversion, thus, the program can effectively serve as an image viewer/converter program. ■ Can perform gamma correction on images. ■ Can browse your hard drive for images and make image catalogs from them. ■ Comes bundled with a powerful animation utility. ■ Supports all program tools while zoomed. ■ Provides an excellent online help facility.
Cost	Very good	\$99 (US) download or \$109 (US) for CD version.
Availability and support	Excellent	Easily found online and very well supported. Frequently updated by an established company.
Gripes	Very good	<ul style="list-style-type: none"> ■ Offers a limited gradient fill capability. All of its gradient fill angles are predefined. ■ Tool option dialogs can be a bit annoying. ■ Large program that uses a lot of RAM and disk space.

TABLE 6-12: *Paint Shop Pro* Feature Summary

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Pencil tool	✓	Includes the standard functionality for this tool.
The Brush tool	✓	Provides several brush sizes, shapes, and effects, including charcoal, magic marker, and ink. Also supports multiple brush widths and brush cloning, a feature typically found only in image editors.
The Airbrush tool	✓	Also allows you to control the size and rate of the spray.
The Line tool	✓	Can produce connected line segments and control the width of the line.
The Curve tool	✓	Supports two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Can produce both filled and unfilled rectangles as well as squares.
The Ellipse tool	✓	Can produce filled and unfilled ellipses as well as rotated ellipses.
The Polygon tool	✓	Can produce both filled and unfilled polygon shapes as well as gradient fills. Also lets you create basic 3D shapes.
The Fill tool	✓	Lets you fill in areas with solid colors, patterns, and gradient fills. Also allows you to fill in objects using straight, shaped, ridged, radial, and contoured gradients but doesn't allow you to adjust the fill angle.
The Selection tool	✓	Includes the standard functionality for this tool and supports a number of image block manipulation functions.
The Lasso tool	✓	Includes the standard functionality for this tool and supports a number of image block manipulation functions.
The Zoom tool	✓	Lets you magnify screen sections from 2 to 32 times their original size. Allows access to all tools while zoomed.
The Navigator tool	✓	Includes the standard functionality for this tool.
The Eye Dropper tool	✓	Includes the standard functionality for this tool.
The Palette Selector tool	✓	Includes the standard functionality for this tool. Supports the Microsoft PAL format.
Brighten	✓	Allows you to brighten regions as well as the entire image.
Darken	✓	Allows you to darken regions as well as the entire image.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
Smooth	✓	Allows you to smooth regions as well as the entire image.
Smear	✓	Includes the standard functionality for this tool.
Invert		Not implemented but can be simulated via one of its special effect options.
The Translucency tool		Not implemented but can be simulated with layers.
The Stencil tool	✓	Doesn't support color-based stencils but does support screen masks in higher color display modes.
The Anti-alias tool		Not implemented.
The Colorize tool	✓	Doesn't work the same way it does in <i>Deluxe Paint</i> or other programs mentioned here as it's only supported in block operation and not as a toggle/modifier as with other painting programs.
The Shade tool		Not implemented.
The Grid tool	✓	Supports variable sized grids but offers no "snap-to-grid" function.
The Eraser tool	✓	Includes the standard functionality for this tool.
The Clear tool	✓	Includes the standard functionality for this tool.
The Undo tool	✓	Includes the standard functionality for this tool. Doesn't support an undoable Undo but does support an undo history.
The Text tool	✓	Includes the standard functionality for this tool. Allows you to anti-alias text and treat text as a block selection for further manipulation. Supports Windows TrueType fonts. Includes the ability to adjust kerning and leading.
Industry standard file formats	✓	Can load BMP, PNG, JPEG, GIF 87a/89a, IFF/LBM, PSP, PSD, PCX, TIFF, TGA, and Macintosh PICT. Can save BMP, PNG, GIF 87a/89a, PSP, PSD, PCX, JPEG, IFF/LBM, TIFF, TGA, and Macintosh PICT. The accompanying animation utility can also export FLIC files.
Multiple display mode support	✓	Supports all display modes supported by Windows and your video hardware.
Multiple screen support	✓	Available work screens are limited only by available memory.
Keyboard shortcuts	✓	Makes extensive use of keyboard shortcuts.
Coordinate tracking	✓	Includes the standard functionality for this tool.



NOTE: You can find a fully functional trial version of *Paint Shop Pro* on the CD-ROM included in this book. Please refer to Appendix B for more information.

Pro Motion

Latest Version (at time of writing): 4.2

Native Platform: Windows 95, 98, NT 4.0, and 2000

Type: Commercial

Publisher/Author: Cosmigo, Inc.

System Requirements: PC compatible, Windows 95, 98, or NT 4.0, and an SVGA graphics card

