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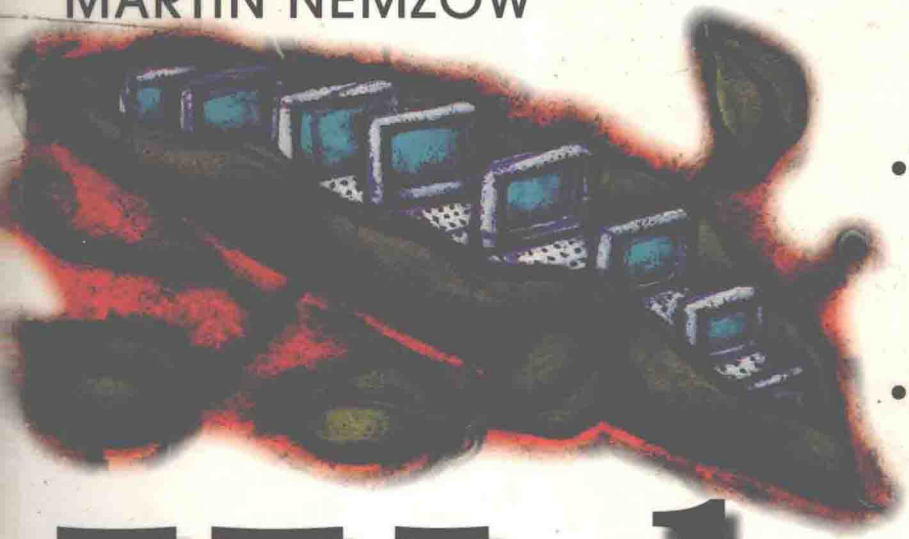
MARTIN NEMZOW



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With love to Carol Weingrod. Special love and thanks to my children, Sophie Esther and Gabriel, for their devotion to me and their own efforts to create video clips. They beta-tested some of the "kid-proofed" installation and desktop gear and tried out the networked multivendor videoconferencing gear. Special thanks to all the helpful people who provided special effort to complete this project, including the editorial staff at McGraw-Hill, and vendors who loaned hardware and gave of their knowledge to this project.

PREFACE

Introduction

Video technology is changing our lives and business by altering how we view products, services, advertising, and the people who communicate with us. Image presentation represents human communication evolution from grunts and signs to culturally independent conversation and articulation. It is the most universal medium developed so far. Video is not a gee-whiz technology and certainly not one to be placed high up on a pedestal; it is practical, widely available, and cost-effective for individuals and organizations today. Video is a technology available to those who are not necessarily technically savvy. Technology has advanced to where video presentation is affordable and practical. Costs for video production for distribution as video mail, streaming video, or clips over the Internet range from less than $40 to more than $20,000 for studio-grade film production. These prices assume that the user already has an operational computer system. Furthermore, this computer need not be some high-end PowerMac, Pentium Pro, or SGI system. The video products and techniques shown in this book and conferencing setups run just fine on an Intel 80386 or low-end Macintosh PCs.

Actual videoconferencing hardware and software is available at less than $150. Street prices and freeware push these costs lower than $75. I have seen remanufactured cameras advertised for less than $60. Low-end modems are available for $25; even modems supporting 28.8 kbps are available for $45 at the time of writing. Duplexed sound boards are available for as little as $16. Microphones cost from $5. Multimedia speakers cost from $2.95. Low-end conferencing and videoconferencing software are available for free on the Internet from Intel, Microsoft, and Cornell University, to name but a few sources. This same configuration also makes the marginal cost of capturing a still image (that is, one single frame) virtually free. Video technology will change the economics of photography and will have a significant bearing on Web site technology, which in turn will increase our need for image management technology, compression methods, and online disk storage. There are other issues in videoconferencing besides a low entry price, but videoconferencing and Web video is here to stay and become an integral part of corporate and personal communications. Although switched digital videoconferencing has been around for about 14 years, market penetration with videoconferencing over standard telephone lines

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and the Internet sets the turning point for this technology. Videoconferencing is fun—for personal calls. Let's face it. If you do not have it, you think about it and want it, well, because it is a status symbol. It is proficient for personal communications. It is impressive in the corporate environment. It is admittedly a little different in business; its fun lasts for about fifteen minutes, when it becomes another tool with extra demands and causes a significant feeling about loss of personal privacy, lack of control over time scheduling, and another responsibility. Without guidance, it can become an unwelcome intrusion. If the technology is mishandled, it represents a real security risk, a confrontational and divisive medium, and thus an employment risk. While there are many great things about Web video delivery videoconferencing and many benefits in a corporate or organizational surrounding, it is not without risk. One of those risks is that you must learn how to manage your video presence, your emotions, and personal intercommunication skills.

