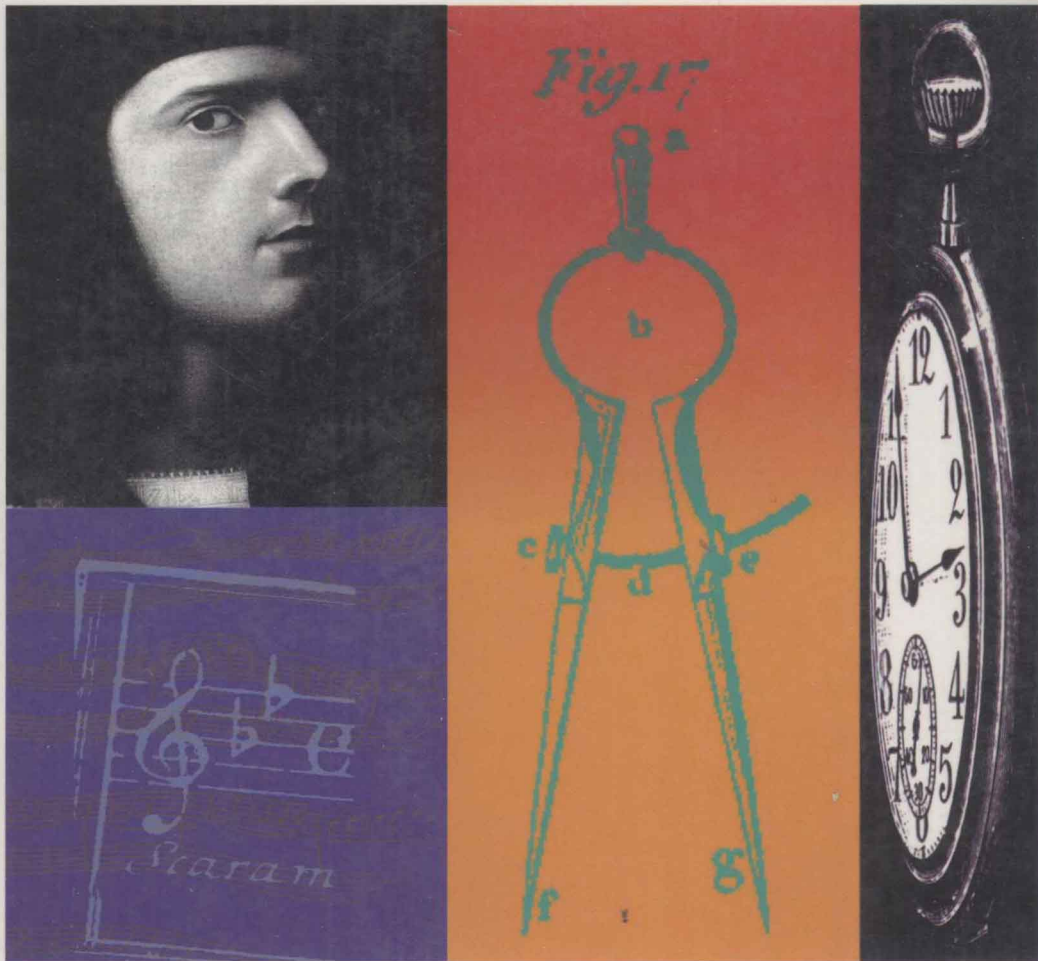




Apple Computer, Inc.

MULTIMEDIA DEMYSTIFIED

A GUIDE TO THE WORLD OF MULTIMEDIA FROM **APPLE COMPUTER, INC.**



RANDOM HOUSE/NEWMEDIA SERIES

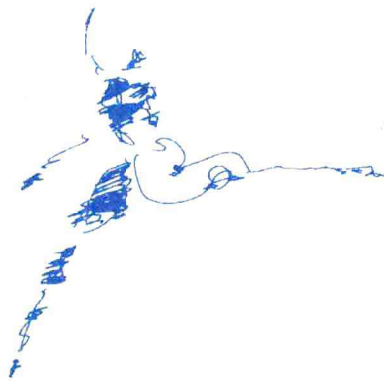


Apple-NewMedia Series



MULTIMEDIA DEMYSTIFIED

A Guide to the World of Multimedia from Apple Computer, Inc.