URL (at time of writing): <http://www.cosmigo.com/promotion/>

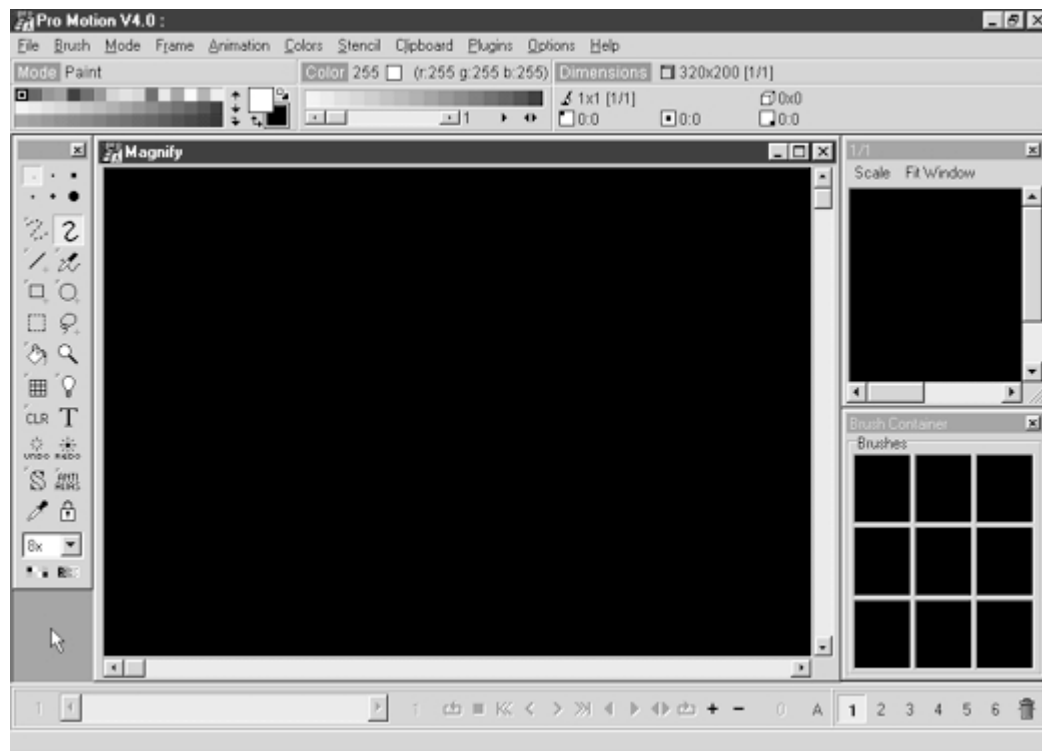


FIGURE 6-7: *Pro Motion*

Pro Motion is a Windows-based painting program that was closely modeled after *Deluxe Paint V* for the Commodore Amiga. It first appeared on the market in 1996

and has earned a good reputation as a game graphics creation tool with both hobbyists and professional game developers alike.

If you're serious about designing arcade game graphics, definitely get *Pro Motion*.

TABLE 6-13: *Pro Motion* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Interface is very intuitive. Screen is relatively uncluttered. Most options have icons associated with them and all work as expected.
Performance and stability	Excellent	Runs well on even the slowest of machines. Faster machines will enjoy even better performance. Noticeably stable on the systems tested.
Compatibility	Very good	Fully compatible with all 32-bit versions of Windows from Windows 95 through Windows 2000.
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Provides all of <i>Deluxe Paint</i>'s painting tools and functionality. ■ Includes a sophisticated, built-in animation tool. ■ Supports multiple levels of undoable undos. ■ Supports all program tools while zoomed. ■ Supports all popular file formats. ■ Supports plug-ins, which can extend the functionality of the program even further. ■ Provides a simple but effective help facility.
Cost	Very good	\$58 (US) e-mail version or \$74 (US) for the program on CD.
Availability and support	Excellent	Easily found online and very well supported by its author. Updated frequently and updates are free.
Gripes	Very good	<ul style="list-style-type: none"> ■ Anti-alias function isn't as robust as some of the other programs mentioned here, particularly when dealing with text. ■ Only supports six work screens. ■ Handles Windows Clipboard access in a non-standard way.

TABLE 6-14: *Pro Motion* Feature Summary

Drawing Tools and Effects	Supported	Comments
The Pencil tool		Not implemented. However, its Brush tool offers something similar.
The Brush tool	✓	Also supports multiple brush widths.
The Airbrush tool	✓	Allows you to control the size of the spray.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Line tool	✓	Also allows you to create connected line segments and control the width of the line.
The Curve tool	✓	Supports two types of curves: simple and one with multiple endpoints.
The Rectangle tool	✓	Lets you draw both filled and unfilled rectangles as well as squares.
The Ellipse tool	✓	Lets you draw filled and unfilled ellipses.
The Polygon tool	✓	Allows you to draw both filled and unfilled polygon shapes.
The Fill tool	✓	Lets you fill in areas with solid colors, patterns, and gradient fills. Also allows you to fill in objects using straight, shaped, ridged, radial, and contoured gradients with full control over the fill angle.
The Selection tool	✓	In addition to the standard functions such as cut, copy, and paste, this program supports block resizing, rotation, bending, shearing, halving, doubling, flipping, and converting objects into single colors, as well as loading and saving blocks.
The Lasso tool	✓	Same features as the Selection tool.
The Zoom tool	✓	Lets you magnify screen sections from 2 to 32 times their original size. Also allows you to use all tools while in magnification mode.
The Navigator tool	✓	Allows you to view the entire screen at once but uses a crude form of this tool.
The Eye Dropper tool	✓	Includes the standard functionality for this tool.
The Palette Selector tool	✓	Provides all major features including the ability to define colors, swap color values, copy color values, and define color gradients. It even allows you to load and save color palettes in the Microsoft .PAL format.
Brighten	✓	Includes the standard functionality for this tool.
Darken	✓	Includes the standard functionality for this tool.
Smooth	✓	Includes the standard functionality for this tool.
Smear	✓	Includes the standard functionality for this tool.
Invert	✓	Includes the standard functionality for this tool.
The Translucency tool	✓	Allows you to specify the level of translucency.
The Stencil tool	✓	Includes a powerful Stencil function that gives you full control over individual colors and the ability to load and save stencils for future use.
The Anti-alias tool	✓	Provides two algorithms of anti-aliasing for different situations and works with all drawing tools.

