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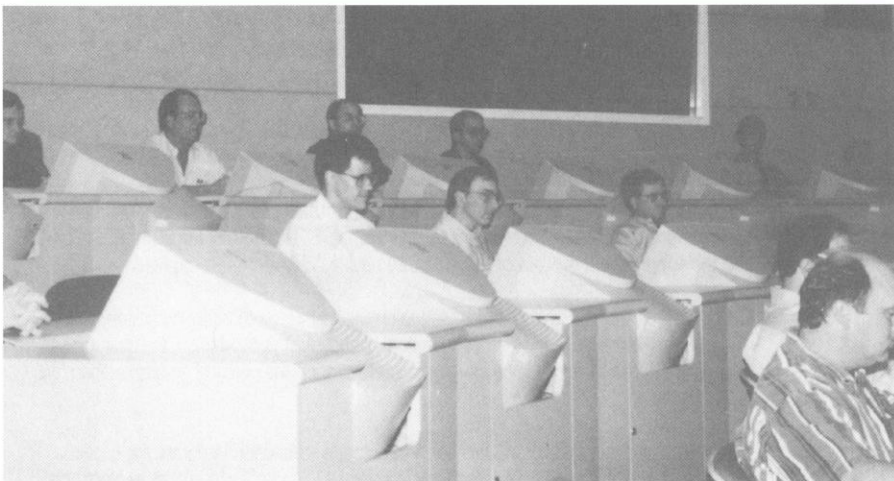
AICPA

InfoTech

Practical Advice For Implementing Technology

UPDATE

AICPA Information Technology Section Announces Top Technologies for 1996



Participants in GDSS lab developing list of top technologies.

Image processing, the practice of converting paper documents (e.g., charge slips, mail, and other original source documents) into electronic documents (i.e., digital images) by scanning was deemed the technology that would most impact CPAs in the upcoming year. Slipping past electronic data interchange (EDI)—the technology chosen last year—image processing was chosen over other technologies when evaluated in terms of four functional areas.

The annual list is compiled by two AICPA groups, the Information Technology Practices Subcommittee and the Information Technology Research Subcommittee, at a joint committee meeting where Group Decision Support System (GDSS) technology is used to generate the listing. See further discussion of GDSS in sidebar article.

The participants began with a list of 56 defined technologies/concepts and practices derived from data compiled in last year's session and updated for new developments since then. This list was evaluated to

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Gadget of the Quarter—
Phone Blaster™

determine the impact each item would have in each of four CPA functional areas in the coming year: accounting and auditing, taxation, consulting, and finance and operations. The participants in the GDSS then considered how implementation of the technology in each functional area might impact revenue potential, organizational productivity and effectiveness, personal productivity and effectiveness, as well as the effect each item might have on the risks and exposures existing in the CPA's professional environment. Finally, each item was evaluated to determine its stage of development/acceptance and use in practice. Ratings range from 1 to 4, where 1 signifies a new or emerging technology not yet in significant use commercially, and 4 signifies a technology/practice now extensively in use.

The result of this multi-step process is both a list of technologies CPAs need to be aware of in order

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to "just keep up," as well as some that might enable CPAs to approach that fleeting and elusive state of being "on the cutting edge." The underlying philosophy of this whole process is that technologically savvy CPAs will be able to provide better service—whether it is to their clients, or to the organization in which they work.

The Top 15 Technologies for 1996 are presented in EXHIBIT 1. The listing is arranged in rank order, offers a numerical equivalent corresponding to the technology's degree of everyday use (stage rating), and also includes a definition of the technology.

The members of the Information Technology Practices and Research Subcommittees who work together to develop this list represent the opinions of AICPA members from all disciplines: public practice, industry, and academe. This year, the session was again facilitated by AICPA Information Technology Executive Committee member Ev Johnson, of Deloitte and Touche. Other participants are listed below. From the IT Practices Subcommittee: Tom Diasio of Ernst & Young, who served as subcommittee chair; Ken Askelson of JC Penney Co.; Steve Bare of Savannah Software; Bill Creps of Rogers Seed Co.; Phil Friedlander of Ernst & Young;

Mike Persh of Keane Federal Systems; Chris Reimel of the NJ Department of Labor; and Bill Zimmerman of French McGowan & Co., P.C. From the IT Research Subcommittee: Mark Eckman of AT&T, who served as subcommittee chair; Jan Monroe of MicroMash, who served as subcommittee vice-chair; Wayne Harding of Great Plains Software; Mike Harnish of Lotus Development Corp.; Dr. Elise Jancura of Cleveland State University; Roman Kepczyk of Varney, Mills, Rogers, Burnett & Associates; Mark Payne of KPMG Peat Marwick LLP; and Dr. Larry E. Rittenberg of the University of Wisconsin. **IT**

