

Multimedia Content Development for new Generation Libraries

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ABSTRACT

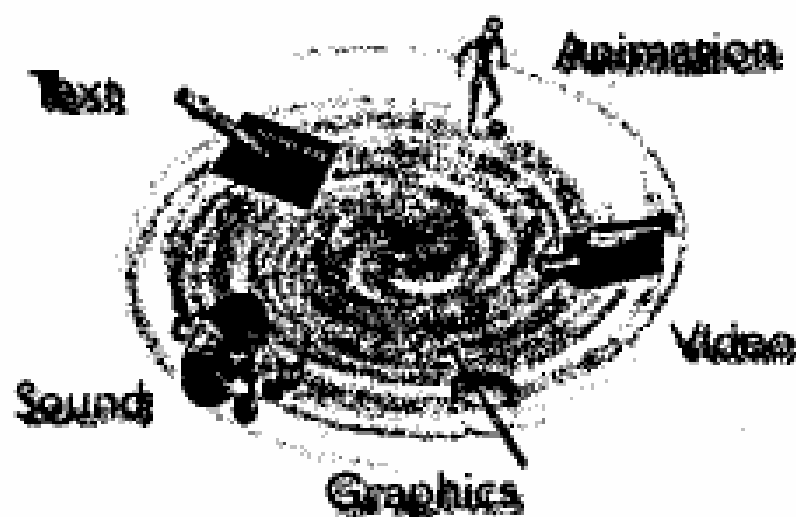
Information Technology has dramatically affected all facets of our lives and Library Services in the new era are no exception. The conventional libraries confined within a physical space are slowly transforming into digital information resources centers through a thoughtful and effective deployment of the technology which is now being used beyond just automating library's routine administrative functions and is catalytic in efficient and effective delivery of library services. However, just the availability of power of IT and digital contents is not enough to effectively deliver the digital/multimedia content unless the content forming part of the library resources is properly planned and designed.

This article gives brief introduction about the use of multimedia in library services, characteristics, current technology trends, pros and cons in using various different types of digital object formats, tools for creating these objects with their merits and demerits and the popular tools for digital content integration.

1. Multimedia defined

The term 'multimedia' has a variety of meanings to

different people. *Multimedia*¹ can be defined as the technology engaging a variety of media, including text, audio, video graphics and animation either separately or in combination, using computers, to communicate ideas or to disseminate information. The applications of multimedia are various and include virtual reality and 3-D presentations. Multimedia has become a generic term for "multimedia computing" or "interactive multimedia".



The computer and its software are used to control and navigate through the communications medium, not only one at the time, but several simultaneously which simulates the real-world and presents unique and innovative opportunities to captivate human senses.

The multimedia computer system

The essential capability of any multimedia computer² system is the ability to convert the analogue signal to a digital format and compress this information using standard algorithms. The power of the CPU determines whether this process can be carried out in real-time or whether it has to be done off-line. The compression process is necessary otherwise the quantity of data to be stored and transmitted would be

excessive. It is now possible to digitize video and audio on desktop computers such as the PC or Macintosh, which makes possible the handling of multimedia material which can be used in support of teaching.

A multimedia computer system thus comprises a powerful high speed central processor, relatively large memory, hard disk and floppy disk drives, CD-ROM, various input and output devices, e.g. microphones and loudspeakers, video input and output devices, e.g. VCRs and video cameras, a still image input and output device, e.g. scanner, high graphics capability to handle both bitmap and vector graphics, a SVGA/XSVGA quality display and mouse.

2. Multimedia components/objects

One or more of the following media and/or their combination form part of any multimedia application¹:

Text

Since computers can display a variety of fonts, innumerable colors and combinations, multiple beautiful colors and backgrounds feature in almost all multimedia applications and the ultimate result appears far better than the printed texts.

Graphics

This includes, pictures, photographs, graphs and charts and other art works. It is this media that makes up a visually fascinating material. The old proverb "A picture is worth a thousand words" still holds true.

Animation

This refers to the artificial movements of texts or other multimedia objects created in virtual environments, using specialized software packages. Animations are primarily used to demonstrate an idea or illustrate a concept. Video is usually taken from life, whereas animations are based on drawings. Animations are perhaps the most interesting part of

multimedia computing but are extensively time consuming and demand heavy artistic capabilities.

Audio

This includes speeches, music and other types of sounds. Audio element is generally used to enhance the usual multimedia environment.

Video

This includes the actual video clips that could be embedded right over the applications and can be played back without a hitch. The sizes of the clippings are usually much smaller than that from video cassette players.

3 Multimedia: Classifications¹

Interactive multimedia

A multimedia application is called an interactive multimedia, if the user participates in every stage of the proceedings as the application advances. The degree of interactivity may vary from application to application. Most of the CD-ROM titles and Games-ware are of interactive nature.

Non-interactive multimedia

Non interactive multimedia is something; say a corporate presentation or a multimedia demo, in which the audience just watch the show as it proceeds from the beginning to the end in a sequential manner.

Entertainment multimedia

All games, multimedia books and novels and multimedia movies are examples of entertainment multimedia.

Educational multimedia

CD based self learning tutors, which try to educate the user in some specific curriculum, along with the

entertainment, constitute edutainment multimedia.