<i>Drawing Tools and Effects</i>	<i>Supported</i>	<i>Comments</i>
The Colorize tool	✓	Works exceptionally well, particularly on color gradients of the same intensity.
The Shade tool	✓	Includes the standard functionality for this tool.
The Grid tool	✓	Includes the standard functionality for this tool.
The Eraser tool		Not implemented.
The Clear tool	✓	Includes the standard functionality for this tool.
The Undo tool	✓	Supports an undoable Undo and can even redo actions up to several levels.
The Text tool	✓	Supports full text editing capabilities and compatible with Windows TrueType fonts. Doesn't support leading, kerning, or tracking control.
Industry standard file formats	✓	Reads and writes BMP, GIF 87a, IFF/LBM, and PCX files. Its animation tool can also import and export files in the FLIC format.
Multiple display mode support	✓	Limited to 8-bit (256 color) display modes in all standard Windows screen resolutions.
Multiple screen support	✓	Only supports a maximum of six work screens regardless of available memory.
Keyboard shortcuts	✓	Makes extensive use of keyboard shortcuts. Many of these are logically assigned and some even mirror shortcuts used by <i>Deluxe Paint</i> .
Coordinate tracking	✓	Includes the standard functionality for this tool.



NOTE: You can find a feature-disabled demonstration version of *Pro Motion* on the CD-ROM included with this book. Please refer to Appendix B for more information.

Other Useful Windows Painting Programs

There were a number of Windows-based painting programs that met most of my review criteria but ultimately weren't recommended for various reasons. Nevertheless, they are mentioned here.

- *ArtGem*—An interesting true color painting program. Although a capable program, its strange interface makes me prefer other programs.
- *ChaosFX*—A feature-rich image editing program. The program is technically very impressive but very expensive when compared to most of the other programs reviewed in this section of the chapter.

- *Pixel 32*—An incredibly promising image editor that is still under development and not completely stable at this time. However, once this program is completed, it will give programs such as *Paint Shop Pro* and *Photoshop* a real run for the money.
- *Ultimate Paint*—A general-purpose painting program. While the program is stable and inexpensive, it's not nearly as feature rich or easy to use as many of the other programs reviewed here.



NOTE: Some or all of these programs are included on the book's accompanying CD-ROM. Refer to Appendix B for additional details.

Recommended DOS Screen Capture Utilities

- *Screen Thief*

Screen Thief

Latest Version (at time of writing): 2.04

Native Platform: DOS

Type: Freeware

Publisher/Author: Villa Software, Inc.

System Requirements: PC compatible, DOS, Windows 95 and 98, and a VGA graphics card

URL (at time of writing): <http://www.villasoftware.com>



FIGURE 6-8: Screen Thief

Screen Thief is a full-featured DOS screen capture utility that's been around since the early 1990s. It has become popular with game developers due to its reliability, feature set, and ability to capture screen displays that other capture programs could not.

If you need to capture DOS game screens, this is the program to use.

TABLE 6-15: *Screen Thief* Overview

Criteria	Rating	Comments
Interface and ease of use	Good	Very easy to use for a pure DOS program. Default capture keys are easy to access and intuitive to use.
Performance and stability	Very good	Worked as advertised with good performance. Very stable.
Compatibility	Good	Runs flawlessly under DOS and Windows 95. Not tested under Windows NT, however.
Unique or special features	Very good	<ul style="list-style-type: none"> ■ Provides support for most common graphic file formats ■ Allows user to redefine capture keys, which makes it very flexible. ■ Can redefine its interrupt for maximum compatibility with other DOS TSR software.
Cost	Excellent	Free.
Availability and support	Good	Can be found online relatively easily. Still supported but not frequently updated.
Gripes	Good	<ul style="list-style-type: none"> ■ Requires you to configure it manually via the command line to support special features and display modes. ■ Has trouble capturing some screens that use SVGA compatible display modes.

TABLE 6-16: *Screen Thief* Feature Summary

Program Features	Supported	Comments
Full screen capture	✓	Can successfully capture screens in most VGA and SVGA display modes.
Active windows capture	N/A	N/A
Region capture		Not implemented.
DOS screen capture	✓	Works as expected.
DirectX capture	N/A	N/A
Standard file formats	✓	Can capture screens and save them in PCX, TIFF, BMP, and GIF file formats.
Clipboard access	N/A	N/A
Capture undo		Not implemented.

Program Features	Supported	Comments
Automatic palette correction	N/A	N/A
Image cropping		Not implemented.