EXHIBIT 1—TOP 15 TECHNOLOGIES FOR 1996

Rank	Stage	Technology Description	Definition
1.	3.0	IMAGE PROCESSING	The process of converting paper images (e.g., source documents, mail, etc.) by scanning into electronic documents (i.e., digital images). This might include gathering blocks of information for document identification purposes, indexing, subsequent retrieval, or further processing (e.g., document matching, additional document creation, document auditing).
2.	3.6	EDI: ELECTRONIC DATA INTERCHANGE	The automatic, electronic (paperless) execution of routine business transactions between two or more business partners in a standard format. EDI is used by large retailers to manage the supply chain process of merchandise back to raw material suppliers.
3.	3.3	SECURITY (e.g., encryption, etc.)	The policies, procedures, and methods used to ensure that access to information systems (IS) resources is restricted to authorized users (system confidentiality). In addition, the guarantee that IS resources will be available on an on-going basis to support the needs of an organization (system availability).
4.	2.5	ELECTRONIC COMMERCE	The use of computer and communication technologies to link and integrate the business processes of multiple enterprises. Electronic commerce includes such services as electronic mail, electronic data interchange (EDI), electronic funds transfer (EFT), groupware, workflow automation, electronic publishing, product data exchange, and bar coding.
5.	3.2	COMMUNICATIONS TECHNOLOGIES	Taking advantage of these technologies involves the process of packaging and transmitting data, text, voice, and/or video information among users. An example of the use of communications technologies would be the ability of two individuals to communicate over the Internet using a combination of technologies such as modems, LANs, gateways, TCP/IP, satellites, etc.
6.	2.6	WORKFLOW TECHNOLOGY	Technology that enables workgroups to move and manage information among themselves. This is accomplished through the creation of predictable processes and the institution of increased controls over the flow of information between these processes.

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7.	3.9	AREA NETWORKS	Defined as computers at different locations linked by data communications technology to share computer resources. Examples are local area networks (LANs), wide area networks (WANs), and value-added network services (VANS).
8.	2.6	COLLABORATIVE COMPUTING & GROUPWARE	Software designed to help teams of people work together in smarter, faster, more productive ways. It helps optimize the potential of the network by giving every member in a team the ability to view and update documents, share ideas, and access applications, enabling him or her to simultaneously think, do, and plan. As a result, consensus can be reached more easily, work flows handled more smoothly, and the right decisions arrived at more quickly.
9.	3.1	COOPERATIVE AND CLIENT/SERVER COMPUTING	The distribution of processing functions between two or more computers. Whereas cooperative computing is the sharing of processing and resources among the servers involved, client/server computing distributes the processing functions between the workstation and server more efficiently.
10.	1.8	INTELLIGENT AGENTS	Software used to inquire of other databases, systems, or networks, based on the specific needs of the user. Agents can range from requests for information (finger commands on the Internet), to broad-based searches across vast networks of data, to the performance of specific tasks.
11.	3.0	BUSINESS PROCESS RE-ENGINEERING	An approach to improving business processes which fuses information technology and continuous improvement. An example of this process is replacing tellers with automatic teller machine (ATM) equipment.
12.	3.6	MAIL TECHNOLOGY	The various technologies available to shorten response time and to make businesses more efficient. Alternatives include the postman (snail mail), voice mail, electronic mail, video mail, and active messaging.
13.	2.1	EXPERT SYSTEMS	A focused form of artificial intelligence, which enables computers to mimic the processes of the human mind. Includes computer programs that incorporate certain amounts of expertise or knowledge derived from human sources. These programs are used by a decision maker to assist in the decision-making process.
14.	3.0	QUICK RESPONSE	A business strategy by management to fully utilize technology and partnering by retailers, suppliers, manufacturers, and raw material providers to better respond to changing customer demands. Technologies supporting QR include point-of-sale/SKU-level transaction processing, barcoding/scanning, electronic data interchange, automatic reorder/replenishment, automatic shipping notices/shipping carton markings, and networks.
15.	2.7	TELECOMMUTING	A business practice providing greater flexibility to the workforce with the potential of enabling people to work smarter and more efficiently. It focuses on the work being performed rather than where it is being performed. An alternative to the traditional configuration of four walls, a desk, phone etc., the telecommuting office is perhaps better referred to as the virtual office.

Group Decision Support System

GDSS is a technology that enables the participants of a group to increase overall productivity by enabling "better" decisions to be made. Group work is a fact of life both in professional services firms as well as at their clients' and is becoming critical to the survival and success of both. Information technology available which can aid the group deliberation and decision process. This is where GDSS comes in. The technology is usually a network of some type connecting a number of PCs with a file server. This network has the capability of displaying information on large screen monitors in a designated room. The display capabilities include not only the individual PC of interest but the aggregation of responses made during the session. The session may focus on any or all of the following group tasks/processes: brainstorming, nominal group, Delphi surveys, assumption surfacing, policy formulation, issue analysis, alternative evaluation, stakeholder identification, strategic planning, or any other matter which a group may debate. Group decision support facilities can assist in handling the need to come to some consensus while providing for anonymous input from all concerned.

Text Retrieval: The Why and How of Getting Started—Part 2

By Bruce I. Winters, CPA, CISA

Bruce Winters is a senior manager with the national office of Deloitte & Touche LLP in Wilton, Connecticut. In this article, Bruce discusses why text retrieval has become a major tool for professionals using PC computing. Part one of the article (see Fall '95 issue) explains how this technology is used. Part two of the article follows and explores just how to get started. This material will assist professionals in the evaluation of available commercial retrieval titles (i.e., AICPA Professional Standards—part of the Electronic Research Series using FOLIO Views) and their value-added potential.

