Introduction

"As the boss of Microsoft, the world's most successful software company, I played a large part in the birth of the Information Age. In this book I explain the idea of a digital nervous system—the use of information technology to satisfy people's needs at work and at home . . ."

In 1980, IBM was the world's biggest producer of business machines, but the world was changing. Small computers were beginning to appear and the company wanted to get into that market. They began to develop a machine which they called the Personal Computer, but it needed an operating system.

At the time they were talking to Microsoft, a small company that sold computer programs, and they happened to mention the problem. Microsoft didn't have an operating system, but they knew someone who did. They bought the rights to it and after making changes to suit the new PC, sold it to IBM as MS-DOS. However, Bill Gates, the boss of Microsoft, insisted that IBM should allow him to keep the rights to the system, so that he could also sell it to other customers. Surprisingly, IBM agreed.

Gates had correctly realized that a computer was simply a box to run the software. The IBM PC appeared in 1981, but other manufacturers moved in and started selling similar machines. Most of them used MS-DOS. Within a few years Microsoft changed from being a small software company to a very large one. Meanwhile, IBM never managed to dominate the personal computer market and finally stopped making these machines in 2005.

Today, there are large companies such as Dell, Hewlett-Packard and Toshiba selling personal computers. However, there are also huge numbers of "white-box" machines—built from standard parts by small companies, stores, or interested people. Most of

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them use Microsoft software.

In 1985, Microsoft introduced its Windows program. Before this, computer screens were plain and files simply appeared as lines of text. Windows made the screen colorful and more user-friendly. It also allowed the operator to do more tasks more easily and made better use of the computer's memory. Five years later, Microsoft Office appeared. This contained Microsoft Word for writing texts, Excel for calculations, and Powerpoint, which allowed the user to give presentations.

Microsoft's biggest crisis, which Bill Gates discusses in this book, came in August 1995, when the company, having underestimated how quickly the Internet was growing in popularity, released Windows 95 without Internet Explorer. However, they very quickly produced an improved version.

Today Microsoft has 79,000 employees in 102 countries. Its annual earnings are over $50 billion. At times, its most popular products—the various versions of Microsoft Windows and Office—have taken more than 90% of the market. Recently, however, there are signs that the company, like IBM before it, may be slowing down. Free software, available on the Internet, has taken away a large share of new sales, and the MSN search engine comes third after Google and Yahoo. However, new products are promised.

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Bill Gates was born in October 28, 1955, in Seattle, where he grew up with his two sisters and where he still lives with his wife and children. He became interested in programming while he was at school and at the age of fourteen, with Paul Allen, another Lakeside student, he formed a company called Traf-O-Data, to make traffic counters. In the first year he earned $20,000. In 1973 he went to Harvard to study math. There he met Steve Ballmer, now president of Microsoft.

In January 1975 the magazine *Popular Electronics* offered a very simple computer, the Altair 8800, for hobbyists. Programming it was a slow process which involved setting many switches, but Bill Gates contacted MITS, the manufacturer of the Altair, to say that he and others were working on a version of BASIC that would run on it. MITS was interested and the result was Altair Basic. It used a long piece of paper with holes in it. The first question typed in was 2+2, and the machine said 4. This was the beginning of personal computers. Gates left Harvard soon afterwards and started Microsoft with Paul Allen.

In 1995 Bill Gates wrote *The Road Ahead*, which was number one in the New York Times best-seller list for seven weeks and is also a Penguin Reader. *Business @ the Speed of Thought* came out in 1999. In it, Bill Gates compares the Internet to the human nervous system. We sense what is happening around us, messages are sent to the brain, and it tells the body what to do. Gates offers this model as the way a company should behave, with websites and e-mail allowing it minute-by-minute contact with its customers and changes in the market, while inside the company, data and ideas can move quickly between employees and managers.

The result can be a better future as more and better information provides more interesting jobs for workers, more knowledgeable customers, more effective schools, and citizens who have a voice in the decisions of their governments. A "digital nervous system" can improve business—but this book is not only for people in business, it is for everyone.

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Chapter 1 Information Flow is Your Lifeblood

Information work is thinking work. When thinking and working together are significantly assisted by computer technology, you have a digital nervous system. It consists of the advanced digital processes that knowledge workers use to make better decisions —to think, act, react, and adapt. Michael Dertouzos of MIT writes that the future "Information Marketplace" will require a large amount of special software and complex combinations of human and machine processes—an excellent description of a digital nervous system at work.

Do you view information technology as a way to solve specific problems? Then you're probably only getting a fraction of the benefits that modern computers and software can provide. Instead, you should be creating systems that will deliver information immediately to anyone who can use it—"digital nervous systems."

As the boss of Microsoft, the world's most successful software company, I played a large part in the birth of the Information Age. In this book I explain the idea of a digital nervous system—the use of information technology to satisfy people's needs at work and at home, just as the human nervous system supports the human mind.