NOTE: You can find a copy of *Screen Thief* on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

Recommended Windows Screen Capture Utilities

- *HyperSnapDX*
- *Snagit*

HyperSnapDX

Latest Version (at time of writing): 3.55

Native Platform: Windows 95, 98, NT 4.0, and 2000

Type: Shareware

Publisher/Author: Hyperionics

System Requirements: PC compatible, DOS, Windows 95, 98, NT 4.0, or 2000, and an SVGA graphics card

URL (at time of writing): <http://www.hypersnap-dx.com/hsdx/>

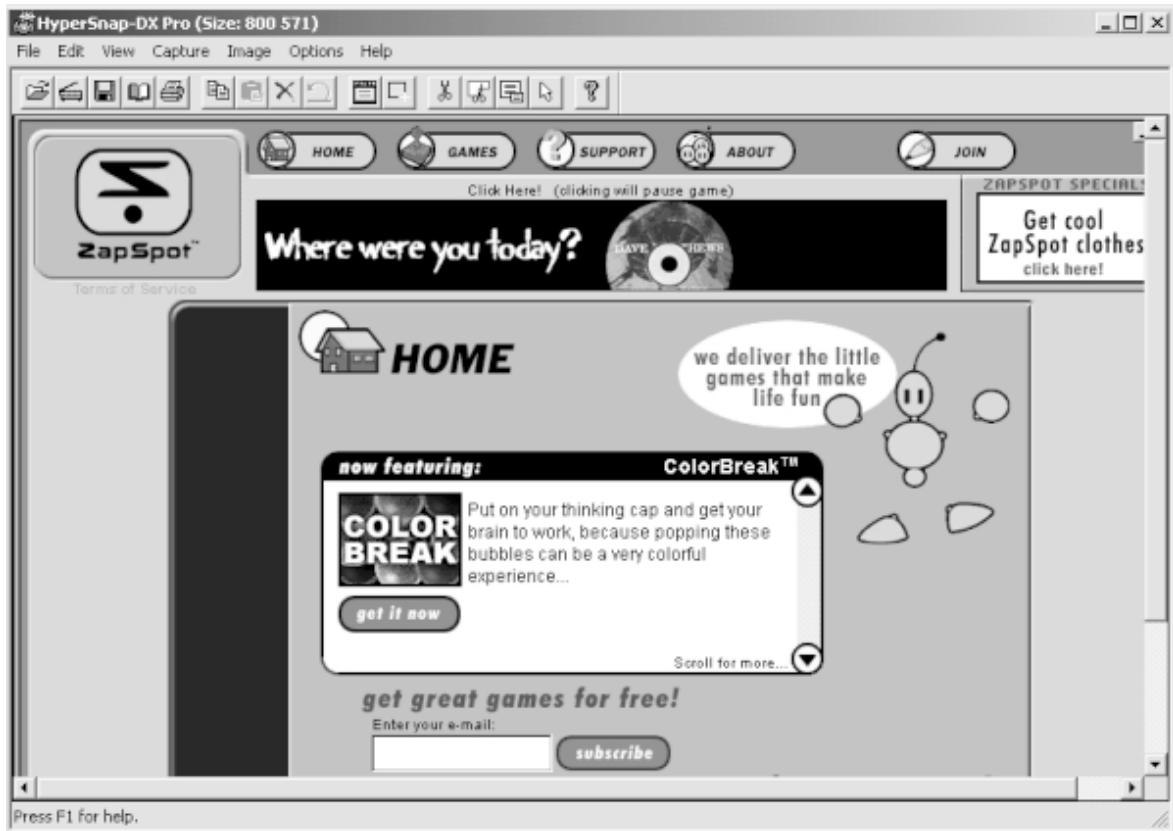


FIGURE 6-9: HyperSnapDX

HyperSnapDX is an extremely impressive and powerful screen capture utility. It can capture virtually any Windows screen including those used by DirectX and 3Dfx Glide games. Furthermore, it can save captured images in any of 20 different graphic file formats.

HyperSnapDX is one screen capture utility that belongs in every game developer's toolbox.

TABLE 6-17: HyperSnapDX Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Very easy to use and default capture keys are easy to access.
Performance and stability	Excellent	Worked as advertised with great performance on all systems on which it was tested. A very stable and reliable program.
Compatibility	Excellent	Runs flawlessly under Windows 95, 98, NT 4.0, and 2000.

Criteria	Rating	Comments
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Supports over 20 common graphic file formats including PSD. ■ Allows user to redefine capture keys, which makes it very flexible. ■ Can capture DirectX and 3Dfx Glide game screens. ■ Can capture the entire scrolling contents of a screen window. ■ Supports many common image manipulation functions such as resizing and changing color depth and resolution.
Cost	Excellent	\$25 (US)
Availability and support	Excellent	Easily found online, well supported, and frequently updated and enhanced.
Gripes	Very good	<ul style="list-style-type: none"> ■ Doesn't capture DOS screens.

TABLE 6-18: HyperSnapDX Feature Summary

Program Features	Supported	Comments
Full screen capture	✓	Allows you to capture any Windows-compatible display mode supported by your system.
Active windows capture	✓	Works as expected.
Region capture	✓	Works as expected. Supports coordinate tracking in order to help you make more precise region captures.
DOS screen capture		Not implemented.
DirectX capture	✓	Works as expected.
Standard file formats	✓	Can capture screens and save them in PCX, TIFF, BMP, PSD, GIF, PNG, and a number of other file formats.
Clipboard access	✓	Works as expected.
Capture undo	✓	Works as expected.
Automatic palette correction	✓	Works as expected.
Image cropping	✓	Works as expected. Provides handy guides that enable you to crop images with pixel-point precision.



NOTE: You can find a fully functional trial version of *HyperSnapDX* on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

SnagIt Pro

Latest Version (at time of writing): 5.01

Native Platform: Windows 95, 98, and NT 4.0

Type: Shareware

Publisher/Author: TechSmith, Inc.

