The nervous system in the human body carries information from all parts of the organism, even the extremities, to the brain. The information is analysed instantly and a suitable response initiated. What would the world of business be like if every company had a digital nervous system, which gathered data in real time from its internal processes and its external dealings with customers and suppliers? What if the companies could respond at the speed that the human body responds when threatened? What if all data were collected and exchanged digitally and made available to all the people who matter – the employees of the company, the customers and partners? Bill Gates lays out a stunning vision of a Web lifestyle, in which the collection and exchange of information is made as simple as the use of electrical products from the electricity lifestyle. In the process, he details a blueprint for all company managers to empower their workforce and thereby put their companies in the forefront of innovation in the brave new world of meeting customers’ needs and wants at the speed of thought.

According to autobiographical notes in his book about technological change *The Road Ahead*, Bill Gates wrote his first software program when he was thirteen years old. Reading between the lines, it is clear that there were two points about this incident which made it such a formative experience. Firstly, the sense of power it gave him, the ability to control something huge at a time when he was too young to drive, and to know that the computer would always follow his program exactly. Secondly, the immediate feedback that you got. You knew immediately if your program was right because it worked – or didn’t.

Bill Gates benefited from a private education which his parents paid for, but he had to pay for time online on the school computer. This, as he remembers, is what drove him to the commercial side of the software business. He got a job writing programs. Then, one summer day in 1972, he saw an announcement in a magazine. Intel had released the 8008 chip. He and his school friend, Paul Allen, wrote a program to analyse the data from traffic monitors on city streets and started their first company ‘Traf-O-Data’. It was not a commercial success but he was on the road. When, two years later, Intel brought out the 8080 chip with 10 times the power of the 8008, he and Paul were able to write a version of BASIC for it, and, at the same time, found the company which came to be called Microsoft ... and the rest, as they say, is history.

Microsoft has grown from the idea of a drop out from Harvard into one of the biggest corporations in the world. Its stranglehold on the computing world through the Windows operating system is often criticised and Bill Gates has been accused of wanting to control everything that happens in the world of technology from his Seattle base. But in this book, Gates argues that control from the center cannot work. As he says, it has been said for centuries that knowledge is power, but, according to Bill Gates, that power is only realised when the knowledge is shared rather than kept as a secret. All good managers know that true control in business involves finding out what is happening or has just happened and taking corrective action if necessary. In the book, he argues that the digital age has brought real time information about production and sales within reach. Furthermore, the power of smart analysis software means that knowledge workers can be given the high-quality data in real time that enables them to do what they do best – work out a solution to any problem which currently exists – rather than wade through a mass of routine data to find out what the problem actually is.

### Communicative activities

The following teacher-led activities cover the same sections of text as the exercises at the back of the Reader and supplement those exercises. For supplementary exercises covering shorter sections of the book, see the photocopiable Student’s Activities pages of this Factsheet. These are primarily for use with class readers but, with the exception of the discussion and pair/groupwork activities, can also be used by students working alone in a self-access center.

### ACTIVITIES BEFORE READING THE BOOK

Put students into groups to discuss the questions.

(a) What do you know about Bill Gates?
(b) Which Microsoft products do you use in your company?
(c) How important do you think the Internet will be in the future of your company?

### ACTIVITIES AFTER READING A SECTION

**Chapter 1**

1. Ask students to role play two conversations as follows:
Teacher’s notes

(a) between a Microsoft Personnel Manager and an applicant for a job at Microsoft. The applicant asks questions and the manager explains the system, taking the information from page 17.
(b) The same Personnel Manager and the applicant after he/she has been offered a job. Now the manager explains what happens next, taking the information from page 17 and 18.

2 Ask students to work in groups and consider the administrative tools they use in their companies. Do they pass ‘the soft-boiled egg’ rule?

Chapter 2
1 Put students in pairs to reread the questions on pages 22 and 23 then test each other.
Example:
Student A: Do you believe that in the future people at work … .
Student B: … will use computers every day for most of their jobs.

2 Put students into groups of four. Each student must research a different part of the section entitled Get to market fast: make notes and report back to the group on how his/her company met the challenge of the section title.
Student A: Read again about the American car industry and Ford in particular – pages 49 and 50
Student B: Read again about Intel – pages 50 and 51
Student C: Read again about Banco Bradesco – pages 51 and 52
Student D: Read again about Compaq – pages 52 and 53

Chapter 3
Ask students to work in groups to discuss this question and make a list:
What sort of bad news is the writer talking about at the beginning of the chapter? Then elicit the list from the groups and ask them to add a few more examples of bad news.