Nonetheless, new technology like video delivery and videoconferencing represents the new, must-have status symbol and new wave of office automation, much like answering machines, facsimiles, faxback and fax-on-demand, caller ID, conference calling, and voice mail. While you cannot delay or control the acquisition of this technology for long, you do need to learn how best to use it, benefit from it, and weave it into you and your organization functions. Video is not a question of "if" but rather "when."

Face it! Any corporate staffer can buy one of these products from a discretionary budget. Who needs management approval? How will you prevent the purchase? Videoconferencing is here and growing. Although computer-based video presentation has been available for over ten years and videoconferencing for at least eighteen years, the major transformation has been in its universality, cost, and bandwidth requirements. All the pieces are now in place for the desktop digital video revolution and Internet delivery. The personal computer has become our primary tool in the workplace. It is the virtual filing cabinet for customer files, financial data, presentations, and all the other documents to conduct business on a daily basis. Conducting business means communicating.

Video is the consumer toy of choice, and videoconferencing is the home gimmick. The industry is positioning videoconferencing as a consumer product because there are 243 million potential consumers just in the United States. You can pitch this product to well-heeled grandparents and their grandchildren, as shown in Fig. 1. What better way to bring families around the world closer than with video mail and live videoconferencing?

Nonetheless, videoconferencing as the comprehensive, stand-alone communication medium misses the benefits of process and desktop integration. Although personal connections remain important in fam-

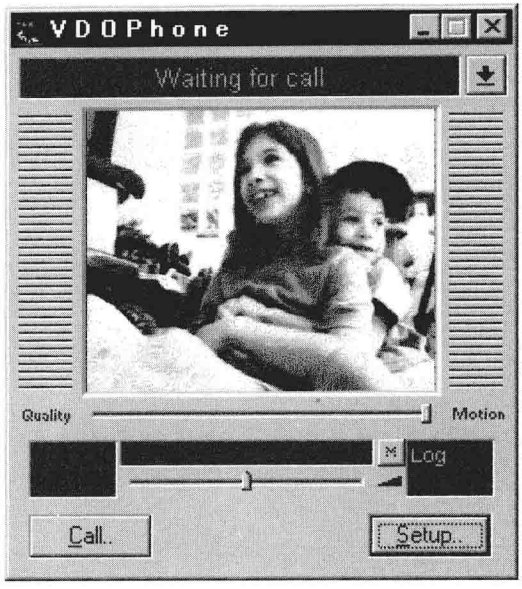

Figure 1
"Grandpa, I miss you! When are you coming to visit?"

ily relationships, increasing competitive pressures and global business make video a medium of choice, because it is inexpensive, universal, and powerful. When videoconferencing is integrated into desktop applications, corporate workflows, and enabled with document sharing, it delivers some of the promises for working from anywhere and anytime with anybody.

This book shows you that videoconferencing is not just a front-line corporate tool or the gimmick for the "Hello, Grandparent!" market. It is also a tool for efficient collaboration, technical support, and direct sales. Although there are tradeoffs in videoconferencing and video delivery between quality, size, bandwidth, and costs (to some extent), the virtual video clip and videoconferencing is closer to the real thing than the POTS and better than anything else yet. What most people do not realize is that videoconferencing was an important underground Internet service before vendors and trade magazines recognized its significance. Like Internet telephone services, the marginal cost for video delivery over the Internet, Intranet, LAN, and private or dedicated WANs is zero. It is virtually a free service now. The scramble began in 1996 to bring video products to the masses. Video really represents a new wave in communications, more profound to everyday workflows, processes, businesses, and people than just a novel technology.