4. Popular image formats

*GIF (Graphics Interchange Format)*⁴

Most computer color images and backgrounds are GIF files. This compact file format is ideal for graphics that use only a few colors, and it was once the most popular format for online color photos. The "GIF" format uses an 8 bit Color Look Up Table (CLUT) to identify its color values. If the original image is an 8 bit, gray-scale photo, then the "GIF" format produces a compressed *lossless* image file. (*Lossless* means that the image uncompressed from the file would be identical to the original.) A grey scale image typically has only 256 levels of gray. This is accomplished by the Run Length Encoding mechanism of compressing the information while saving a GIF file. If the original file were a 24 bit color graphic image, then it would first be mapped to an 8 bit CLUT and then compressed using RLE (Run Length Encoding). The loss would be in the remapping of the original 24 bit (16.7 million) colors to the limited 8 bit (256 colors) CLUT. RLE encoding would reproduce an uncompressed image that was identical to the remapped 8 bit image, but not the same as the original 24 bit image.

GIF has, however lost ground to the JPEG format when it comes to photos because GIF images are limited to only 256 colors but JPEGs can contain up to 16 million colors—and they can look almost as good as a photograph.

Interlaced GIF, A feature of the GIF89a graphics standard, displays images in two passes of alternating lines instead of loading them one line at a time. Depending on which graphics viewer or Web browser is being used, interlaced GIFs may produce a "venetian blind" effect or simply a blurry or blocky image that gradually sharpens. Pages using interlaced GIFs let people see at least the outline of an image sooner; thus the pages often appear to load faster.

than those with non-interlaced graphics. If a browser doesn't support interlaced images, an image will simply appear as a normal (non-interlaced) GIF.

A feature of the GIF89a graphics standard, a transparent GIF lets the background show through selected parts of an image. When creating the GIF, the designer can designate one color in the image's palette as transparent. When the GIF is displayed, areas using that color reveal whatever is underneath. Transparency is most often applied to a GIF's background color to let the page's own background show through, so that images appear to float on the page. Most modern Web browsers support transparent GIFs. Those that don't, simply display the images as normal GIFs.

JPEG⁵

JPEG is a standardized image compression mechanism. JPEG stands for Joint Photographic Experts Group, the original name of the committee that wrote the standard.

JPEG is designed for compressing either full-color or gray-scale images of natural, real-world scenes. It works well on photographs, naturalistic artwork, and similar material; not so well on lettering, simple cartoons, or line drawings. JPEG handles only still images, but there is a related standard called MPEG for motion pictures.

JPEG is "lossy," meaning that the decompressed image isn't quite the same as the one you started with. (There are lossless image compression algorithms, but JPEG achieves much greater compression than is possible with lossless methods.) JPEG is designed to exploit known limitations of the human eye, notably the fact that small color changes are perceived less accurately than small changes in brightness. Thus, JPEG is intended for compressing images that will be looked at by humans.

A useful property of JPEG is that adjusting compression parameters can vary the degree of looseness. This means that

the image-maker can trade off file size against output image quality. You can make extremely small files if you don't mind poor quality; this is useful for applications such as indexing image archives. Conversely, if you aren't happy with the output quality at the default compression setting, you can jack up the quality until you are satisfied, and accept lesser compression.

Why use JPEG?

There are two good reasons:

1. to make your image files smaller, and
2. to store 24-bit-per-pixel color data instead of 8-bit-per-pixel data.

Making image files smaller is a win for transmitting files across networks and for archiving libraries of images. Being able to compress a 2 Mbyte full-color file down to, say, 100 Kbytes makes a big difference in disk space and transmission time! And JPEG can easily provide 20:1 compression of full-color data.

It takes longer to decode and view a JPEG image than to view an image of a simpler format such as GIF. Thus using JPEG is essentially a time/space tradeoff: you give up some time in order to store or transmit an image more cheaply. But it's worth noting that when network transmission is involved, the time savings from transferring a shorter file can be greater than the time needed to decompress the file.

The second fundamental advantage of JPEG is that it stores full color information: 24 bits/pixel (16 million colors). As compared to GIF, which stores 8 bits/pixel (256 or fewer colors)?

When should I use JPEG, and when should I stick with GIF?

JPEG is not going to displace GIF entirely; for some types of images, GIF is superior in image quality, file size, or both.

Generally speaking, JPEG is superior to GIF for storing full-color or gray-scale images of “realistic” scenes; that means scanned photographs, continuous-tone artwork, and similar material. Any smooth variation in color, such as occurs in highlighted or shaded areas, will be represented more faithfully and in less space by JPEG than by GIF.

GIF does significantly better on images with only a few distinct colors, such as line drawings and simple cartoons. Not only is GIF loss less for such images, but it often compresses them more than JPEG can. For example, large areas of pixels that are all exactly the same color are compressed very efficiently indeed by GIF. JPEG can’t squeeze such data as much as GIF does without introducing visible defects. (One implication of this is that large single-color borders are quite cheap in GIF files, while they are best avoided in JPEG files.)

Plain black-and-white images should never be converted to JPEG. You need at least about 16 gray levels before JPEG is useful for gray-scale images. It should also be noted that GIF is loss less for gray-scale images of up to 256 levels, while JPEG is not.

PNG⁶

PNG is an extensible file format for the lossless, portable, well-compressed storage of raster images. PNG provides a patent-free replacement for GIF and can also replace many common uses of TIFF. Indexed-color, grayscale, and true color images are supported, plus an optional alpha channel for transparency. Sample depths range from 1 to 16 bits.

5. Tools for creating multimedia image objects

There are many tools available which one can use to create simple or elaborate drawings, images, manipulate pictures and photos. These objects can be either black-and-white or color and can be saved as a bitmap, JPG, GIF, Tiff or any other popular format. Example:

1. MS Paint
2. Microsoft Photo Editor
3. Paintshop Pro
4. Adobe PhotoShop

6. Popular digital audio file formats⁷

Historically, almost every type of machine used its own file format for audio data, but some file formats are more generally applicable, and in general it is possible to define conversions between almost any pair of file formats – sometimes losing information, however.