External & In-house Applications

The following discussion provides an overview of how to get started with the purchase/development of a text retrieval system. There are no universal solutions, but the simple model below has worked successfully in many different projects.

Where to Start?

Its as simple as 1-2-3

1. Purchase one or more of the commercial text retrieval system titles available. Begin with one of the AICPA Folio products and test it to determine which of its access and media functions is suitable.

Then, use this as a benchmark for customized requirements. Determine what work is done by each staff level and the most effective access methods for these tasks.

2. Consider and weigh the development stage of the practice, staff experience, specific industry expertise, the

volatility of the information, the criticality of updated communications, and client needs.

Focusing on the volume of information, the volatility of the sources, and the level of internal relationships (type of system) in the raw data will help determine the type of system that should be developed.

3. Consider the use of technology in the firm and the investment the firm is willing to make in tools for authoring and delivery. A wide range of hardware and software options are available; choices will depend on the requirements. What delivery medium (diskette, CD, LAN, WAN) will be utilized? Is there a need for cross-platform operations? Will multimedia elements (voice, graphics, animation) be included?

Suppose that multimedia features are desired. Certainly, such systems can produce very stylish and accessible types of presentations. However, creating and integrating these features will also add to the cost of the system. Therefore, it is important to select only those multimedia capabilities that actually help to communicate the firm's message. Keep in mind that multimedia standards and hardware/software environments are changing quickly. Multimedia features also require a more sophisticated development and delivery platform. Current popular business titles include tests, graphics, and minimal audio.

Full-motion video and animation will improve a presentation, but overall they may not be worth the extra investment.

External Databases

Although there are many commercial titles presently available in the marketplace, the quality is varied and the added value is not consistent. Many

A Case Study

Deloitte & Touche has been committed to the art of text retrieval on the desktop for the past seven years. This objective arose from the need to manage the vast amount of information in the profession by structuring it intuitively in one place and without requiring a learning curve.

In 1988, the CD-ROM-based delivery system was designed for the use of national office professional researchers as well as the needs of partners and staff. The system, revolutionary at the time, has since evolved according to the demands of the practice, the profession, and the changes in technology, delivery platforms, and authoring.

Electronic retrieval at Deloitte & Touche allows staff to find information related to a given topic and confirm its connection to the issue at hand. Simple access to information in context provides new information and helps to establish usage boundaries for specific related answers. It strives to answer common questions for all levels of users. Questions typically addressed to an electronic retrieval system include:

"Where does it say ...?"

"How do I account for ...?"

"When does xyz exception apply ...?"

"What does the client mean by ...?"

and

"What is the firm policy regarding xyz and why ...?"

The Deloitte & Touche retrieval system required a large amount of customization because of original constraints imposed by hardware, available software tools, size of memory and hard disks, and desire for very high value-added retrieval. Many of the capabilities discussed above are now performed more easily with off-the-shelf tools. The purpose of using Deloitte & Touche as an example is to offer one solution that has continued to evolve over time. Just as it is difficult for managers to decide when to buy PCs and when to upgrade their systems, building a text retrieval system is also a challenging project, but one which offers the potential for numerous benefits that grow as the system expands and changes.

niche market titles offer the whole spectrum from simple books on-line (i.e., page-turners) to more complex systems that function as "experts in a box."

The most common page-turners provide word-search, minimal hyper-text, and expanded table-of-contents access. These are useful for the professional who focuses on one area of practice or requires occasional reference to the literature. The more advanced expert in a box systems are for certain applications and market niches. They are more expensive, but contain higher added value.

Important factors to consider in choosing an external database are the value of the content, the source of that content, the number of updates per year, and the support available. It is crucial in professional services to consider the on-going learning curve and value. A purchased system should be easy to learn and use, compatible with other systems and interfaces, have flexible file types that can be exported, and offer reliable updates.

When considering the price of the product, evaluate the access methods provided. The cost of staff time used to learn and use the system is often much higher than the purchase price of most packages.

Retrieval systems represent the purchase of content, its organization, the rights to that information, as well as access methods. The cost of the software tool itself may not represent the cost of what is really being paid for integrating it.

When purchasing titles, consider how they will work with the generic software (e.g., word processing, spreadsheets, databases, and presentation tools) and the in-house software being used.

Among the examples of typical products available today include FASB and AICPA materials. These include, but are not limited to, Professional Standards and Pronouncements, Index to Accounting & Auditing Technical Pronouncements, Accounting Trends and Techniques, Audit and Accounting Guides, and the Technical Practice

Aids. Using the software consistently across all the infobases through common interfaces and commands, access methods, and file types adds to the value of the individual titles.

Other products available include Electronic GAAP by John Wiley & Sons, Inc. (providing access to the Delaney publication), the SEC regulations offered by Commerce Clearing House (CCH),

Dun & Bradstreet's Million Dollar Disc, Compact Disclosure (data on companies obtained through SEC filings), and Research Institute of America (RIA) and other CCH tax services.