System Requirements: PC compatible, DOS, Windows 95, 98, NT 4.0, or 2000, and an SVGA graphics card

URL (at time of writing): <http://www.techsmith.com/products/snagit/>



FIGURE 6-10: *SnagIt*

SnagIt has been around in one form or another since 1990, and like a fine wine, it only gets better with age. This screen capture utility offers a number of powerful and unique screen capture features, including the ability to capture and record screen activity as highly compressed video files. In addition, it's one of the few Windows screen capture utilities that is able to capture full-size DOS screens.

TABLE 6-19: *SnagIt* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Very easy to use and default capture keys are easy to access.
Performance and stability	Excellent	Worked as advertised with great performance on all systems tested on. A very stable and reliable program.
Compatibility	Excellent	Runs flawlessly under Windows 95, 98, NT 4.0, and 2000.

Criteria	Rating	Comments
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Supports all common graphic file formats. ■ Allows user to redefine capture keys, which makes it very flexible. ■ Can capture DOS screens. ■ Can capture screens and save them as Windows AVI videos. ■ Can capture the entire scrolling contents of a window. ■ Supports many common image manipulation functions such as resizing and changing color depth and resolution.
Cost	Excellent	\$39.95 (US)
Availability and support	Excellent	Easily found online, well supported, and frequently updated and enhanced.
Gripes	Very good	<ul style="list-style-type: none"> ■ Doesn't allow DirectX screen captures.

TABLE 6-20: *SnagIt* Feature Summary

Program Features	Supported	Comments
Full screen capture	✓	Allows you to capture any Windows-compatible display mode supported by your system.
Active windows capture	✓	Works as expected.
Region capture	✓	Works as expected. Supports coordinate tracking in order to help you make more precise region captures.
DOS screen capture	✓	Can capture most DOS screens, even when running a full DOS session.
DirectX capture		Not implemented.
Standard file formats	✓	Can capture screens and save them in PCX, TIFF, BMP, GIF, PNG, and a number of other file formats.
Clipboard access	✓	Works as expected.
Capture undo	✓	Works as expected.
Automatic palette correction	✓	Works as expected.
Image cropping	✓	Works as expected.



NOTE: You can find a fully functional trial version of *SnagIt* on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

Recommended DOS Image Viewers/Converters

■ SEA

SEA

Latest Version (at time of writing): 1.3

Native Platform: DOS

Type: Shareware

Publisher/Author: Photodex Corporation

System Requirements: A 386 with 4MB, a VESA-compatible 1 MB VGA card, and a mouse (optional)

URL (at time of writing): <http://www.photodex.com>



FIGURE 6-11: SEA

SEA achieves what has often been thought impossible under DOS: it marries an easy-to-use and attractive user interface with a solid image viewing and conversion engine.

If you're a DOS user, this is the image viewer/converter program to have.

TABLE 6-21: SEA Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	The best of any DOS-based graphics program of its type. Menu commands are clearly labeled and intuitive, making it easy to use.
Performance and stability	Excellent	Runs very well on all tested systems. Fastest of all of the DOS image viewers I've used. Appears to be very stable and reliable.
Compatibility	Very good	Runs on DOS and Windows 95 and 98. Will not run on Windows NT 4.0, however.
Unique or special features	Good	<ul style="list-style-type: none"> ■ Supports command line driven image viewing and conversion. ■ One of the few DOS-based image viewers to support PSD files. ■ Supports all SVGA display modes with the appropriate VESA drivers installed.
Cost	Very good	\$29.95 (US)
Availability and support	Good	Easily obtainable and reasonably well supported. Updated occasionally.
Gripes	Good	<ul style="list-style-type: none"> ■ Should support more graphic file formats.

TABLE 6-22: SEA Feature Summary

Program Features	Supported	Comments
Extensive graphics file format support	✓	Supports all standard image formats such as GIF, JPEG, PNG, TIFF, PCX, PSD, IFF/LBM, and TGA.
Good interface	✓	Excellent interface. A real joy to use.
Batch conversions	✓	Works as expected but not as efficient or elegant as some of the other programs described here.
Image catalogs	✓	Works as expected.
Special operations	✓	Performs many special operations including image resizing, color reduction, and gamma correction.

Other Useful DOS Image Viewers/Converters

There were a number of DOS-based image viewers/converters that met most of my review criteria but weren't reviewed here for various reasons. Nevertheless, I will mention them here as you may find them useful. These are:

- *Display*—A free image viewing and conversion utility that provides many features and options. Its only drawbacks are its large memory requirements and complex user interface.
- *Graphics Workshop for DOS*—A very reliable, shareware image viewing and conversion utility. This program was written by Steven William Rimmer, one of the leading authorities on graphic file formats.
- *Nview*—A DOS version of *XNView* (which is described in the next section) that utilizes the same image viewing/conversion engine. Unfortunately, there were compatibility problems that prevented it from running properly on my test system.



NOTE: Some or all of these programs are included on the book's accompanying CD-ROM. Refer to Appendix B for additional details.