File formats are a separate issue from device characteristics. There are two types of file formats: self-describing formats, where the device parameters and encoding are made explicit in some form of header, and “raw” formats, where the device parameters and encoding are fixed.

Self-describing file formats generally define a family of data encodings, where a header field indicates the particular encoding variant used. Header-less formats define a single encoding and usually allow no variation in device parameters (except sometimes sampling rate, which can be a pain to figure out other than by listening to the sample).

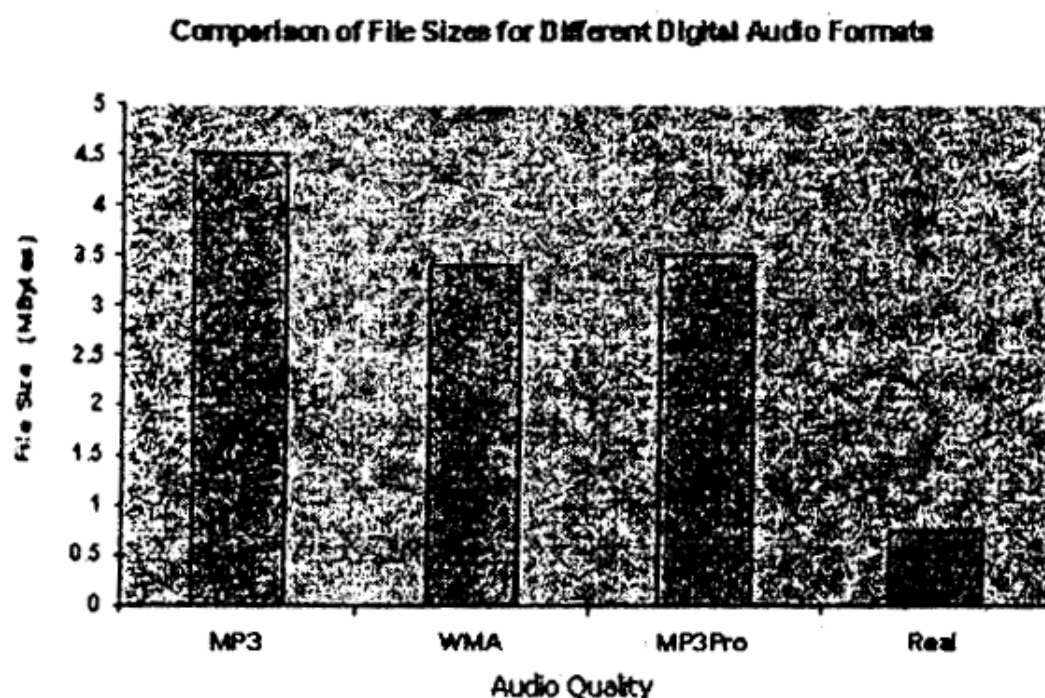
Digital audio data is characterized by the following parameters, which correspond to settings of the Analog to Digital Converter when the data was recorded. Naturally, the same settings must be used to play the data.

- * Sampling rate (in samples per second), e.g. 8000 or 44100
- * Number of bits per sample, e.g. 8 or 16
- * Number of channels (1 for mono, 2 for stereo, etc.)

Approximate sampling rates are often quoted in Hz or kHz ([kilo-] Hertz). Sampling rates are always measured per channel, so for stereo data recorded at 8000 samples/sec, there are actually 16000 samples in a second. The resultant audio files are huge in terms of file sizes as the data is uncompressed.

However, in order to effectively distribute audio over networks it has to be compressed to reduce the data size so that bandwidth doesn't become a bottleneck. There are many different Compression techniques available.

au⁸, aiff⁹, wave¹⁰, mp3¹¹, WMA¹² etc are some of the popular audio file formats offering data compression and making them suitable for distribution of audio over the networks. Following graph shows the comparative file sizes after capturing an audio clip and converting it into MP3, MP3Pro, WMA and RA formats:



From the above graph, it is clear that the Real Audio format offers the best compression and is the most suitable format for distribution of audio over the Internet. However, this compression results in a loss in the quality of the audio. MP3 format offers the best quality with sufficient compression and is very suitable for distribution of audio on CDs and also over local area network (LAN).

In the table on the following page, I have tried to make a comparison of various features of three most popular digital audio storage formats:

Table: Comparison of various features of MP3, WMA and Real audio formats

Features	Audio File Format		
	MP3	WMA	Real
Quality	Excellent	Good	Very Good
Streamable	Yes	Yes	Yes
Bit Rates	128	64	96
Plug-ins	Winamp	Windows Media Player	Real One
Encoding Time	High	Medium	Low
Convertible back to WAV	Yes	Restricted	With Winamp
Availability of portable players	Widely	Available	Difficult to find
Price of portable players	Moderate	Expensive	Very Expensive
Popularity	Most Popular	Moderate	Moderate

7. Tools for creating audio files

1. Windows Sound Recorder - record sound/music clip limited to 60 seconds duration
2. MultitrackStudio - Mix, edit, and record music.
3. RecAll Sound Recorder (<http://www.sagebrush.com>)
4. Nero Burning Rom 5.5 - the latest versions includes an integrated wave file/sound editor
5. Cool Edit Pro 2.0 - Record, edit, and mix multi-track digital audio
6. LAVA burn - you can write MP3 files, wave files and Audio CD tracks on a audio CD. Convert Wave to mp3 with external encoder.
7. MP3 Encoder - lets you convert standard CD tracks and WAV files to constant...
8. Winamp - MP3 player
9. MUSICMATCH Jukebox Plus - lets you Play MP3s, CDs, video, rip CD-quality MP3s, Burn CDs
10. AudioCD MP3-Studio - designed to burn your MP3s and WAV files to audio CD in one step directly to music CDs

1. Popular digital video file formats

A video file format is a standard for encoding digital video, audio and some auxiliary information into a file. In contrast to audio and image formats, most video file formats allow a variety of codecs, both audio and video, to be used.