Multimedia Demystified

Sponsored by Apple Computer, Inc., Multimedia Business Development Group,
New Media Division for the Apple Multimedia Program

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Notes

Notes

Notes

You don't need a crystal ball to see where multimedia is going. What you need is a box.



Actually, what you see here is far more than just a box. Our Orientation Kit is your entree to the Apple® Multimedia Program and your direct link to the future of multimedia. So, whether you're a designer, developer, educator, publisher or marketer — or just looking to get involved — you should get with the Apple Multimedia Program. An annual membership fee connects you to some of the best minds and most successful members of the multimedia community. For starters, we'll send you the Apple Multimedia Orientation Kit plus an ongoing supply of valuable tools, information and updates. Membership includes special discounts, a personal AppleLink® address and a "Members Only" bulletin board that lets you tap into technical and marketing tips and techniques. You'll receive how-to guidebooks and videos with advice from proven developers. You'll see how businesses are using multimedia, and get key market research reports, so you'll know where the opportunities are. There's even a directory of multimedia products and services, so you can find exactly what you're looking for. For worldwide program information or a membership application, call (408) 974-4897.

That way, the future can't happen without you.

Apple Multimedia Program 

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There are many roles in the multimedia process. We've grouped the most common into 12 categories that define the most important division of responsibilities. If you want to get involved in the multimedia industry, these overviews will show you where your skills are needed in the development process.

If you need to hire someone with the skills described in any of these roles, this section will help you identify who these people are and how to find them. It will also give you an understanding of their backgrounds and experiences.

There are many types of multimedia projects. We've grouped the most common into 12 categories that describe what the major issues and concerns are and any differences in the overall process.

If you know what kind of project you want to create (or want to explore the possibilities), this section is a good place to start. It provides a different view of the book based on the perspective from a particular project.

This book is organized around the process of creating and developing multimedia projects and products. This process is a prototypical one and not every section or concern applies to every project. However, most multimedia projects do follow a similar process.



Dear Multimedia Developer,

Hardly a day goes by without a newspaper headline heralding the excitement and the viability of the multimedia marketplace. According to InfoTech, CD-ROM title revenue in 1993 grew by 149 percent to \$9 billion and is projected to reach \$125 billion in 1999.

By year end 1994, Apple Computer will have sold over three million CD-ROM drives, building a critical mass of CD-ROM-based multimedia-capable computer systems. Apple is committed to the establishment and growth of emerging new media markets. This determination is illustrated by the introduction of the Apple Multimedia Program, cross-platform authoring and playback solutions, media-rich system software upgrades, and initiatives for title publishing, distribution, and marketing.

In a recent survey, Dataquest found that new media developers recognized the Macintosh as the premier multimedia development platform by two to one. The introduction of Power Macintosh further strengthens Apple's leadership providing unprecedented performance to multimedia developers.

Multimedia Demystified: A Guide to the World of Multimedia from Apple Computer, Inc. is an example of Apple's commitment to provide resources for developing and distributing successful multimedia products. We created it specifically for current and aspiring new media pioneers, providing information on how to manage the development roles, projects, and process, including interviews of producers and case studies of products.

The future of multimedia begins with you—the developer. Your titles, tools, and ideas will create the demand that will continue to build the market and satisfy the rising expectations of consumers. Apple looks forward to an exciting future, continuing its leading role as an innovator of multimedia technologies, expanding its new media market support, and providing its most important partner—the developer community—with the resources necessary to succeed.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Chahil".

Satjiv S. Chahil
Vice President and General Manager
New Media Division
Apple Computer, Inc.





Introduction

Multimedia is really not such a new medium, but rather old individual media that have come to life together in new formats on new devices and for new personal uses. There are many lessons that the print world, story telling, music and film production can offer about how to make multimedia work as a unified interactive experience. This book enhances those lessons by bringing together some powerful examples and experiences from a host of viewpoints that are very compelling and useful to help shape this new medium.

— S. Joy Mountford, Manager,
Apple Design Center

Multimedia enhances the way people work, learn, play, and most importantly, communicate.