In-house Applications

Although the decision to purchase an external database may seem relatively easy because of the generally low cost

EXHIBIT 1

First Steps

1. Determine who is the audience and how it is going to use the product
2. Determine the scope of the project and what resources are available (budget)
3. Understand what the raw materials are (content)
4. Obtain the rights to the content from the publisher
5. Understand how it should be organized and structured (process)
6. Create and implement electronic publishing standards for presentation of the materials
7. Re-purpose (try to reuse) the existing raw data (through scanning, conversion, or creation of content)
8. Determine filing conventions, controls over information flow, and procedures (if a group of people will be working on the project)
9. Determine standards for accessing and encoding documents, storage, and delivery
10. Determine delivery platforms (planning ahead saves considerably on potential technical problems)
11. Determine markup of documents (if documents are to be generic, this provides a consistent "typeset" appearance and offers multiple platform delivery, e.g., standard generic markup language (SGML))
12. Read/review documents for clarity and consistency ("garbage in" still translates as "garbage out")
13. Review documents for explicit jumps to related materials (these are "see also" references)
14. Have an expert review materials for implicit references (this adds value)
15. Extract the key ideas and structure to be included (more value)
16. Create indices, thesaurus, table of contents, and glossary (this is automated in a simple system)
17. Manufacture-integrate all the pieces of documents and other tools (this is the first but key production step to ensure quality and updating capability)
18. Review
19. Run checks for data integrity
20. Create delivery media (media work differently on different platforms)
21. Distribute prototype system
22. Institute a trial STRESS Test. Test in all situations with all potential users to simulate the final product
23. Reorganize, update, and deliver final product

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Specifications Overview—Deloitte and Touche Accounting and Auditing Knowledgebase Systems

Domain: Accounting and auditing

Methodology: Content-based, developed by National Office Communications Department, and updated by content practitioners

Coverage: Manages professional/firm literature and provides "one-stop shopping" access to information resources

Info Characteristics: Large volume, volatile sources of information, interconnected by key words and ideas, needs to be comprehensive, incorporate in-depth organization

Updates: Updated at least quarterly. Must be easy to maintain with incremental updates

Purpose—Why create: Keep users up-to-date, improve work quality, help limit risk, provide better communication, improve firm image, ease personnel transitions

Audience: All DTTI professionals worldwide

User Characteristics: Diverse backgrounds, interests, levels of understanding and experience

How Used: Access and confirmation of information

Usage: Primarily through structured information

Training/Manuals: None. User-friendly enough for a short demo or self-guided tour

Maintenance: By authors/editors of original material. No technical skills required

Delivery: CD, LANs, WANs, Dialup (subsets on floppy disks)

Developed: Major releases v1.0 1987 DOS; v2-4 1988,90,91-93; v5 1994 Windows

Key Users Feedback: Allows users control of the books, ease of use, ease of learning, ease of immediate access, excellent coverage, accuracy, integration with text sources and other tools, value-added materials.

of the title and short learning curve, the decision to create a custom in-house system is not. But it is important to note that the authoring tools made available on the market within the past year have made customizing a system within the reach of even a sole practitioner.

The primary decision regarding what system to build and the amount of resources to devote to it must be based upon the immediate goals intended for the system.

Questions to consider include the following: Is the system to be used in-house or for resale purposes?; will the product be showcased to begin a line of consulting within the business?; and what is the expected resulting value-added content provided to users?

First, decide on which applications are needed. Most people prefer to start on a small project. Deloitte & Touche recommends that clients look for applications that are critical or unique. Also consider areas where text retrieval would have an obvious advantage. A simple project should not

require much file conversion, customized programming, or the extensive services of a contents expert. These applications should be done at minimal cost, providing a quick payback by offering simple access (word search and hypertext) methodology.

EXHIBIT 1 on page 5 provides an overview of the steps that it will take to build any system for publishing (vs. authoring). Note that although these steps are generic and therefore may be used for projects at any access level, they do require a certain structure to begin with.

Other Considerations

Other key considerations involved in the process of purchasing or building a retrieval system include:

- Delivery platforms
- Media—when one should consider the various multimedia tools
- Standards
- Copyrights and royalties

- Intelligent agents and data mining
- Image processing and how it relates to text retrieval
- Create or convert: how to decide whether to include various media
- Authoring vs. publishing tools and their potential integration
- Formatting: use of fonts, graphics, and markup languages
- Other new and related tools and capabilities: hardware/software for graphics; audio; video; and unique publishing products like Adobe Acrobat, which allows the sending of fully formatted documents to other PCS, regardless of hardware platform or application
- Also consider the following generic problems that may come with developing a large and successful system: size (as a system grows, the issues change); maintenance and updates; incompatible source documents and files; authoring resources (who does what work); training; implementation plans; version control; manufacturing; production; delivery; application integration; security and control; and issues related to how to continue to add functionality but maintain ease of use.

Summary

Users in volatile industries consider rules and procedures "moving targets" that require continuous updating. User backgrounds and specific needs are diverse. Some of the required information changes are needed immediately, while other raw data is updated only once a year. The nature of the work may require detailed access to portions of the content materials for specific areas and only browsing access to other information. Whether we are confirming something we know (but require an exact quote), or accessing something we know nothing about, a well-designed and implemented text retrieval system can meet our needs.