Auxiliary information often includes:

- * data required for correct synchronization between audio and video
- * subtitles

Popular video file formats are:

AVI (Audio/Video Interleave) ¹³

AVI is the file format used by Video for Windows, one of three video technologies used on personal computers. (The others are MPEG and QuickTime.) In AVI, picture and sound elements are stored in alternate interleaved chunks in the file.

AVI Tools

1. WINAVI 6.0
2. Windows Media Player

MPEG¹⁴

MPEG (Moving Pictures Experts Group) is a group of people that meet under ISO (the International Standards Organization) to generate standards for digital video (sequences of images in time) and audio compression. In particular, they define a compressed bit stream, which implicitly defines a decompressor. However, the compression algorithms are up to the individual manufacturers, and that is where proprietary advantage is obtained within the scope of a publicly available international standard.

Established in 1988, the group has produced MPEG-1, the standard on which such products as Video CD and MP3 are based, MPEG-2, the standard on which such products as Digital Television set top boxes and DVD are based, MPEG-

4, the standard for multimedia for the fixed and mobile web and MPEG-7, the standard for description and search of audio and visual content. Work on the new standard MPEG-21 "Multimedia Framework" has started in June 2000. So far a Technical Report and two standards have been produced and three more parts of the standard are at different stages of development. Several Calls for Proposals have already been issued.

Technically speaking MPEG is not a storage format but standards for digital video and audio compression.

MPEG Tools

1. DCM - a complete package of hardware and software tools for creating MPEG-2 and MPEG-1 content, including VideoCD 2.0 and DVD compliant video
2. Data Translations Broadway - Create quality videonight on your PC.
3. Pinnacle Studio Software
4. Ulead Media Studio Pro
5. Fx MPEG Writer - Create VCDs or DVDs from AVI, MPEG, or Windows Media source files
6. Windows Media Player - MPEG Player for viewing MPEG video
7. Xing - VCD player for viewing VCD and MPEG video
8. Nero Burning Rom 5.5 - the latest versions includes an integrated MPEG encoder for creating VCDs

QuickTime¹⁵

Developed by Apple Computer, QuickTime is a method of storing sound, graphics, and movie files. If you see a MOV file on the Web or on a CD-ROM, you'll know it's a QuickTime file. Although QuickTime was originally developed for the Macintosh, player software is now available for Windows and other platforms and can always be downloaded from Apple's Web site.

QuickTime Tools

1. QuickTime Player: FREE premier multimedia player.
2. QuickTime Pro: Powerhouse media authoring.
3. QuickTime Streaming Server: License free server for streaming digital media over the Internet.
4. Darwin Streaming Server: Open-source streaming server for Linux, Solaris and Windows.
5. QuickTime Broadcaster: FREE live encoder to easily webcast live events over the Internet.

RealTM

Tools from RealNetworks provide the universal platform for the delivery of any digital media from any point of origin across virtually any network to any person on any Internet-enabled device anywhere in the world.

Real Player Tools

1. RealOne Player: A tool necessary for media content to be experienced on the client PC. (Downloadable from <http://www.real.com>)
2. RealOne Enterprise Desktop: A configurable version of the RealOne Player that has been optimized for enterprise deployments.
3. Sound Forge Studio XP 5.0: Streamlined Audio Editor for the Web.
4. Helix Universal Server: The Helix Universal Server is streaming media server software. Able to run on multiple operating systems, RealSystem Server distributes audio, video, and other media to client computers via unicast or multicast delivery. RealSystem Servers are the cornerstone of RealSystem iQ, an integrated media-delivery platform designed for rich media delivery.
5. Helix Universal Gateway: Offers Universal media

delivery and caching capabilities in one integrated solution. Containing all the functionality of the Internet server, plus an integrated universal media cache to reduce bandwidth usage, this server is the ideal edge solution for Service Provider distributed deployments.

Windows Media Video

Windows Media Video (WMV) is a generic name for the set of proprietary streaming video technologies developed by Microsoft. It is part of the Windows Media framework. WMV is not built solely on Microsoft in-house technology. From version 7 (WMV7), Microsoft has used its own non-standard version of MPEG-4. The video stream is often combined with an audio stream of Windows Media Audio.

WMV files are customarily played by Windows Media Player on Microsoft Windows and Macintosh systems. Some third-party players also exist. Raw WMV video is packed into an AVI or Advanced Streaming Format (ASF) container. The resulting files may be named .avi if it is an AVI-contained file, or .wmv or .asf if it is an ASF file, but .wmv files are to be ASF files with audio/video content only.

WMV is usually found in the AVI file container when encoded with Microsoft's Windows Media Video 9 VCM software for Windows. Microsoft's Windows Media Player for the Mac does not support all WMV encoded files since it supports only the ASF file container.

WMV also features digital rights management facilities.