Multimedia is growing up and finally gaining some respect! That “0 billion \$ market” saw a turning point in 1992 when most of the largest players in personal computing and consumer electronics — Apple®, IBM, Microsoft, SONY, Tandy, Dell, Sega, Nintendo — began spending large budgets to advertise and market multimedia products and equipment. Many of the multimedia software tools, vendors, and title developers have even begun to turn a profit.

The fact that you are reading this book means you are probably already involved with multimedia in some way. Many of you may just be getting started in developing multimedia as an extension to your existing work, such as desktop publishing, software development, or consulting. You’re anxious to get involved in the revolution and share in the opportunities this revolution will produce. If you’re ready to jump in and start doing great things, *Multimedia Demystified: A Guide to the World of Multimedia from Apple Computer, Inc.* is for you.

Some of you may have been involved in this growing industry for years and want to strengthen your skills in a specific area. Or perhaps you want to learn about new areas where your skills can be applied. Dive in! This book will present new ideas on how to capitalize on your skills and develop new ones.

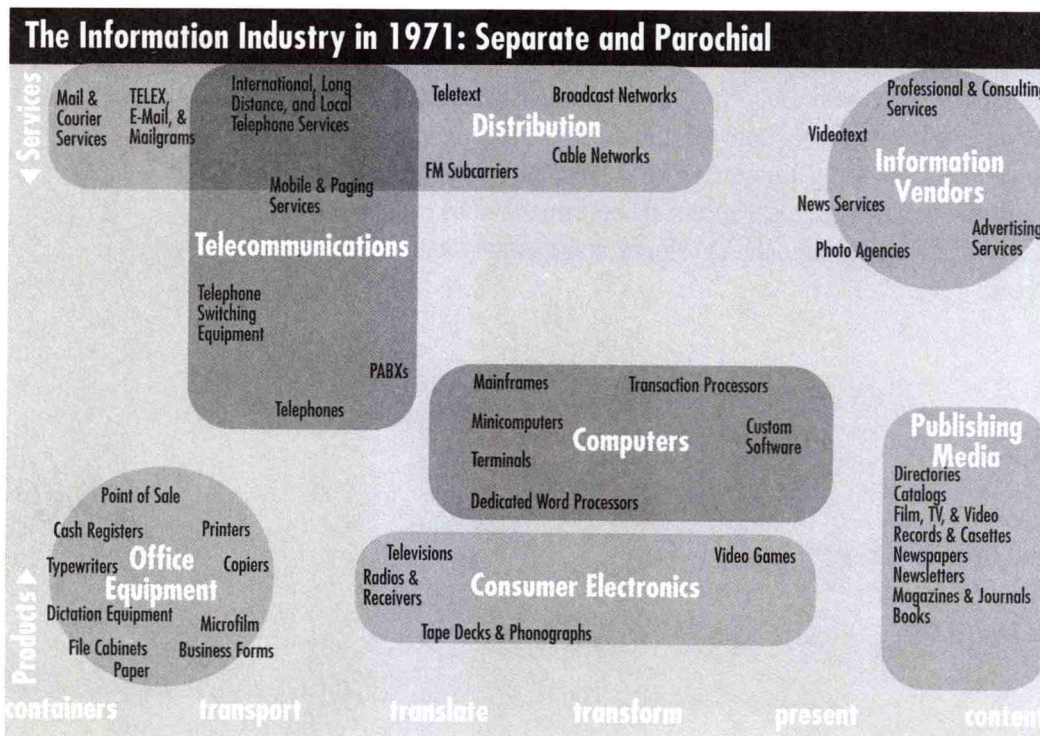
Others of you may just now be getting involved. You’ve watched the industry develop and have thought about joining in when the time is right. Based on many indications, there may be no better time than now. This book will help you overcome the steep learning curve involved in multimedia production.

Still others — vendors, distributors, and **information providers** in publishing, music, art, and education — are on the periphery of the multimedia industry. This book can help you understand the issues facing the multimedia developers you work with and give you numerous ideas on how to enhance your business.

Watch for a Digital Boom...

Something extraordinary is happening on a global scale. Five mega-industries — personal computing, consumer electronics, publishing, entertainment, and telecommunications — are converging. By the year 2000, each of these industries could independently represent nearly **one trillion dollars** in size.