Recommended Windows Image Viewers/Converters

- *IrfanView*
- *XNView*

IrfanView

Latest Version (at time of writing): 3.17

Native Platform: Windows 95, 98, and NT 4.0

Type: Freeware

Publisher/Author: Irfan Skiljan

System Requirements: PC compatible, Windows 95, 98, NT 4.0, or 2000, and an SVGA graphics card

URL (at time of writing): <http://stud1.tuwien.ac.at/~e9227474>

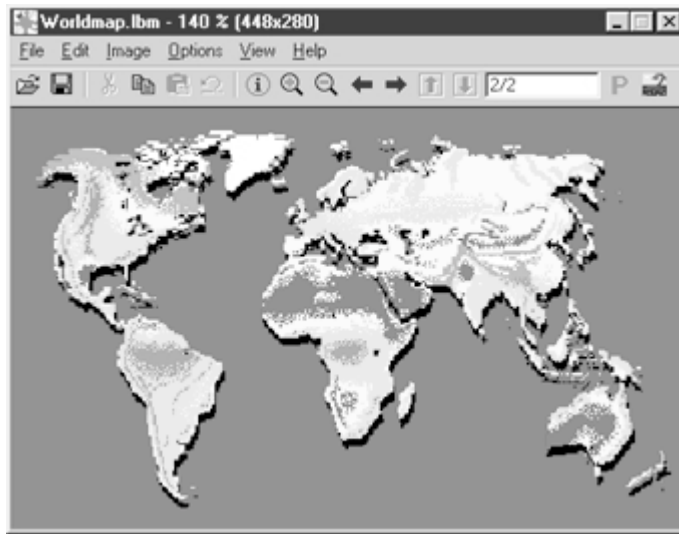


FIGURE 6-12: IrfanView

IrfanView 32 started out three years ago as a hobbyist project by a talented university student named Irfan Skiljan and has quickly established itself as one of the best programs of its type—free or commercial. *IrfanView 32* supports dozens of graphic file formats, special effects, and image conversion options, and provides many other features that few other programs of its type can touch.

I highly recommend this program as much for its features as its price.

TABLE 6-23: IrfanView Overview

Criteria	Rating	Comments
Interface and ease of use	Very good	Easy to use but tries to pack too much functionality in too little an area. Some options are crowded and confusing.
Performance	Excellent	Performs very well on all systems tested. Displays images quickly.
Compatibility	Excellent	Runs without incident on all Windows 95, 98, NT 4.0, and 2000 systems.
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Supports over 70 different graphic file formats, including all of the file formats mentioned in Chapter 3. ■ Can do batch image conversions. ■ Can double as a screen capture utility. ■ Can create browsable thumbnails of all of the images in a given directory. ■ Can count the number of colors used by a particular image. ■ Can install itself as your default Windows graphic viewer.

Criteria	Rating	Comments
Cost	Excellent	Free.
Availability and support	Excellent	Easy to obtain and well supported. Updated frequently.
Gripes	Very good	■ Tries to do a bit too much for a program of its type. This means that many of its menu options are cluttered.

TABLE 6-24: *IrfanView* Feature Summary

Program Features	Supported	Comments
Extensive graphics file format support	✓	Compatible with all common graphic file formats and then some.
Good interface	✓	Interface is relatively easy to use.
Batch conversions	✓	Works as expected. Performs conversion actions quickly.
Image catalogs	✓	Works as expected.
Special operations	✓	Can perform color depth reduction and promotion, image scaling, and a variety of other useful image processing effects.



NOTE: You can find a copy of *IrfanView* on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

XNView

Latest Version (at time of writing): 1.12

Native Platform: Windows 95, 98, NT 4.0, and 2000

Type: Freeware

Publisher/Author: Pierre Gougelet

System Requirements: PC compatible, Windows 95, 98, NT 4.0, or 2000, and an SVGA graphics card

URL (at time of writing): <http://perso.wanadoo.fr/pierre.g/>

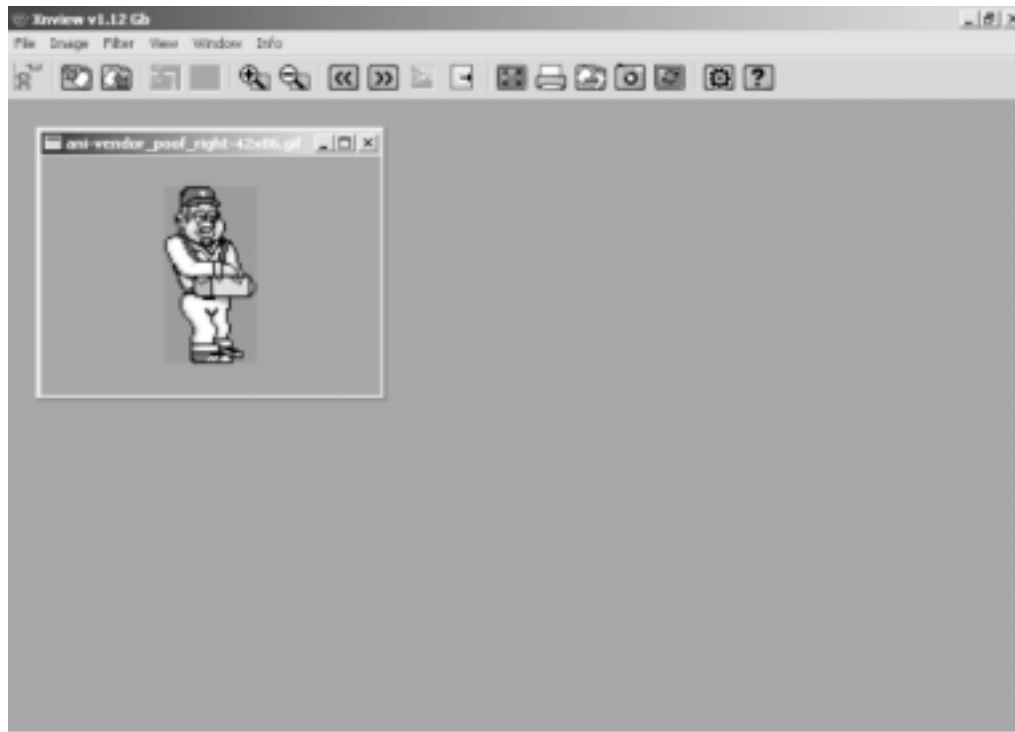


FIGURE 6-13: XNView

XNView has been around in one form or another since the early 1990s. Since that time it has been ported to platforms as diverse as the Atari ST to Linux.