In the table on the following page, I have tried to make a comparison of various features of three popular digital video storage formats:

Table: Comparison of various features of WMV, QuickTime and Real Media formats

Features	Digital Video File Format		
	WMV	Quick Time	Real Media
Resolution	640x480	640x480	320x240
Video Compression	MPEG4	Sorenson, Cinepak, MPEG4	RM
Video bit rate	1000kbps	1000kbps	350kbps
Audio Compression	MP3, WMA, OGG, AAC, AC3	Sorenson, Cinepak, MP3	RM
Audio bit rate	128kbps	128kbps	64kbps
Size/min	4-10MB/min	4-20MB/min	2-5MB/min
Min/74min CD	50-180min	30-180min	120-300min
Hours/DVD	7-18hrs	3-18hrs	14-35hrs
Hours/Dual Layer DVD	13-30hrs	6-30hrs	25-65hrs
DVD Player Compatibility	Few	None	None
Computer CPU Usage	Very High	High	Low
Quality	Excellent	Excellent	Good

2. Popular tools for multimedia content integration

1. Common Word Processing Tools

The most common tools used for computer-generated documents is the native application tools such as:

1. Microsoft Word
2. WordPerfect
3. Microsoft PowerPoint etc
4. PageMaker

2. Postscript¹⁷

PostScript is a programming language optimized for printing graphics and text (whether on paper, film, or CRT is immaterial). In the jargon of the day, it is a page description language. It was introduced by Adobe in 1985 and first (to my knowledge) appeared in the Apple LaserWriter. The main purpose of PostScript was to provide a convenient language in which to describe images in a device independent manner. This device independence means that the image is described

without reference to any specific device features (e.g. printer resolution) so that the same description could be used on any PostScript printer (say, a LaserWriter) without modification. In practice, some PostScript files do make assumptions about the target device (such as its resolution or the number of paper trays it has), but this is bad practice and limits portability.

3. HTML¹⁸

To publish information for global distribution, one needs a universally understood language, a kind of publishing mother tongue that all computers may potentially understand. The publishing language used by the World Wide Web is HTML (from HyperText Markup Language).

HTML is the lingua franca for publishing hypertext on the World Wide Web. It is a non-proprietary format based upon SGML, and can be created and processed by a wide range of tools, from simple plain text editors - you type it in from scratch - to sophisticated WYSIWYG authoring tools. HTML uses tags such as <h1> and </h1> to structure text into headings, paragraphs, lists, hypertext links etc.

HTML gives authors the means to:

- * Publish online documents with headings, text, tables, lists, photos, etc.
- * Retrieve online information via hypertext links, at the click of a button.
- * Design forms for conducting transactions with remote services, for use in searching for information, making reservations, ordering products, etc.
- * Include spreadsheets, video clips, sound clips, and other applications directly in their documents.

Tool for Creating HTML Documents

1. Any popular text editor such as Windows Notepad can be used to create HTML documents

2. Visual Tools such as FrontPage for creating HTML pages

5. Macromedia Tools²⁰

One can create everything from web-based tutorials to sophisticated simulations incorporating audio and video with Macromedia Authorware, the leading rich-media authoring solution for e-learning, deliver applications on the web, corporate networks or CD-ROM, and easily track student results and return on investment.

1. Macromedia Authorware (a complete e-learning solution)
2. Macromedia Studio MX (for rapid development of rich Internet applications with approachable, integrated tools that leverage leading web server technologies and device platforms.)
3. Macromedia Flash MX (Create rich Internet content and applications)
4. Dreamweaver MX (for Build websites and web applications)
5. Fireworks MX (Design and optimize interactive web graphics)

6. Adobe Acrobat - Portable Document Format (PDF)²¹

(PDF) is the open de facto standard for electronic document distribution worldwide. Adobe PDF is a universal file format that preserves all the fonts, formatting, graphics, and color of any source document, regardless of the application and platform used to create it. PDF files are compact and can be shared, viewed, navigated, and printed exactly as intended by anyone with free Adobe Acrobat Reader software. You can convert any document to PDF using Adobe Acrobat software.

PDF is the emerging workflow standard in the multimedia and publishing industry. It also plays a key role in financial services, regulated industries, and government.

PDF offers the following benefits:

- * PDF files can be published and distributed anywhere: in print, attached to e-mail, on corporate servers, posted on Web sites, or on CD-ROM.
- * Platform independent: Whether your PC runs on MS-DOS, Windows, OS-2, MAC, or Sun/UNIX, you can distribute your PDF documents among them all, retaining all of your content, format, fonts, and graphics ... and more!
- * Compact PDF files are smaller than their source files, can be downloaded a page at a time for fast display on the Web, and don't slow down your network.
- * Web Friendly: PDF documents can be viewed directly within Web browser windows that are fully compatible with Netscape Navigator V3.0 or Internet Explorer V3.0
- * Acrobat Reader software required for reading PDF documents is easy to download from the Adobe Web site free.
- * Using Acrobat 5.0 software, you can easily add bookmarks, set security options, and generate miniature Adobe PDF previews. Acrobat 5.0 also lets you comment on and approve Adobe PDF documents with digital signatures, all within a Web browser.

Tagged Adobe PDF

Adobe Acrobat 5.0 software introduces tagged Adobe PDF, an enhancement to the PDF specification that allows PDF files to contain logical document structure. Logical structure refers to the organization of a document, such as the title page, chapters, sections, and subsections. Tagged Adobe PDF documents can be re-flowed to fit small-screen devices and offer better support for re-purposing content. They also are more accessible to the visually impaired.

Tool for Creating PDF Documents

1. Adobe Acrobat 5.0
2. Neevia docuPrinter
3. Jaws PDF Creator & Editor
4. PDF995 (downloadable from <http://site4.pdf995.com/download.html>)
5. PDFEDIT995 (downloadable from <http://site4.pdf995.com/pdfedit.html>)

PDF is one of the key technologies for multimedia publishing. PDF is becoming the 'defacto' standard for publishing on the Internet. By converting every existing or new document into PDF, any document can be published for viewing, navigation and printing by anyone, anywhere, anytime. The look and feel will be exactly the same, regardless of the hardware (computers and printers) or software being used.