Rarely before has the world seen a merging of different disciplines like this one. For the first time, they will all use a common format. By the year 2000, raw content and information for each one of these industries will be available in digital formats, stored in bits and bytes. Almost everything we see on TV, read in print, view at the theater, and receive over wires or airwaves



will be easily accessible and available anywhere, at any time. We're looking at a **digital boom!**

One of the great challenges with this incredible array of digital information is to provide **interfaces ▶ 32, 131, 209** and **searching mechanisms ▶ 141, 162** that allow people to sift this information. Multimedia represents intuitive and realistic ways for people to sort through this digital web—to present this “content” to consumers who are not programmers or “digital scientists.” It also represents ways for people to customize their interaction with the digital world so that the information they receive through their senses makes the most sense to them—be it aural, visual, tactile, kinetic, or a combination of these. Think of multimedia as an enhancement to the way people communicate.

Multimedia Defined

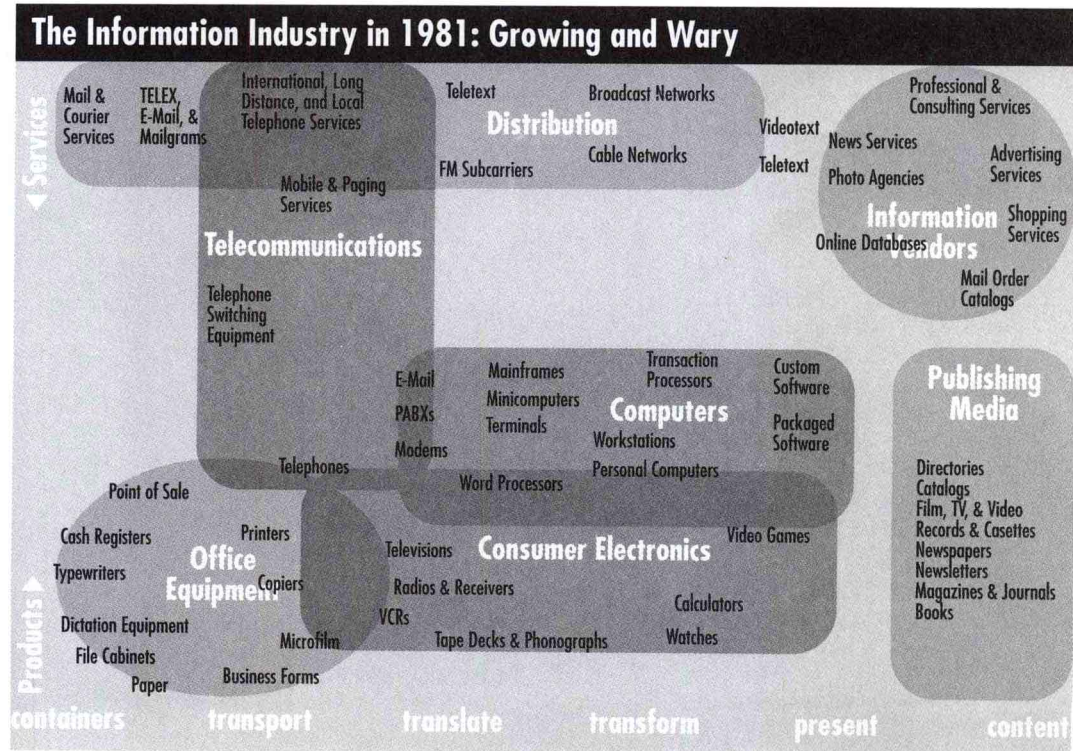
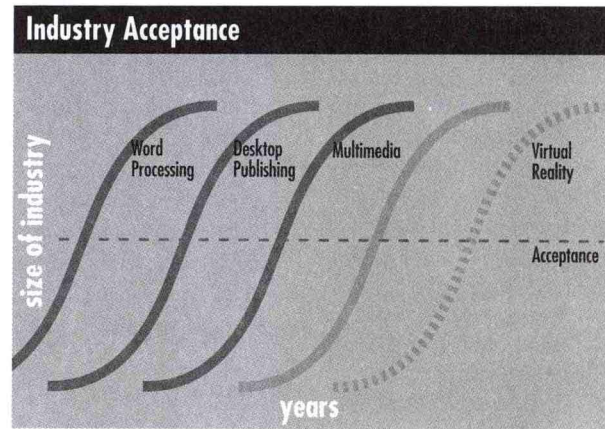
Everyone has his or her own impression of what multimedia is. Some think of it as a slide show set to music, others see it is an interactive retail kiosk, still others believe it is a video game at home on a TV screen. In fact, with the coming of the “digital boom,” multimedia may look like ALL of these. There is no right or wrong definition—it is a continuum of applications and technologies that allow for a wide range of experiences.