Now a PC can help to boost the

quality and scope of our work by providing access to updated, accurate information.

Finally, don't be frightened off by the technology. The commercial products, software tools, and manuals are getting easier to use, and there are numerous sources of outside assistance. The days of carrying trunks of paper and worrying about which reference source to carry to each client site may finally be nearing an end. Consider the questions contained in EXHIBIT 2 relating to a firm's access to daily information services, and then decide if the firm has waited too long to become a developer and user of content-based text retrieval systems. **IT**

EXHIBIT 2—Top Five Major Questions

The following top questions have been very useful in preliminary evaluations of text retrieval requirements and incorporate the input I have received from users, developers, content providers, knowledge engineers, and systems integrators. These questions have provided a basis for scoping projects, designing specifications, determining resources, training staff, and estimating time schedules for implementing text retrieval systems.

Why Invest

Is it difficult to gather, manipulate, and process the information required?

How to Access

Is there a problem managing and obtaining documents?

Timing

Is it difficult to get what is needed when it is needed?

PC Value

Is there current disappointment in the value received from investments in acquiring and learning technology?

Where Is It?

Is it difficult to obtain information on what related sources exist (i.e., while at a client)?

Graphical-based Operating Systems—Are They for You?

*By Wayne E. Harding, CPA,
Roman H. Kepczyk, CPA, and
Janis R. Monroe, CPA.*

Wayne Harding is vice-president of accountant relations for Great Plains Software in Denver CO, a job whose focus is to stimulate awareness of Great Plains Software and its products. Roman Kepczyk is a principal in the technology division of Varney, Mills, Rogers, Burnett & Associates, a CPA firm based in Manhattan, KS. Roman's current area of interest is the development and implementation of long-term technology plans for CPA firms throughout the country. Janis Monroe is president and founder of MicroMash in Englewood, CO. This article is designed to provide a comparative overview of today's popular graphical-based systems, Windows 3.X, Windows 95, Windows NT, IBM OS/2, and Macintosh.

If you are not yet on a graphical environment, you are less productive than you could be. A graphical operating environment (such as Windows or Macintosh) provides you the ability to switch back and forth between different applications with ease. This feature alone saves an appreciable amount of time.

The other feature that leads to big time savings is the common user interface that the graphical-based applications use. After investing the time and effort to learn one or two initial applications, each additional new application becomes that much easier to learn because of its similarity in look and function to other applications of its kind. With these advantages—and many more—in mind, the real question becomes: Which graphical-based operating system should you choose?

As with all computer selections, carefully consider what you want to achieve through the automation process. Look for the applications that will help you achieve your specific work and technology goals. One major question to address is what operating systems you need to support your targeted applications. This will be a start. In addition, look at what you plan to do in the future and where the applications you use are going in the future. Yes, sometimes this will have to be an educated guess. At other times, you might be able to inquire about the proposed direction of a given application from the developer.

Rest assured that almost without exception this development is heading toward a graphical environment (if they are not already there). And, in terms of most financial applications, if the application supports something other than a Windows environment (3.X or 95), it will normally also support Windows.

For purposes of this discussion, the following graphical operating systems are presented in alphabetical order:

IBM OS/2 Warp
Mac OS (for Macintosh and PowerPC)
Windows 3.X
Windows 95
Windows NT
IBM OS/2 Warp

IBM OS/2 Warp is a stable, 32-bit operating system that offers true multi-tasking and multi-threading capabilities. Official minimum installation requirements state that it will operate with a 386 processor and 4Mb of RAM.

Realistically, the minimum configuration needed to operate this operating system is 8Mb of RAM on a 486 or faster PC—with true performance enhancements at 16Mb of RAM. The standard installation takes up roughly 35-40Mb of hard disk space, but if Win-

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dows performance is a major consideration, you will want to add the Bonus Pack (30Mb) which adds licensed native Windows code along with additional features.

Without the Bonus Pack, your Windows applications will run slower in OS/2 than in both Windows 3.1 or Windows 95. Laptop users who have not committed to Windows 95 will find OS/2 a good solution for addressing the conventional memory problems we all face when loading multiple PCMCIA cards such as modems and network drivers.

According to *PC Magazine*, installation of OS/2 is the "most challenging and unintuitive" of the installations of current operating systems, but we found few problems in loading the operating system. The biggest area of concern is that OS/2 does not support real mode device drivers, which means your hardware must be natively supported by OS/2 drivers. If you do not have OS/2 drivers available for your graphics cards, sound cards, or CD-Rom drives, they probably will not function. It is also important to copy your OS/2 device drivers onto the floppy installation diskette to make the installation easier and quicker. Installation can be done with floppy diskettes but the CD-Rom option is definitely better—as with the installation of most operating systems.