7. Microsoft Publisher²²

Microsoft Publisher 2002 business desktop publishing program is designed for business users who are serious about creating professional-looking marketing and business materials without the assistance of a professional designer. A flexible wizard model integrated into the new Task Pane allows users to quickly and easily apply design options to create high-quality newsletters, flyers, brochures, Web sites, and more. With increased support of commercial printing functionality, first introduced in Publisher 2000, and the creation of the Publisher Service Provider Program, business users can easily locate commercial printers, service bureaus, and copy shops to output Publisher files.

Benefits

Work faster with familiar Office tools. Publisher 2002 simplifies the way people work by incorporating popular productivity tools from current and prior versions of Office,

further reducing learning between Office applications. New features include Headers and Footers, Print Preview, customizable toolbars, Office Clipboard, OfficeArt, AutoShapes, thesaurus, Auto Recover, multiple documents, and more.

Powerful design tools for business users. Publisher 2002 offers more than 8500 template options to start creating and customizing common business publications, including newsletters, postcards, brochures, Web sites, and catalogs. Publisher smartly integrates the Office XP task pane to give users thumbnail previews and single click access to important design tasks – Color Schemes, Font Schemes, layouts, and publication designs.

New commercial printing options. These features include a 4-color process and spot color printing, giving you additional options for professional printing. You can search online for a Publisher printer at www.microsoft.com/publisher/printers.

Publish online. Export print-ready Publisher files for viewing on the Web, AutoConvert an existing brochure or newsletter to a Web site, or create a new Web site with the Web Site Wizard. Or, distribute your single page Publisher file as an e-mail message or an e-mail attachment.

8. Adobe Content Server²³

Adobe Content Server is a digital publishing system for protecting, managing, and distributing eBooks and electronic documents. A powerful foundation for creating secure digital publishing systems, Adobe Content Server software helps publishers, libraries, enterprises, government agencies, and application service providers (ASPs) produce, manage, distribute, and protect digital content. Built around Adobe Portable Document Format (PDF), Adobe Content Server ensures the highest standard of security and rights

management while delivering full-fidelity eBooks and other digital content to customers and patrons around the world.

Adobe Content Server 3.0 is available with an English user interface. Documentation is in English and Japanese.

Adobe Content Server packages and distributes digital content in universally accessible Adobe PDF format. Anyone with free Adobe Acrobat eBook Reader software can view the content. The content is easy to use and easy to distribute because millions of publications are created with the aid of Adobe tools such as Adobe FrameMaker, Adobe InDesign, Adobe Photoshop, Adobe Illustrator, and Adobe Acrobat software, they are often eBook-ready, ensuring a huge source of content to satisfy readers' tastes and interests the world over.

8. eBook CREATOR²⁴

eBook creator is incredibly easy to use. If you can work a mouse, you can create eBooks with eBook CREATOR in a snap. It is a complete, ready-to-use system that any information publisher can use to create his own contemporary-style eBooks. It is equipped with a detailed, easy-to-understand instruction manual that walks you through every step of the creation process. eBook CREATOR is so simple, you'll use the manual once and never have need of it again!

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- * ***Complete Help Documentation:*** A step-by-step tutorial explains every menu option, every command, every feature, and every button in an easy-to-understand language.
- * ***Popular Compatibility:*** eBooks created using eBOOK CREATOR use the exact same format as Internet Explorer, making them compatible with the world's most popular web browser. Supported are HTML, DHTML, Gif images and animations, JPEG and PNG graphics, JavaScript, VBScript, Java applets, and all IE plug-ins including the ever popular Flash.
- * ***Internet Linking:*** Create web links within your eBooks to connect your readers to the internet...especially important for links to YOUR website and affiliate programs!
- * ***Password Protection:*** eBOOK CREATOR has tremendous security features to protect your information product from "prying eyes." You may select to password protect your entire eBook, or just protect certain pages and allow your readers a preview of a portion of your eBook before they register for a password.

- Customize your own security message when the reader accesses a password protected portion of your eBook.
- Input up to 1,000 different passwords per eBook to prevent users from “sharing” passwords with their friends. (Each time your eBook is downloaded or copied, it will require a UNIQUE password to unlock the protected pages)
- Link directly to a form or webpage from your website for that specific user to get the password that will work for her.
- *Save Your Projects:* Most eBook compilers miss the mark here. Instead of re-entering all of your settings each time you want to create a new version of your eBook, eBook CREATOR’s system allows you to save your settings and access them anytime you need them.
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bar. Toolbars, buttons, screen position, startup screens and more are all at your creative discretion.

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- * *Splash Screens and Start-Up Messages:* You can add your own splash screen graphic that appears when the eBook is launched. Additionally, you may choose to include a message box that appears as the eBook opens.
- * *Built-In Search Engine:* With this powerful tool, the user inputs a keyword and the search engine lists every page within your eBook that the keyword appears on. Each listing is clickable for instant access to the page.
- * *Custom Pages:* This feature allows you to set up special message boxes when your customers attempt to access a locked page in your trial version.

9. E-book reader software for windows

1. Ghostscript - Postscript Documents Viewer²⁵

Ghostscript is an interpreter for the PostScript language. A PostScript interpreter usually takes as input a set of graphics commands. The output is usually a page bitmap, which is then sent to an output device such as a printer or display. PostScript is embedded in many printers.