It's also one of the most impressive image viewing and conversion programs I've ever seen as it supports over 120 different graphic file formats and sports a refreshingly simply and effective user interface.

If you're looking for a reliable and feature-rich image viewer/converter, definitely consider using *XNView*.

TABLE 6-25: XNView Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Intuitive and very easy to use. Makes good use of icons and all options are clearly labeled.
Performance and stability	Excellent	Performs very well on all systems tested. Displays images quickly. Appears to be very stable.
Compatibility	Excellent	Runs well on all Windows 95, 98, NT 4.0, and 2000 systems tested.

Criteria	Rating	Comments
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Supports over 120 different graphic file formats, including all of the file formats mentioned in Chapter 3. ■ Can do batch image conversions while applying special effects. ■ Can double as a screen capture utility when needed. ■ Can create browsable thumbnails of all of the images in a given directory. ■ Can count the number of colors used by a particular image. ■ Can install itself as your default Windows graphic viewer.
Cost	Excellent	Free.
Availability and support	Excellent	Easy to obtain and well supported. Updated occasionally.
Gripes	Excellent	None.

TABLE 6-26: XNView Feature Summary

Program Features	Supported	Comments
Extensive graphics file format support	✓	Compatible with all common graphic file formats and then some.
Good interface	✓	Interface is very easy to use.
Batch conversions	✓	Very flexible.
Image catalogs	✓	Works as expected.
Special operations	✓	Can perform color depth reduction and promotion, image scaling, and a variety of sophisticated image processing effects. Can even apply these operations to images as it converts them from one format to another.



NOTE: You can find a copy of XNView on the CD-ROM that accompanies this book. Please refer to Appendix B for more information.

Other Useful Windows Image Viewers/Converters

There were a number of Windows-based image viewers/converters that met most of my review criteria but weren't reviewed here for various reasons. Nevertheless, I will mention them here as you may find them useful. These programs include:

- *CompuPic*—A commercial image viewing and conversion utility. Provides many useful features and has an excellent user interface.

- *Graphics Workshop Pro*—A very well written shareware image viewing and conversion utility. Offers many features and options including the ability to save images as executable programs. This program was also written by Steven William Rimmer, one of the leading authorities on graphic file formats.



NOTE: These programs are included on the book's accompanying CD-ROM. Refer to Appendix B for additional details.

Recommended Palette Tools

- *Opal*
- *PalMerge*

Opal

Latest Version (at time of writing): 1.95

Native Platform: Windows 95, 98, and NT 4.0

Type: Shareware

Publisher/Author: Basta Computing, Inc.

System Requirements: PC compatible, Windows 95, 98, or NT 4.0, and an SVGA graphics card

URL (at time of writing): <http://www.basta.com>

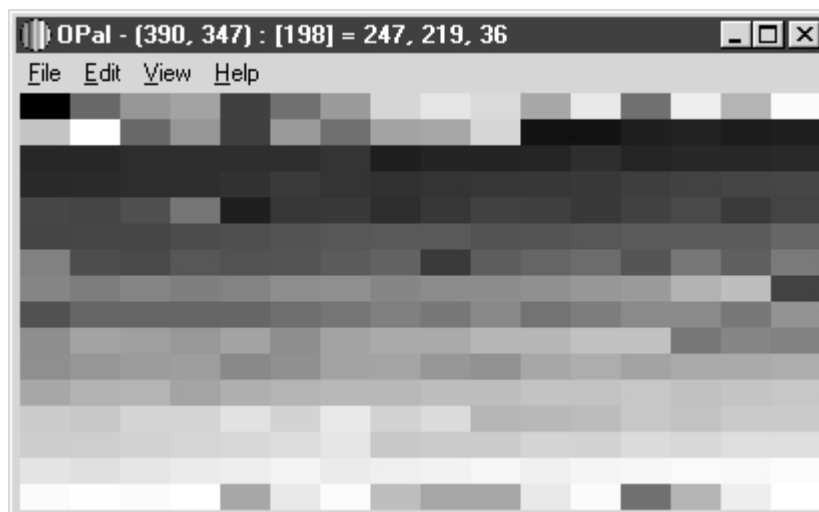


FIGURE 6-14: *Opal*

Opal enables you to perform several different types of color palette manipulations. These include looking up the RGB value and palette index of any pixel on the desktop, capturing the palette of another application, and saving the contents of the current color palette to a bitmap image or text file.

TABLE 6-27: *Opal* Overview

Criteria	Rating	Comments
Interface and ease of use	Excellent	Very easy to use. The program's options are logically arranged and well thought out.
Performance and stability	Excellent	Runs well on all Windows systems tested. Appears to be very stable.
Compatibility	Excellent	Compatible with Windows 95, 98, and NT 4.0.
Unique or special features	Good	<ul style="list-style-type: none"> ■ Allows you to export the contents of the current color palette to a text file. This can be very useful for designers and programmers alike. ■ Can describe color values in a variety of formats.
Cost	Excellent	\$10 (US)
Availability and support	Good	Easily found online and well supported. However, it is only occasionally updated.
Gripes	Poor	<ul style="list-style-type: none"> ■ Doesn't allow you to alter the color palette or perform color palette manipulations of any sort. ■ Limited use in non-palette display modes.