OS/2 Warp runs most 16-bit Windows applications (current Windows 3.X programs) without a hitch. Programs that do cause problems in Windows 3.X will cause even more crashes in OS/2 because of the non-native architecture. One issue of concern to CPAs should be that IBM has stated that they presently will not support 32-bit Windows applications in OS/2. As most new software development dollars are going towards Windows and Windows 95 applications, OS/2 will have a difficult time down the road getting people to write applications that will run in OS/2. Another area of concern is that IBM is reducing its emphasis on the consumer market and focusing on its enterprise clients. This will have an adverse impact on OS/2's

long-term future as people in the corporate environment will more than likely choose a Windows product to use and learn from at home—a preference which will eventually spill into the corporate market.

Compared to the Windows operating system, OS/2 is considered more stable because of its preemptive multitasking function. OS/2 has the ability to isolate each 16-bit Windows application in its own virtual DOS machine. This means that if one application fails, the other applications continue to operate. OS/2 also has true multi-threading, which means you can run multiple functions within the same program at the same time. For those users planning on staying with today's standard DOS and Windows 3.X applications, OS/2 offers the best short-term stability. Unfortunately, unless IBM can convince software developers and end-users to choose OS/2 over Windows 95, OS/2 will have a rough road in the future.

Another new OS from IBM is being developed by Taligent, Inc., which is a joint venture between IBM, Apple, and Hewlett-Packard. Some might be wondering about the status of this previously much-hyped operating system. A recent article in the December 1, 1995, *Wall Street Journal* revealed that the three partners have agreed to dismantle Taligent Inc. and transfer its technology to IBM. It appears that Taligent fell victim to conflicting agendas and differing product timetables within the companies. Only IBM remained committed to using Taligent software in its products, while the others developed competing products as a hedge against Taligent's failure. Based on this information, we would not advise that you wait for Taligent to enter the marketplace any time in the near future.

Mac OS

We find the Mac operating system the easiest and most capable of assisting a person to get their work done with the least possible effort. The Mac OS does not have the tendency to get in the way like Windows 3.1 or even Win-

dows 95 does from time to time.

The Mac OS is most noted for its graphic capability. The spread between the Mac OS system and the others is lessening all the time, but the perception of many users is that the system is far superior for graphics. In addition, graphic designers are accustomed to, and hence prefer, the Mac OS system. When analyzing a system choice, artistic needs may play a significant part in the decision making, especially if you create financial reports, marketing documents, and presentations in-house.

The Mac's handling of removable media (floppies and CDs) is distinctly different from other operating systems. The Mac OS automatically recognizes the removable medium and will even eject it automatically when appropriate. The Windows 3.1 operating system never knows (until it tries to access it) whether there is media in the drive or not. The icons for the drives are visible even when the drive is empty. In addition, the names of the drives are not identified when you switch disks.

The Mac OS is based on cooperative multitasking, which requires each application to yield processor cycles. Every program is thus dependent on every other program to behave smoothly. Windows 95 has preemptive multitasking for 32-bit applications, an attribute which will become significant as more applications are written for Windows 95. However, the Mac OS has an architectural advantage in its support of multiprocessing, wherein one application can send codes to several processors for execution.

One shortcoming of the Mac OS is a somewhat limited selection of financial and accounting-related software. When deciding on an OS system and related hardware, definite consideration should be given to your software needs and whether the Mac fulfills these needs—now and in the future.

Windows 3.X

Windows 3.1 and 3.11 (Windows for Workgroups) are ideal for DOS-based users looking for their first taste of a

graphical user environment (GUI) but who don't have the high-powered equipment necessary for some of Microsoft's latest offerings.

If you migrate to Windows from DOS, make sure you have the proper hardware. Microsoft recommends at least a 386 DX processor with 4 Mb of RAM. However, to get full performance out of Windows, we recommend at least a 486/33 MHz with 8 Mb of RAM.

Nevertheless, the reason to migrate from DOS to Windows 3.X today is lack of computing horsepower. If you are presently using DOS and want to try a graphical interface, we recommend you try Windows 95 or Windows NT. All programs we have tested that operate under Windows 3.X will also operate under Windows 95. Some programs (those with a 32-bit code architecture) will even run faster under Windows 95.

Windows 95

This is indeed the latest and greatest operating system from Microsoft. If you are migrating from Windows 3.X, it is wise from a conservative standpoint to install Windows 95 with the option to remove Windows 95 and restore your old operating system.

We say this based on at least one author's migration experience. With the first attempt to migrate, the modem was not recognized. Microsoft support did not help, saying the modem was not compatible. A new modem was purchased. With the next installation, the printer port (LPT1) was not recognized. In this instance, Microsoft support did come to the rescue. The problems resulted from relying on the plug-and-play option—an option which allows Windows 95 to figure out what device it is working with on its own. This problem is unlikely to occur if you obtain and install the appropriate driver from your peripheral vendor.

In between the unsuccessful and the successful install on the business computer, the author decided to install Windows 95 on his home computer (a 486, 33 MHz with 8 Mb of memory).

Everything installed fine. But a problem arose when attempting to operate Microsoft Encarta. There was not enough memory. Microsoft could not help, even though a fax was promised by the technician to help solve the memory problem. The fax never came.