Ghostscript has several main uses:

1. Display a PostScript file
2. Display a PostScript file to decide if you really need to print it
3. Print a PostScript file to a non-PostScript printer

Microsoft Reader²⁶

Microsoft Reader 2.0 is a free software application downloadable from <http://www.microsoft.com/reader/downloads/pc.asp>. It is designed to deliver an on-screen reading experience that approaches the convenience and quality of paper. Microsoft Reader is the first product to include patented ClearType display technology, which improves resolution on LCD screens by up to 300 percent to deliver a print-like display. Microsoft Reader also pays strict attention to the traditions and benefits of good typography. It offers a clean, uncluttered layout; ample margins; proper spacing, leading, and kerning; plus powerful tools for marking, highlighting, and annotating your eBooks.

Benefits

Microsoft Reader is setting a new standard for electronic reading. With the new Microsoft Reader 2.0, you get:

- Best-of-breed content support, so you can now enjoy premium, Owner Exclusive content on any Windows-based PC, laptop, or Pocket PC 2002 device
- Greater convenience: Now you can Activate Microsoft Reader on up to four devices and read your eBooks where you want, when you want. New and improved user interface with easier navigation, Web linking, and custom dictionary support.

2. Adobe Acrobat eBook Reader²⁷

Software for the ultimate eBook reading experience making you enjoy the portability, versatility, and interactivity of electronic books. The free Adobe Acrobat eBook Reader software enables you to read high-fidelity eBooks on your notebook or desktop computer – no special hardware is needed! Only this reader software displays eBooks with the pictures, graphics, and rich fonts you've come to expect from printed books. Combining a vivid, elegant reading experience

with an intuitive interface, Acrobat eBook Reader gives you all that eBooks have to offer.

3. TK3 Reader²⁸

The TK3 Reader allows anyone to read a TK3 book that has been made with the TK3 Author. The Reader enables a wide range of user functions, including a notebook, highlighter, "stickie" notes, powerful search options, and more.

It is free and has helpful user features, like:

- * a notebook where you can write notes, save short passages (with source and page number automatically noted), or store audio and video clips
- * searchable "stick-on" notes to place directly on the page
- * a highlighter to mark any text you choose
- * the ability to "dog-ear", or turn down the corners of any number of pages
- * a find button to search both the TK3 book and any added notes. You can also search according to category (for instance, all dog-eared pages and margin notes, annotations only, etc.)
- * enables you to distribute TK3 books through the internet or on a CD-ROM, DVD-ROM, or zip-disk

10. Different popular multimedia formats compared

Text/ASCII Files

Pros:

- * Widely Supported - Text files can be opened on any platform, in any operating system. The only requirement for opening text files is that you must own a computer!
- * Very Small - Text files can be compressed up to 90%, and they're not very big to start with! This means that they will download very quickly.

Cons:

- **Very Plain** - Text files are extremely plain and boring. There is absolutely no way to spruce them up to keep your reader's attention. You cannot change the font and you certainly cannot use bold or italics! The only way to emphasize anything is by using capital letters. Unfortunately, it's common knowledge that writing in capital letters will slow down the average reader by 70%!
- **Very Unprofessional** - If you send your information product out as a text file, you can expect to lose credibility with your customer before they have even read it! If you paid good money for an information package on the Internet and it arrived as a text file, would you be impressed? I think not!
- **Very Insecure** - The word "security" should not even be used in the same sentence as "text file"! There is absolutely no way of securing a text file. If you send your information out like this, expect it to be stolen.

DOC Files - "Microsoft Word Documents"**Pros:**

- **Flexible Layout** - DOC files offer you the flexibility to layout your documents in an easy-to-use, attractive manner.
- **Images** - You are able to insert Bitmap images throughout a DOC file, giving it a little more pizzazz.
- **Password Protected** - You can password protect a word document so that it cannot be viewed until the password is entered.

Cons:

- **Very Large File Size** - DOC files become very big, very quickly. It takes absolutely no time at all for a DOC file to grow to 10 - 15 megs when you add any kind of

special formatting. Could you imagine having to download a 30 megabyte DOC file with a 28.8kbps modem? It would take forever!

- * **Compatibility Risk** – It is true that most computers out there have some type of word processor on them that can support a DOC file, but each one displays it differently. So what may appear to be a beautiful presentation on your end could actually show up as jumbled mess of images and text on your consumer's end. If this turns out to be the case, you will have just lost all your credibility with your customer!
- * **Poor Security** – Above I mentioned that you could password protect a DOC file with Microsoft Word. Unfortunately, that is about as far as the security goes. A password might be better than nothing, but in reality it is only going to keep the honest people honest. Anyone who decides to redistribute or pirate your information can simply hand out the password along with the file. You need to keep in mind that you have no way of limiting how many times the password can be used.
- * **No Copy Protection** – This feature makes a Word document very dangerous to use. Anyone with a word processor is capable of copying your information and pasting it into other documents in infinite quantities. Even if the file is marked "Read Only", you can still copy and paste into other documents!

PDF Files

Pros:

- * **Flexible Layout** – PDF files offer you the flexibility to design your documents in an easy-to-use, attractive manner. In fact, you can import your information directly from your word processor so that it is quick and easy to setup.

- **Images** – PDF files support the use of most common image formats so you can add a little more glamour with some flashy images.
- **Password Protected** – You can password protect a PDF file so that it cannot be viewed until the password is entered.
- **Small File Size** – PDF files have a very good compression ratio so they can be downloaded over the Internet quickly and easily.