Like a living creature, an organization works best if it can rely on a nervous system that sends information immediately to the parts that need it. A digital nervous system can unite all of an organization's systems and processes, releasing rivers of information and allowing businesses to make huge leaps in efficiency, growth, and profits. I have a simple but strong belief: how you gather, manage, and use information will decide whether you win or lose.

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The best way to put distance between your company and the crowd is to do an excellent job with information. There are more competitors today. There is more information available about them and about the market, which is now worldwide. The winners will be the ones who develop a world-class digital nervous system so that information can easily flow through their companies for maximum and constant learning.

I know what you're going to say: no, it's efficient processes! It's quality! It's winning market share and creating brands that are recognized! It's getting close to customers! Success, of course, depends on all of these things. Nobody can help you if your processes aren't efficient, if you don't care about quality, if you don't work hard to build your brand, if your customer service is poor. A bad business plan will fail however good your information is. And bad practice will spoil a good plan. If you do enough things badly, you'll go out of business.

But whatever else you have on your side today—smart employees, excellent products, loyal customers, cash in the bank—you need a fast flow of good information to make processes efficient, raise quality, and improve the way you put your plan into practice. Most companies have good people working for them. Most companies want to treat their customers well. Good, useful data exists somewhere within most organizations. Information flow is the lifeblood of your company because it enables you to get the most out of your people and to learn from your customers. See if you have the information to answer these questions:

- What do customers think about your products? What problems do they want you to fix? What new features do they want you to add?

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- What problems do your partners have as they sell your products or work with you?
- Where are your competitors winning business from you, and why?
- Will customers' changing demands force you to develop new capacities?
- What new markets are appearing that you should enter?

A digital nervous system won't guarantee you the right answers to these questions. But it will free you from the old paper processes so that you'll have the time to think about the questions. It will give you the data to start thinking immediately, and to see the trends coming at you. A digital nervous system will make it possible for facts and ideas to quickly surface from deep in your organization, from the people who have information about these questions and, it's likely, many of the answers. Most important, it will allow you to do all these things fast.

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An old business joke says that if the railroads had understood that they were in the transport business instead of the steel-rail business, we'd all be flying on Union Pacific Airlines. Many businesses have changed their goals in even more basic ways. But it's not always clear where the next growth opportunity is.

McDonald's has the strongest brand name and market share and a good reputation for quality. But a market analysis recently suggested the company change its business model. McDonald's has occasionally promoted movie-linked toys. The analysis suggested that the company should use its well-known small-profit product to sell the high-profit toys, and not the other way round. Such a change is unlikely, but not unthinkable in today's fast-changing business world.

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No company can assume that its position in the market is safe. A company should constantly be thinking about its options. One company might be hugely successful if it broke into another business. Another company might find that it should stay with what it knows and does best. The most important thing is that a company's managers have the information to understand where they can compete and what their next great market could be.

This book will help you to use information technology to ask and answer the hard questions about what your business should be and where it should go. Information technology gives you the data that leads to deeper understanding of your business. It enables you to act quickly. It provides solutions to business problems that simply weren't available before. Information technology and business are becoming so tightly linked that you can't talk about one without talking about the other.

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The first step in answering any hard business question is to look at the facts. It's easier to say this than to do it. The principle is illustrated in my favorite business book, *My Years with General Motors*, by Alfred P. Sloan Jr. If you only read one business book, read Sloan's (but don't put this one down to do it). Extraordinary success can follow from positive leadership that's based on information and reason.

During Sloan's time as boss, from 1923 to 1956, General Motors became one of the first really complex business organizations in the United States. Sloan understood that a company could not develop a broad business plan or choose the right projects without building on facts and on the understanding of the people in the company. He developed his own understanding of the business by working closely with his staff and by regular personal visits to the company's technical departments. His greatest influence as a manager, however, came from creating

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working relationships with GM dealers across the country. He constantly gathered information from GM's dealers, and he worked to develop close relationships with them that produced results.

Sloan thought that fact-finding trips were very important. So he built an office in a private railroad car and traveled all over the country, visiting dealers. He often saw between five and ten dealers a day. These visits helped Sloan to see that the car business was changing. It was moving from simple selling to trading, as people wanted to trade their old cars when they bought new ones. Sloan saw that GM's relationship with its dealers had to change as well. The manufacturer and the dealers had to become partners. Sloan formed a dealer council to meet regularly with GM's senior executives. He also created a department to handle complaints from the dealers. He paid for economic studies to find the best places for new dealers, and even found a way to lend money to "capable men" who did not have the cash to become dealers.

Accurate information about sales was still hard to find. When a dealer's profits went down, GM didn't know why. Without the facts, it was impossible to know what to do. Sloan said he would pay a lot of money so that every dealer "could know the facts about his business and could intelligently deal with the many details . . . in an intelligent manner." This would be "the best investment General Motors ever made."

Sloan created a standardized system of accounts for the entire GM organization and all its dealers. Every dealer and every employee, at every level of the company, put their numbers into exactly the same categories. By the mid-1930s GM's dealers, its factories, and its offices could all do detailed financial analysis using the same numbers. A dealer, for example, could clearly see how well he was doing and also compare his results to the average across the company.

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