Chapter 4
Put students into groups of three. Each student must research a different part of the chapter, make notes and report back to the group on how a digital nervous system can work in this area.
Student A: Health care
Student B: Government
Student C: Education

Chapter 5
Ask students to work in groups to discuss the conclusions that Gates comes to in this chapter. Which conclusions:
(a) had they come to already about business and the future?
(b) are new to them?
(c) do they agree with?
(d) do they disagree with

ACTIVITIES AFTER READING THE BOOK
Remind students that Gates uses examples from lots of different businesses to make specific points. Put students into groups to discuss these questions.
(a) Which example from the book do you still remember?
(b) What is the point of that example.

Glossary
It will be useful for your students to know the following new words. They are practised in the ‘Before You Read’ sections of exercises at the back of the book. (Definitions are based on those in the Longman Active Study Dictionary)

Chapter 1
automate (v) to turn a manual process into one done by a machine, especially a computer
campaign (n) a series of things that you plan and do in order to achieve a particular result
digital (adj) using a system in which information is shown in the form of changing electrical signals
download (v) to move information from one part of a computer system to another using a modem
infrastructure (n) the basic systems that a country or organization need in order to work properly
online (adj) connected to other computers, especially through the Internet
strategy (n) a set of plans used to achieve something

Chapter 2
3-D (adj) in three dimensions, like a cube
boundary (n) the highest limit that something can reach; the line that marks the edge of a surface, space, area etc.
compatible (adj) able to exist or be used together
consumer (n) someone who buys or uses goods and services
downsize (v) to reduce the number of people working in a company in order to cut costs
function (n) the purpose that something is made for
hardware (n) computer machinery and equipment
interact (v) to talk to people and make relationships with them; to have an effect on something
interface (n) the point at which two things or parts of a process meet
outsource (v) to get products or services from another company rather than produce them within your own company
processor (n) the part of a computer that does the process needed to deal with information
satellite (n) a machine that is sent into space and travels around the Earth, moon, etc. especially used for radio and television communication
transistor (n) a small piece of electronic equipment used in radios, televisions, computers etc.
virtual (adj) not actual, but making you feel that it is

Chapter 3
click on (v) select by pressing the left key on a computer mouse
IQ (n) intelligence quotient = a measure of how intelligent you are
outlet (n) a place where something e.g. water can flow out of a container or machine
plant (n) factory

Chapter 4
encryption (n) turning something into a code which can’t be read without the key
Business † the speed of thought

B u s i n e s s † t h e s p e e d o f t h o u g h t

P e n g u i n R e a d e r s F a c t s h e e t s

level

E 1 2 3 4 5 6

A D V A N C E D

Student’s activities

Business @ the speed of thought

Photocopiable

Students can do these exercises alone or with one or more other students. Pair/group-only exercises are marked.

Activities before reading the book

In the introduction, Gates talks about the birth of the Information Age. What do you understand by that term? Explain to your partner.

Activities while reading the book

Chapter 1

1 Complete each of these sentences from the first part of Chapter 1 with words from the box.

- analyze
- appreciate
- brain
- brand
- complex
- deliver
- digital
- fact-finding
- facts
- infrastructure
- installing
- investment
- modelling
- networks
- number-work
- partners
- plan
- preparation
- programs
- protecting
- quality
- real
- time
- share
- sources
- technology
- thinking
- tools

(a) Information is … work.
(b) When thinking and working together are significantly assisted by computer technology, you have a … nervous system.
(c) You should be creating systems that will … information immediately to anyone who can use it.
(d) A bad business … will fail however good your … is.
(e) McDonald’s has the strongest … name and market … and a good reputation for ….
(f) During Sloan’s time, General Motors became one of the first really … business organizations in the United States.
(g) Sloan thought that … trips were very important.
(h) Sloan saw that the manufacturers and the dealers had to become ….
(i) Sloan said he would pay a lot of money so that every dealer could know the … about his business.
(j) This would be, he said, the best … General Motors ever made.
(k) GM’s … – what I call a company’s nervous system – helped GM to dominate the car business.
(l) To manage with the force of facts requires information …
(m) Information work is the processing of information by human … or computer …
(n) When computers went from simple … to … business problems, they began to play a part in information work.
(o) On today’s computer … you can find and present data easily and cheaply.
(p) Companies should spend less time … financial data from employees and more time teaching them to … and act on it.
(q) Today McDonald’s is … a new information system that processes sales at all its restaurants in ….
(r) Employees really … information.
(s) Good meetings are the result of good …
(t) Digital … enable companies to get data immediately, from many …, and to analyze it from many angles.