Martin Nemzow
January, 1997

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CHAPTER 1

Overview

Introduction

Video delivery on the Internet and videoconferencing represents the beginning of a transition from symbolic communications to universal visual communications. We have the ability to communicate any place at any time to anyone almost anywhere with the POTS, Internet, and expanding wireless networks. All the components are in place to make video an efficient, probable, and cost-effective technology. It is conceit and arrogance that video delivery and videoconferencing are technologies best left to experts and trained MIS people. Video is an easy and straightforward technology for everybody. The most serious complication is relearning how to communicate in a collaborative environment. Although you are likely to encounter some confusion and installation problems as a matter of course, that is just what this book is about—helping you identify, address, and resolve these simple problems. While vendors have previously positioned video production and videoconferencing as expensive and high-end production techniques, the market has changed. The products are inexpensive and simple. The desktop requirements are inexpensive, and cheaper delivery methods have simplified and made video a universal computer medium. In fact, most delivery channels are already in place, so that the cost of one extra video stream or a video conference call is really zero! This is most evident by the current crop of consumerlike business hardware/software catalogs showing video production software and hardware and videoconferencing as high-visibility items. A collage from Tiger Software shows this in Fig. 1.1 and reinforces the mainstream value and viability for the economical implementation of desktop video.

The Purpose of This Book

The marketplace has a number of books about videoconferencing, streaming video, video production, and Web site design and implementation. These are valid niches for books. Many of the books are user manuals to supplement sparse vendor or product documentation. Some discuss the more technical production methods for making movies or dealing with video production. This is the first book to tie the practical issues with the technical ones; it addresses infrastructure, performance, quality, product selection, installation, and implementation within the framework of internets, intranets, LANs, and point-to-point connections that forms the larger global communication infrastructure. *Web Video Com-*

Figure 1.1
Primitive, although effective, market research showing videoconferencing as a corporate mainstream and "fun at home" product. (Courtesy of Tiger Software Systems)

plete assumes that you can install and use most consumer products and that you know how to call technical support for help and access a Web site for answers to frequently asked questions (FAQs) or search for technical answers, configuration issues, and lookup addresses.

In addition, *Web Video Complete* leaps forward to deal with the next layer of technical and practical questions. This includes: what do you do with video and videoconferencing, how do you deploy it, how do you get it to work over POTS, ISDN, LANs (now also referred to as intranets), WANs (remotely managed intranets), through public switched telephone networks (PSTNs), and of course on the Internet and parallel but private and secured WAN links between LANs (now referred to as extranets and virtual private networks, or VPNs) and combinations of these communication channels. Because the book mixes practical information with hardcore details, the companion CD-ROM includes not only demos of many videoconferencing products and add-ins, but also the applications and tools to build videos and hotspots on videos and view motion video files and streaming videos from the Internet.

This book also details the hard-learned tricks and tips for integration and implementation—things they do not usually teach in school or include in product literature and technical manuals. I hope you find that

this book has the highest density of technical tips and user tricks per page while still retaining a practical framework when working with video and videoconferencing. The book includes a lot of practical knowledge about video production, videoconferencing, and workflow integration. Collaboration and workgroups are covered, too. Concerns about hardware platforms, standards, compatibility, and other practical working issues are addressed in separate chapters. The bottom line is always about what is practical, what works.

Many videoconferencing products are marketed for home PCs with Intel 386 processors and Macintoshes rather than the latest Pentium derivatives. In fact, the largest share of installed worldwide desktop systems are these older, less powerful systems, as Fig. 1.2 shows.

These older platforms, particularly the Intel-based computers, may furnish enough horsepower, but many such PCs lack the motherboard configuration compatible with the bus cards and port cameras; this book shows how to solve this problem efficiently, even recycling these old PCs as functional video servers. *Web Video Complete* includes material to train you to be a digital director and remain ahead of the curve for producing useful and truly interesting video clips for your subordinates, peers, bosses, customers, potential customers, and even product and stock analysts from outside companies. The shift to digital presentation, metaphorically suggested in Fig. 1.3, is driven by the lower costs of 3-D presentation creation, desktop digital editing tools, and faster production times.