In its most basic definition, multimedia can be thought of as applications that bring together multiple types of media: text, illustrations, photos, sounds, voice, animations, and video. A combination of three or more of these with some measure of user interactivity is usually thought of as **multimedia computing**. Although multimedia can span a wide range of platforms and devices, this book concerns itself with multimedia computing on desktop or portable devices, which are used in specific customer applications.

The power and promise of multimedia is that it gives control to the end user. Once content in various media forms is combined, it can be made **interactive**. Users can begin to navigate and choose relevant

information for themselves. Behind this power of choice stands another major trend—customization for both the user and developer. Digital information allows today's multimedia developers to reach individual consumers with specific, tailored content. Multimedia is at the heart of this trendization with interfaces and options that allow consumers to interactively control the content they want to view.

Since there are so many definitions and examples of multimedia, it may be helpful to view the possibilities on a continuum of complexity and types of **interactivity ▶ 95, 113, 128**. At one end of the spectrum are the simplest and least interactive projects that make use of only two or three types of media. Early videotext or children's computer games using 8-bit color graphics are two examples of these.





Introduction

The whole focus of the industry in the late 1970s was the business of making computers do things. It was all technology and programming. Then the Macintosh® computer came along and popularized the graphical user interface. All of a sudden, the computer changed from being 100% code and all technology to 80% code and 20% graphics. Graphic design and user interface metaphors were part of the mix. It wasn't just a matter of writing code, you had to have artists to make drawings. This spawned a number of applications that took advantage of the incorporation of graphics in programming—desktop publishing and presentations, for example.

Now we are at a point where we are incorporating all these dynamic media and developing content. The whole ratio flops around. The graphics and dynamic media become 80% and the programming is 20%. The accumulation of content is the critical piece of the puzzle.

—Barry Schuler, Medior

At the other end are the highly engaging, highly interactive, and **adaptive projects** ▶ 51, 95. These applications may be displayed on a computer screen, TV screen, or in a theater environment, but they all have one thing in common: Users are highly engaged, in control, and almost “surrounded” with multiple media. For example, a training product for the U.S. Air Force might teach pilots how to fly using multiple media to simulate “real-world” flight. Such a system might reconfigure itself to the user's reactions and information.

One area thought by many to be the ultimate form of multimedia is **virtual reality** ▶ 121, 158, a computer environment so realistic and so interactive that the user's senses interpret images as real. The technology to fully accomplish this “suspension of disbelief” may not be as many years away as once thought. The power of today's simple video games to engage children is so tremendous, imagine the power of multimedia when taken to this extreme definition.

Different Markets and Different Processes

The multimedia industry today is comprised of numerous applications of multimedia across many different markets. In 1992, after a study of over 25 multimedia research reports, Apple categorized multimedia applications into six major solution classifications.

These six general market **solutions** allow us to view the full spectrum of multimedia projects or products for multimedia developers. These classifications cut across market boundaries, such as home, business, education, and government. The wide variety of both **casual multimedia** ▶ 92 and **for-profit** solutions suggests opportunities in both the private and public sectors. The classifications can never be exact, since there are many areas of overlap between these segments. For example, an interactive brochure for a travel agency might be viewed both as an information management tool, like a kiosk, and as a communications and sales presentation tool for the travel agent.

Every month, new classes of applications emerge. With the arrival of portable multimedia devices in 1993, even more revolutionary applications are sure to emerge. Portability from one location to another will enable people to take their multimedia with them and use the information anywhere at any time. Portability from one platform to another (for example from desktop computer to handheld consumer electronic device) will enable new uses of multimedia.

Perhaps the most important question to ask is, what justifies the use of multimedia for various applications? Is it the level of control that it delivers to the user? Is it the presentation of material in new and informative ways? Is it the ability to captivate and engage the user? Is it that multimedia saves time, resources, travel, or other costs? Is it that the brain absorbs and retains more

