



## The Renaissance Tools for Global Companies in the 1990s

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One of the most exciting developments of the 1980s was the wave of new technologies that improved the way people communicate globally.

Breakthroughs in computer and communication technologies including satellites, laptop computers, facsimile machines, electronic mail, voice mail and videoconferencing, have brought people and companies closer together through the spontaneous sharing of information. Most people were amazed at how modern communications brought the Persian Gulf War into our living rooms live. Yet, the same immediate information-sharing occurs every day inside and among major multinational companies.

These companies, facing the relentless pressure of global competition, are constantly seeking to improve the way they access, interpret and share information. To appreciate what further improvements may lie ahead in multinational computing and communications, it is helpful to look at three trends shaping the way people do business in a global economy: (1) the emergence of the "global workgroup", (2) the decentralization of information, and (3) the rise of the mobile executive.

### The Emergence of the Global Workgroup

Today's highly competitive global business environment presents a di-

lemma: while problems become more complex, the time available to solve them decreases. Challenges and opportunities can arise overnight, and companies must be able to respond quickly. This means teams of experts, or "global workgroups" — usually consisting of people from many parts of the globe — must be assembled on a flexible, often ad hoc basis, without leaving their offices. There simply isn't time or money to bring people and papers together in one place.

Computers and communication networks must be employed to support global workgroups that can start work immediately and seamlessly. At Apple Computer Inc., we often refer to this as "spontaneous collaboration."

For example, a team of engineers may be called upon to discuss a new input device for entering non-Roman scripts such as Chinese, Arabic, and Japanese into a computer; a network of sales representatives may work over the weekend to create an international service contract for a prospective customer; or a team of marketing managers may be assembled to discuss the international launch of a new product.

The challenge in such dynamic environments is to allow the individuals to focus their attention on the problem at hand, rather than the delivery systems for communicating as a team — especially considering potential technology and language barriers.

Today, events can occur anywhere in the world that require quick action — an oil spill in Alaska, a nuclear catastrophe in the Soviet Union, or oil field fires in Kuwait. In these and other instances, specialists throughout the world interact with one another through various computing and communication technologies to solve a problem.

Although the daily "corporate fires" do not make the news, they are just as important to a company. Multinational corporations throughout the world share an urgency to move information throughout their global communication networks in a timely manner. This allows them to service and support a worldwide network of global partners and customers. Without this ability, they would be in danger of losing their competitive position, not to mention millions of dollars. There is still a long way to go in addressing a diverse group of people considering most global communication networks assume the world speaks English.

The rapid increase in the power of personal computers allows people anywhere in the world to use information in ways that are most meaningful to them. The multilingual capabilities and graphic-oriented interface built into Apple's personal computer line take these concepts one step further by allowing anyone around the world to communicate in his or her language.

— while using one universal Macintosh model. With the Macintosh, only the system software changes from language to language.

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For example, Sweden-based Tetra Pak is one of the largest food packaging companies in the world. With worldwide subsidiaries that service 137 countries, the ultimate goal of the company is to provide a consistent design standard. Although the packaging is localized in each country, Tetra Pak's workgroup benefits from the Macintosh by having one international Macintosh model that juggles various cultural and language requirements, such as handling right-to-left text formats, while maintaining a consistent hardware and software interface. Other computer manufacturers sell completely separate hardware models around the world to address different languages. This often introduces compatibility problems.

Our philosophy at Apple is that a computer should operate like a telephone — a person should not have to speak English to use it. A computer is not the center of action; a person is. The computer should always be viewed as a powerful and effective tool for helping people accomplish their work, unleash their potential and achieve their ambitions, regardless of language or cultural differences.

One component of the global workgroup in the 1990s will be what Apple Chairman John Sculley calls the dynamic document. Rather than printed on paper, the "dynamic document" will employ video, graphics, sound and on-line access to background materials. It also will be an interactive document; a fluid way for people to work together in groups regardless of physical location.

In the future, for example, imagine how members of an international team for the Summer Olympics could con-

tribute to the development of an opening day video, from their workplaces in different countries. The video could be digitized, compressed and

distributed through the network, allowing each of the members to create, cut, paste, and edit the video on their own computers without ever leaving their offices.