Cons:

- **Poor Compatibility** – If your customer does not have the Adobe Acrobat PDF viewer installed on their computer they will be required to download it before they can access your information package.
- **Poor Security** – The security on the PDF file is equal to that of the DOC file; it allows a password to be placed on the PDF file so that you must have the password to open it. Like I mentioned before, a password might be better than nothing, but in reality it is only going to keep the honest people honest. Anyone who decides to redistribute or pirate your information can simply hand out the password along with the file. You need to keep in mind that you have no way of limiting how many times the password can be used.

Custom Built Files - “Macromedia Director”**Pros:**

- **Very Flashy** - Custom built files can be very appealing, as they are custom designed to your specifications. They are also easy to navigate when designed properly.
- **Interactive** - Custom built presentations can be very interactive depending on the capabilities of your designer.

- * Password Protected - Custom built presentations can be designed to include password protection similar to that of PDF files.

Cons:

- * Very Expensive - This is by far the most expensive way to create publish your information online. Unless you are a professional programmer yourself, you will need to hire someone to design and build it for you. Good programmers do not come cheap!
- * Difficult to Edit or make Additions to - Making changes to your eBook will be a hassle because you will need to contact the programmer each time. Again - this gets expensive very quickly.
- * Insecure - the security in custom built software is equivalent to that of the PDF files. Although you may be able to password protect the eBook, you still have no way of controlling whether or not people share their file and password.

HTML Documents

Pros:

- * Extensive Multimedia Support - If you decide to distribute your information in HTML files you can use any Internet technologies that you see on a web page. You can also spice up your presentations with multimedia technologies like Shockwave and Flash. HTML documents allow for extensive image support.
- * Widely Supported - This is probably the most widely supported option so far. All your customer needs is a web browser to read your information and, since they found you on the Internet, they must have a web browser, right?
- * Internal and External Linking - A big advantage to using HTML is the ability to link not only throughout your

documents, but also to external sites on the Internet. This gives you the option of using other web sites as a reference with just the click of a button.

- **High Compress** – HTML is a very compressed format and, since it was designed for the Internet, may be downloaded with relative speed and ease!

Cons:

- **Very Insecure** - Sending your information out in a plain HTML file for people to open up in their browsers is one of the most insecure ways of distributing your product. If someone is so inclined, all they need to do is upload your files to the Internet and Voila !! They would have their very own informative web site!
- **Confusing to Distribute** – If you did decide to package your information in HTML format, unless you had one page of straight text, your end user would be forced to deal with multiple files and images files on their hard drive. This would be a technical support nightmare! Just getting the end user to find the right file to click open your information package in the beginning can be tough enough!

11. Popular ebook formats compared

Following are some of the features, requirements, advantages and disadvantages of some of the major ebook formats:

1. *Microsoft Reader (LIT) Format*²⁵

Platforms: Windows 95, 98, 2000, ME, XP, or Windows NT 4, Pocket PC.

Requirements: MS Reader software, Pentium 75 or higher microprocessor, 16 MB RAM and approximately 19 MB free hard drive space, Internet Explorer 4.0 with Service Pack 1 or higher.

Features: ClearType™ display technology improves

on-screen reading, external HTML linking, audiobook interface, adjustable font size, full text search, bookmark and highlighting capabilities.

Advantages: MS Reader formatted eBooks are easy to create with Overdrive's software packages, have relatively small files sizes, look fantastic and offer a very nice on-screen reading experience.

Disadvantages: MS Reader eBooks can only be read on computers using a Microsoft Windows operating system. The software is tied in with Microsoft's Passport features. Losing your Passport information can keep you from reading books you've paid for. Text is not printable under any conditions.

2. Adobe Portable Document (PDF) Format²⁰

Platforms: Software for reading PDF files is available for all computer platforms and operating systems, including Palm Pilots and Pocket PCs.

Requirements: Requires Acrobat Reader or other PDF reading software. Versions available for PCs with 386 processors and greater, or Mac 68K and greater.

Features: Full text search, variable font sizes, zoom options, external HTML linking, internal hyperlinks, bookmarking.

Advantages: Broad consumer adoption, cross-platform compatibility, great format for printing.

Disadvantages: Although it is the perfect format for document printing, PDF documents are sometimes difficult to read onscreen. The security features offered by PDF writing software is easily circumvented.

3. Adobe eBook Reader (EBX) Format²⁶

Platforms: Windows 95, 98, 2000, ME, XP, NT 4, MacOS 9.0-9.1.

Requirements: Windows Pentium class computer with Internet Explorer 4 or greater. Mac with a PowerPC processor

and Mac OS software 9.0 or 9.1 with Internet Explorer version 4.5 or Netscape Communicator 4.75 or greater.

Features: Bookmarking, full-text searching, notes and highlighting, two-page view, read out-loud (with publisher's permission), display rotation.

Advantages: Improved on-screen readability over regular PDF documents. eBook library page makes books easily accessible.

Disadvantages: Adobe has eliminated all the positive aspects of PDF in its ebook format. Documents are no longer cross platform, the eBook Reader software is buggy and requires a powerful computer to run efficiently.

4. TK3 Format²⁷

Platforms: Windows 95, 98, 2000, ME. Mac OS 8.6 or later.

Requirements: TK3 Reader on Power Mac or Pentium PC with a minimum of 64 MB RAM

Features: Highlighting, bookmarks, sticky-notes, copy text or other materials to a built-in notepad, and more.

Advantages: TK3 Author creates very nice eBooks, which work with both the Mac and Windows version of the reader. Can include text, images, audio and video.

Disadvantages: TK3 Reader uses a great deal of processing power, and can be very slow to load on older computers. Very few people have the reader application already installed.

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