2 Solve the clues to words in Chapter 1 to find the key phrase from the chapter.

(a) Things which a company makes or sells like televisions, cars, etc.
(b) Companies that make the same products as each other
(c) What a company makes from selling its products
(d) Talking and exchanging information
(e) Getting bigger, selling more products
(f) The total amount of a product that is sold
(g) Taking something to the customers premises
(h) Chance to do something good
(i) A set of plans to help a company achieve something
(j) The day to day work of a company
(k) Things which a company does for a person or another company
(l) Money that a company pays for everything it uses
(m) A person who looks at a business and gives advice
(n) Looking closely at something and drawing conclusions
(o) A person who buys something from a company
(p) A person who works for a company

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Student's activities

Chapter 2
1. Complete these sentences from page 25 to page 29. Then check with the text.
   (a) We always overestimate the change that will occur in the next two years and ...
   (b) You’ll see more companies like Amazon that are strong in one online area and then ...
   (c) The Internet is reducing costs and ...
   (d) The Internet is a great tool for ...
   (e) At least one company, priceline.com, reverses the buyer-seller relationship by ...
   (f) There will even be cases where software representing the seller ...
   (g) If you’re a middleman, ...
   (h) For service industries, the Internet requires you to be ...
2. How did Merrill Lynch make use of new technology to change and improve their business?
3. There are a lot of very large and very small numbers on pages 33 to 36. Work in pairs. Which do you find the most surprising?
4. Discuss these questions in groups.
   (a) What does the writer mean by ‘the electricity lifestyle’? Make a list of the most important elements of the lifestyle, according to the writer.
   (b) What does the writer mean by ‘the Web lifestyle’? Make a list of the most important elements of the lifestyle, according to the writer.
   (c) What does the writer mean by ‘the Web workstyle’? Make a list of some of the elements of this and some of the things people fear about it, according to the writer.

Chapter 3
1. All these events are connected with the impact of the Internet on Microsoft. Number them in chronological order.
   (a) A small number of enthusiastic employees saw the threats and opportunities of the Internet.
   (b) Bill Gates started a sense of crisis about the Internet to excite people to action.
   (c) Employees who recognised the future of the Internet started sending e-mails around the company.
   (d) Microsoft held its first Internet Day.
   (e) Microsoft Internet-enabled its major products.
   (f) Microsoft introduced Windows 95.
   (g) The Internet burst into public consciousness
   (h) The Internet was Microsoft’s 5th or 6th priority.
   (i) The press started to say that Microsoft didn’t understand the Internet.
   (j) Time magazine said Microsoft was the centre of the computer universe.
   (k) Microsoft held its first Internet Day.
   (l) Microsoft introduced Windows 95.
   (m) The Internet was Microsoft’s 5th or 6th priority.
   (n) The press started to say that Microsoft didn’t understand the Internet.
   (o) Time magazine said Microsoft was the centre of the computer universe.
2. Make a one sentence summary of the information in each of these sections.
   (a) Change bad news to good
   (b) Know your numbers
   (c) Move people into thinking work
   (d) Raise your corporate IQ
   (e) Big wins require big risks
   (f) Develop processes that give people power

Chapter 4
An alphabet of phrases! Use a word from each column to make phrases from the chapter. There are many possibilities.

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Chapter 5
Complete these sentences which summarize Gates’ argument.
1. The main people who benefit from the increased efficiency of information technology are ...
2. Business people will benefit if they ...
3. The brains of a company are ... and the best power tool is ...
4. Workers can and will do more if they are ...
5. Every bit of data in a company should be in ... and every process should be ...
6. The tools of the digital age extend ...

Activities after reading the book
Imagine that a friend has just asked you in an email to explain the term ‘digital nervous system’ which Gates uses many times in this book. Write a one paragraph explanation of this term.