The first installation scenario discussed an upgrade in-place. One alternative to this is to download all existing data files from the current Windows 3.x OS and to remove the present OS. Saving the data and wiping the slate clean before installing Windows 95 should reduce the potential for installation problems.

The moral of these install scenarios: We strongly recommend keeping the old system. Microsoft, in its efforts to make Windows 95 easy to install and use, still has some (very few) peripherals that do not work with Windows 95.

What is so great about Windows 95? Each will find his or her own favorite features. We like the taskbar for quick navigation, the use of the right mouse button, the intuitive help menus that not only inform you of how to accomplish something but guide you to the solution, and the Mac-like features for manipulating files and folders with ease.

If you are dealing with more than one computer, make sure that you have a defined technology policy concerning when and how many of the computers switch over to Windows 95 from another OS. For example, if some computers are using Windows 95, which incorporates the feature of long file names, and some other computers are on Windows 3.X, then file sharing becomes an issue.

One last point. There is also a product called Windows 95 Plus that contains added features such as desktop agents (to schedule disk fragmentation, system monitoring, and other housekeeping items) and slick desktop setup schemes. It is well worth the extra \$40 to \$50. For more information on Windows 95, see the September '95 Technology Alert of the same name.

Recommended hardware. Microsoft states a configuration of

486/33 MHz with 12 Mb of RAM. The authors recommend at least a 486/66 with 16 Mb of RAM.

Windows NT Workstation And NT Advanced Server

Back in 1993, Microsoft released Windows NT Advanced Server 3.1. At that time, the market was skeptical as to how Microsoft would fare in the "backshop" environment. Since then, Windows NT has not only proven to have the ability to contend with competitive network operating systems, but has also gained market acceptance in mission-critical environments.

The current release, Windows NT 3.51, is widely used by a diverse client profile. Its success can be attributed to several factors: easy graphical user interface (Windows) to manage a network operating system; support for multiple application services; remote dial-up capabilities; easy integration to existing Novell environments (file & print services); and a reliable and secure platform for mission critical applications. However, Windows NT requires horsepower: at least a fast 486 processor with 16 Mb RAM minimum, and plenty of hard disk space (70-100Mb for operating system alone). Also plan on a higher level of knowledge and expertise to set up and maintain the NT network—regardless of its size.

NT, for the time being, is being targeted by Microsoft for the power users that require a high degree of security and reliability. Unless you are in a larger organization, the NT platform could be too complicated to manage effectively in order to receive your investment dollars back in productivity gains. Microsoft recommends a 486 computer with 12 Mb of RAM for the client/workstation and 16 Mb of Ram for the NT Server.

At the time of writing, Windows NT has a Windows 3.X-like interface. However, it is projected that in the first quarter of 1996, there will be a Windows 95-like user interface for Windows NT Workstations. Eventually, it is expected that Windows NT and Windows 95 will merge into one operating system. **IT**

Gadget of the Quarter

THE PHONE BLASTER™

By Philip Friedlander, CPA

Philip Friedlander is an assistant director in the Information Technology Delivery Group of Ernst & Young, LLP, as well as a member of the AICPA Information Technology Practices Subcommittee.

There are new add-on boards for PCs coming out every day. Because of this, many of us are joining the ranks of the "Expansion Slot Challenged"—that is, those who are running out of expansion slots with which to add boards to our PCs. Creative Labs, the company that produces the Sound Blaster™ and

various other multimedia CD-ROM packages, has come to the rescue with the Phone Blaster.™

The Phone Blaster™ is a single board that combines the features of a Fax/Data Modem, a voice mail system, and a sound board. If all that the Phone Blaster™ did was to combine boards onto one board it would not be all that remarkable. What is impressive is how Creative Labs has integrated the functions of each board. The Phone Blaster™ does all the things you would expect a combination of a FAX/modem/voice/sound board to do, including integrating a data transfer rate of 14.4k, full send and receive fax capabilities, full voice mail, 16-bit digital audio, etc. But it also does much more in the integration of these functions.

Phone Blaster™ has, among other abilities, the following features:

- Support for up to 9,000 passcode protected mailboxes
- Look up capability, based on caller ID, of incoming caller names and companies
- Ability to notify a pager of new messages
- Support for full fax-on-demand
- Full duplex speaker phone
- Voice mail sending, forwarding, and broadcasting
- Full compatibility with Sound Blaster 16 audio
- Hold music capabilities for the voice system that can be input from MIDI, Wave, or CD audio
- Playback mixing of digitized audio, MIDI, CD Audio, line-in, and microphone and PC speakers.

The software that comes bundled with Phone Blaster™ really integrates it most effectively. Kalman Ancilla™ is an integrated telecommunication package that answers the phone, takes messages, forwards calls, sends and receives faxes, alerts your pager, and provides fax-on-demand services. Creative TextAssist™ is a text-to-speech system that allows the Phone Blaster™

to, among other things, read back your E-mail when you remotely access the system. All of the standard Creative Labs' audio utilities also come with the Phone Blaster.™

The onboard connections include analog telephone, line-in, microphone and CD Audio on input; speaker/line out on output as well as PC internal speaker; internal CD-ROM interfaces; and a 15-pin MIDI/joystick connector. System requirements are a 486DX/33 MHz with 8Mb RAM or higher, full-length 16-bit slot, DOS 5.0 or higher, Windows 3.1 or higher, and speakers and a microphone if you want to use speakerphone capabilities.