### The Decentralization of Information

For years, we have been witnessing a breakdown in traditional corporate hierarchy in favor of matrixed structures that emphasize communication and relationships — in short, a ladder replaced by a web. In many global companies today, head offices formulate broad strategies and provide essential services, but most of the critical information flows are horizontal, not vertical. They are between people who are encouraged to get close to customers.

British Petroleum, a \$50 billion company, eliminated six managerial layers between the chairman and the first line supervisors. They were looking for a new model to service their customers. Toyota, the third largest automobile manufacturer in the world, has eliminated all but two layers of its middle management to get to the user faster and more effectively.

As Apple's President and Chief Operating Officer Michael Spindler recently pointed out, the whole notion of cross functionality and expertise is on the rise and location is becoming less of an issue. The notion is that any office within the organization may become recognized as a "competence center" with specialized knowledge, expertise, or understanding.

Du Pont is a case-in-point. Not only is it an industry giant, but it is a worldwide conglomerate of diverse busi-

ness enterprises. Du Pont operates more than 200 manufacturing and processing plants, and research and development facilities in more than 40 countries on 6 continents. Du Pont employs more than 140,000 people worldwide. The Information Systems Department sets the corporate computing and telecommunications strategy that bridges communications between its employees, partners, and worldwide customer base. The need to access, interpret, and share information residing throughout the organization is a daily requirement at all levels, especially considering the diverse business requirements.

The technology developments within the computer industry itself provide a model for today's decentralized organizational structure. The old hierarchical mainframe-to-terminal style or "master-slave" style of computing is being replaced by a client-server model or "peer-to-peer" model that puts meaningful information at the service of individuals — rather than individuals at the mercy of computers. In this model, the personal computer acts as the main desktop tool for linking a person with information that resides around the company — regardless of the computer platform. It's the concept of unlimited power at the desktop.

Consider a salesman for the London-based subsidiary of a U.S. computer manufacturer who is trying to close a sale with the largest bank in the United Kingdom. He depends on his company's global network to retrieve case studies on how banks in other parts of the world are using a similar system. An easy-to-use computer interface to the worldwide customer database allows him to quickly access the information most relevant to the prospective customer. He then customizes the information by integrating various types of media, including video footage of customer testimonials. This allows him to structure information in a way that best articulates his unique sales proposition.

Apple Computer has long recognized the challenges of doing business globally, and has worked to overcome them in several ways. From its inception, the Macintosh has been designed and enhanced to satisfy three critical requirements for a global computer: (1) a philosophy of computing that emphasizes the user's needs, rather than the computer's requirements; (2) an intuitive, graphical user interface not constrained by differences in language or culture; and (3) a development environment that easily supports "localization" — the translation of software from one language to another.

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Over the years, Apple has continued to apply global thinking to customer needs. The company has done this by working closely with third-party developers to provide an expanding base of localized and innovative applications. Companies such as Claris Corporation, Aldus Corporation, Symantec Corporation, and WordPerfect Corporation are taking dramatically new approaches to localizing software for the international marketplace. These applications will provide expanded multilingual capabilities and enhanced features for a diverse customer. Today, the Macintosh operating system supports over 50 language versions, as well as special keyboards and printers that handle both Roman and non-Roman languages.

When a company starts with a multilingual platform such as the Macintosh, there are many possibilities for expansion. For example, future systems could allow a user to select a "languages" menu which consists of all of the world's languages or a combination of languages without having to add any hardware or software. The application, menu boxes, and features specific to the language or business requirements of the particular country

would appear automatically. If the user is working in Japanese, for example, the menu would bring down an item called "vertical text", which is not used in Roman languages.

Interestingly, such a system could also handle languages such as Hebrew and Arabic in which the text reads right to left and, at the same time, incorporate English words into the same text which run left to right. Such a system could also eliminate the lengthy time required to localize an application since much of the international considerations would be built into the operating system.