You will also see images throughout this book that revert to metaphor, just like the prior one. While there are many people who lack imagina-

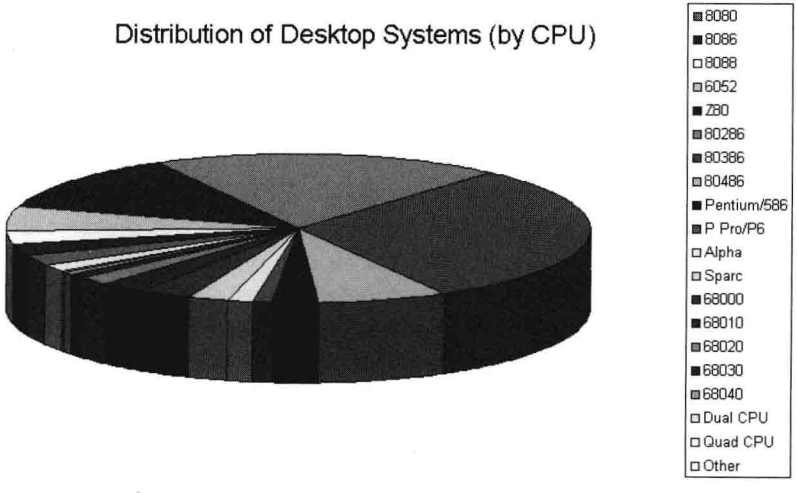

Figure 1.2 Desktop systems (accessing the Internet) by CPU. (Courtesy of Georgia Technical Institute, 1996)

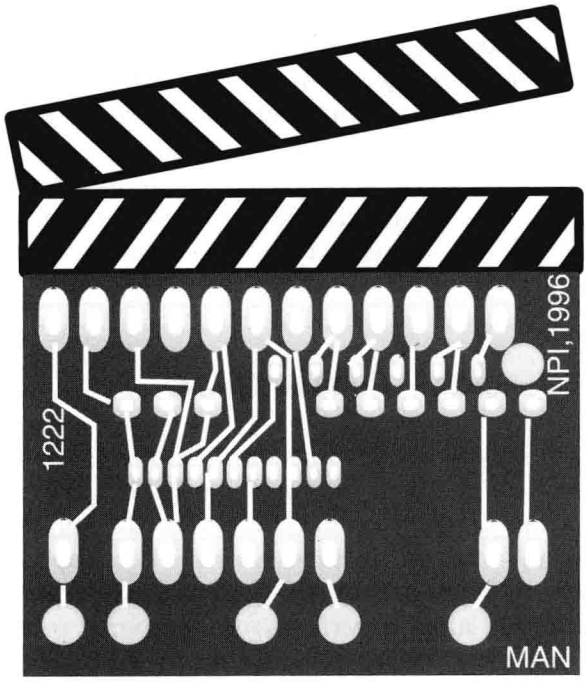

Figure 1.3
Video production is becoming a desktop workflow application, much like word processing, graphics, imaging, or corporate accounting.

tion, many more get a laugh from a funny juxtaposition, an allegory, or a pun on image contents and words. For this reason, the images in the book were selected to illustrate a difficult point or reinforce a visual concept. Photographs, montages, computer art, scans, and 3-D constructions are fair content for the new Web sites, backgrounds in videoconferencing, and overlays in streaming videos. Images and videos are now appearing on the Web that look as though they were shot in a photo studio but were manufactured with tools such as Ray Dream Studio that are faster, cheaper, sometimes equal in quality and effect, and less stressful than sending out materials and people to the studio. This bypasses film development time, stage and background setups, and model costs. Productions such as *Toy Story* demonstrate an artistic recreation of reality at lower costs than possible with wires, stop-action photography, and bluescreen techniques.

Additionally, the purpose of this book is to show you how to integrate digital video and videoconferencing when it is ripe and ready and cook into your stew of enterprise networking and telecommunications so that it benefits your big picture and provides remote desktop collaboration for distributed teams. Streaming video and videoconferencing is effective

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