For those squeezed for slot space or for anyone wanting to take advantage of a lot of office automation in a small package, the Phone Blaster™ is worth looking into. **IT**

PHONE BLASTER™

Description: Combines multiple functions on a single board. Includes powerful fax features, professional sounding voice-mail, full-duplex speakerphone, V.32 bis/14.4 fax/modem, and Sound Blaster 16 digital audio.

Key Benefits: All-in-one telephone management system for the PC that brings big business capabilities to the small office, saving valuable time and money. Features include fax-on-demand, caller ID, pager notification, and sophisticated voicemail.

Package Contents: Hands-free microphone, Creative Labs speakers, Kalman Ancilla™ communications software, Creative TextAssist™, Creative Audio utilities, America On-Line, CompuServe.

Minimum System Requirements: 486DX33 MHz, 8Mb RAM, 11Mb free hard disk space, full-length 16-bit slot, DOS 5.0 or higher, Windows 3.1.

Est. Street Price: \$199.99

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Computer Security... Hands-On Style

If you're like most professionals reading this newsletter, you've got a lot of money invested in technology. You probably not only have security in place to protect your network, but firewalls, passwords, and/or restricted access to your computer system.

But what about your notebook PC? Since you have invested so much time in getting your notebook PC to the point where it is an indispensable assistant, it's no surprise that you guard that 6-lb. wonder as though it were solid gold. Or perhaps you *think* you do. See what you think after you read this tidbit we found floating out there in cyberspace. Attributed to Army Material Command, we found this article on the security of laptop computers during travel to be interesting and practical. Since widest dissemination was requested, we thought we'd help.

The following information is rele-

vant not only for laptops, but also for other personal items of value, such as briefcases, while you are traveling domestically or internationally.

Laptop computers have become a premium target for theft throughout Europe. Every international traveler who is anticipating carrying a laptop computer must remain on constant alert while traveling through airports.

Two different methods of theft have already been utilized at separate airports, but of course the techniques that were used to steal the laptop computers might be used at any airport. Both methods involved two thieves carrying out the theft. Details of the thefts follow.

Recently, Brussels Airport security advised that one method involved the use of security x-ray machines. The first thief would precede the traveler through the security check point and then loiter around the area where the carry-on luggage had already been examined. When the traveler placed his laptop computer onto the conveyer belt of the x-ray machine, the second thief would step in front of the traveler

and set off the metal detector. While the traveler was being delayed, the first thief would remove the traveler's laptop computer from the conveyer belt just after it had gone through the x-ray machine and quickly disappear.

The most recent instance of laptop theft just occurred at the Frankfurt International Airport, Germany, while the traveler was walking through a crowd of people in the airport terminal. The traveler, who was carrying his laptop computer on his rollbag, was preceded by the first thief. Just as the traveler got around the crowd of people, the first thief stopped abruptly, causing the traveler to also stop suddenly. During this momentary interruption, a second thief, who had been following closely behind them, quickly removed the traveler's laptop computer from his rollbag and disappeared in the crowd.

All travelers, both international and domestic, are urged to be aware of the above methods used in stealing laptop computers and remain alert to any abrupt diversions, especially in airports. Report any losses immediately to the authorities. Keep serial numbers, make, and model information of your laptop computers—or of any other items of value—separate from the items so you can give precise information to authorities if the articles are stolen. **IT**

First Annual Practitioners Symposium To Have Technology Track

Combining the most up-to-date information and features of the AICPA PCPS, Small Firm, and National Practice Management conferences, the AICPA's first Practitioners' Symposium is an entirely new, high-powered, information-packed conference. Besides offering CPAs up to 40 hours of CPE credit, this mega-conference provides a forum in which CPA firm owners and other professionals can learn from one another and from expert presenters on how to respond to emerg-

ing accounting and auditing, tax, technology, and management issues affecting their practices.

Participants can design their own curriculum from a rich selection of more than 100 different topics, broken down into eight special-interest tracks: small firm management, larger local/regional firm management, accounting and auditing, governmental and not-for-profit accounting and auditing, tax, consulting services/per-

sonal financial planning, technology, and personal development.

Partners, shareholders, firm administrators, marketing directors, and senior professional staff will all benefit from the wide array of educational offerings available.

The conference will be held in Las Vegas from June 8-12. Registration is \$595 for five days. For more information, contact the CPE Division at 800/862-4272 (dept #3). **IT**

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Technology Conference**

**Information Technology—
The Competitive Advantage**

April 24, 1996

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The Top 15 Technologies of 1996 and the Impact on Industry

Speaker: Michael W. Harnish, CPA, CDP, CISA, LNCS

Windows '95: The Operating System of the Future?

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Investing in Information Technology: Payoffs & Pitfalls

Speaker: Sandra Smith, CPA, CDP, CMA

Industrial Strength Internet Applications for CPAs

Speaker: Carolyn Sechler, CPA, Schwartz Cohen & Company, P.C.

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