TABLE 6-28: *Opal* Feature Summary

Program Features	Supported	Comments
Color palette editing		Not implemented.
Color palette extraction from bitmaps	✓	Only reads palette data from BMP files.
Palette construction from input files		Not implemented.
Common file format support	✓	Only reads palette data from BMP files.

PalMerge

Latest Version (at time of writing): 3.0a

Native Platform: Windows 95, 98, and NT 4.0

Type: Shareware

Publisher/Author: Bryan Miller

System Requirements: PC compatible, Windows 95, 98, or NT 4.0, and an SVGA graphics card

URL (at time of writing): <http://www.allcity.net/~vantageview>

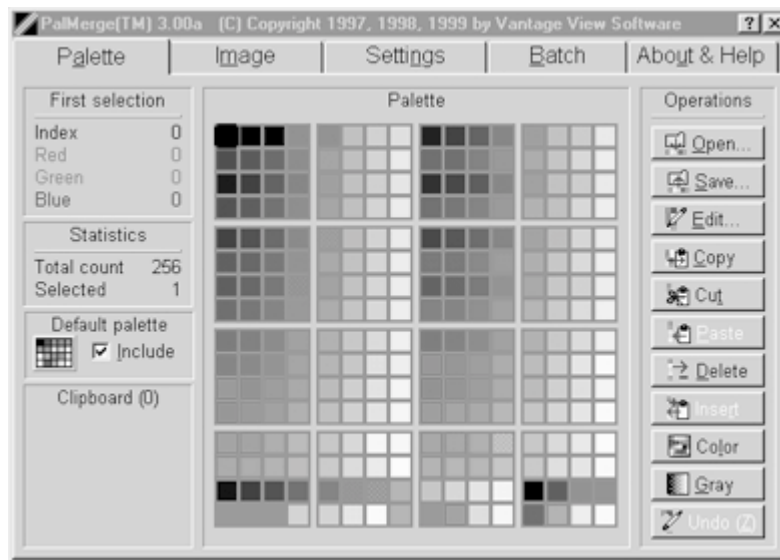


FIGURE 6-15: *PalMerge*

PalMerge is a program designed to give you full control over the contents of the color palette under Windows. Among its special features is a first-rate color palette editor and the ability to extract color palettes from images, and view and process images in various file formats.

Although it won't replace the color selection tools available in most painting programs, *PalMerge* is a good supplemental utility, which many game developers need, and it performs operations that many graphics utilities can't.

TABLE 6-29: *PalMerge* Overview

Criteria	Rating	Comments
Interface and ease of use	Very good	Relatively easy to use but incorporates several non-standard or outdated Windows interface elements.
Performance	Excellent	Runs well on all Windows systems tested. Appears to be very stable.
Compatibility	Excellent	Compatible with Windows 95, 98, and NT 4.0.

Criteria	Rating	Comments
Unique or special features	Excellent	<ul style="list-style-type: none"> ■ Can merge the contents of several palettes into one. ■ Can add Windows reserved colors to the palette. ■ Can perform color reduction and palette remapping operations on individual images or in batch. ■ Comes with a number of predefined color palettes to experiment with. ■ Can export palette data in the Microsoft .PAL format.
Cost	Very good	\$17 (US)
Availability and support	Excellent	Easily obtainable online. Supported but not updated very often.
Gripes	Good	<ul style="list-style-type: none"> ■ Tries to do too much in one program. It's very good at palette manipulation but less so as an image viewer or conversion utility.

TABLE 6-30: *PalMerge* Feature Summary

Program Features	Supported	Comments
Color palette editing	✓	Works as expected. Uses Windows' palette editor but does support impressive color copying and pasting abilities.
Color palette extraction from bitmaps	✓	Works as expected. Can extract palettes from BMP and save them in Microsoft .PAL format.
Palette construction from input files	✓	Works as expected.
Common file format support	✓	Supports all standard file formats including .bmp.



NOTE: These programs, as well as several DOS palette tools, are included on the book's accompanying CD-ROM. Refer to Appendix B for additional details.

Other Useful Graphics Utilities

Besides the programs discussed here, the accompanying CD-ROM includes a number of other useful graphics programs and utilities. Of these, two programs really stand out as useful additions to any arcade game developer/designer's creative toolbox. These programs are:

- *MkExpl 3.0* by Lennart Steinke
- *Universe v1.6* by Diard Software

MkExpl 3.0

MkExpl is a DOS-based program that allows you to create a variety of high-quality animated explosion effects. The program takes parameters and then saves the generated sequence into a sequence of .PCX format files. With this program, you never have to go to the trouble of designing explosion effects again! Best of all, this program is free! Figure 6-16 shows an example of the effects this program can create.



FIGURE 6-16: Example Output of *MkExpl* 3.0

Universe 1.6

Universe is a Windows program that allows you to visually create sophisticated outer space scenes and backgrounds. It allows you to plot realistic looking star fields, nebulas, lens flares, galaxy formations, vortexes, and even several types of planets! The images it generates are suitable for use in virtually any type of space-oriented arcade game. *Universe* is a shareware program and well worth the price, considering the hours it can save you in design time! Figure 6-17 illustrates just what can be achieved with this amazing program.



FIGURE 6-17: Example Output of *Universe* v1.6