New input methods are emerging such as handwriting and speech recognition. California-based CIC recently introduced MacHandwriter, a pen user interface that allows natural handwritten input to operate desktop personal computers. Massachusetts-based Articulate Systems now offers the Voice Navigator which is an application that allows a person to give computer commands with the use of his or her voice. A person can simply call out commands such as "create a file", "get mail" or "print memo" in any language and the computer will respond accordingly. In the future, the excitement lies in being able to incorporate individual behaviors, work habits, gestures, and other humanistic patterns into the system.

Our goal is to hasten the day when the technologies which enable executives to communicate more freely today, will be translated into products for people from all walks of life and will ultimately personalize the way people interact with one another and the information around them. Only after we are able to rise above technology, language and cultural barriers will we be able to create a new renaissance in the Information Age, just as printing lead the renaissance in the Middle Ages, leaving the scribes behind their time. At Apple, we want to lead the way in creating the renaissance tools of the Information Age.

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Technological advances are continually making it easier for people to work with information. This in turn leads to the democratization of information, both in terms of how information is used and how information is created by the most important asset within the company — its people.

## The Rise of the Mobile Executive

Recent estimates indicate today's executives spend as much as 75 percent of the time out of their office. Once they move away from their desks, their computers cease to offer any utility. As a result, we are seeing a wave of new devices that allow executives to take that functionality with them.

The need for such communication tools is a worldwide phenomenon. It's not unusual to walk into a hotel or restaurant in Hong Kong and see cellular telephones on the majority of tables. In Japan, powerful notebook and notepad computers are replacing electronic organizers as permanent companions to executives. Airport lounges, hotel rooms, and airplanes have become repositories for portable, laptop, and notebook computers. Meanwhile, communication technologies such as voice mail and electronic mail allow a business person to maintain an office environment anywhere in the world.

Advances in miniaturization and mobility are leading to an array of fascinating products utilizing both analog, and in the future, digital technology. Currently, this includes notebook computers, pagers, cellular telephones, wireless networks, and many other personal communication and handheld tools.

Soon, these devices will no longer be tools only for corporate executives, but will be available for anyone with a need or desire to communicate more effectively. These tools will have a great impact on the way we go about our day at work, school, and home.

## The Global Computer: a Renaissance Tool

The changing nature of the global company is nowhere more evident than in its mission and management style. Its mission is to help make a better world. Its management style emphasizes individual creativity rather than the old-fashioned corporate conformity and hierarchy. Increasing the individual's creativity ultimately results in productivity for the entire enterprise. It results in a renaissance — a humanistic revival of intellectual and artistic achievement.

Of all the technological revolutions that have taken place in our lifetime, the personal computer may be the most significant. It is a symbol of modern day technology and has been subjected to more change than any other modern innovation.

There is still much work to be done in creating new technologies that trans-

mation which may have resided on a mainframe or minicomputer.

- AppleTalk, a highly functional network system which is built into every Macintosh and computer peripheral, encourages connectivity, mobility, and peer networking, giving people easy access to information — regardless of where the information resides.
- The Macintosh operating system permits users to work among several applications on a Macintosh at the same time, allowing people to represent information in the most meaningful way.
- The Macintosh's inherent suitability as a media integration tool encourages information providers, such as film studios and libraries, along with software developers and end users to turn data into useful, easily understood information.

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scend differences in culture, language, and work patterns. At Apple, our goal is to make the Macintosh a corner-

stone in making technology accessible to the broadest range of people around the globe. It was the first personal computer specifically designed to be adapted to a variety of languages and cultures.

In addition, many of the Macintosh's most notable features support the changing nature of global companies. For example:

- The graphic-oriented interface of icons representing computer commands such as a waste basket for getting rid of information, makes it easier for users to manage information as well as add more functionality to other computing environments by enriching infor-

The Macintosh is evolving into a renaissance tool for revitalizing the way people work with information. Looking to the future, Apple sees many exciting opportunities emerging from the confluence of computing and communication technologies.

## Evolving Multi-lingual Systems

The common theme among the trends discussed here — global workgroups, decentralized information and mobile executives — is the need for people to communicate with each other and to be creative and productive with infor-

mation. As an example, electronic mail allows us to personalize information at our own convenience and send it to anyone, anywhere, anytime.