UNIT 24

The Future of IT

STARTER **1** How do you think developments in IT will affect these areas of life in the next ten years?

1 commerce
2 work
3 the relationship between humans and computers

2 Compare your predictions with others in your group. Try to agree on a ranking from *most likely* to *least likely.*

READING **3** Read the three opening paragraphs of the text below and answer these questions:

1 How does the author justify his claim that we are 'in the midst of convergence'?
2 What will be the difference between computers and humans after 2015?
3 What does he mean by a 'positive feedback loop' in computer development?
4 Why will knowledge of a major language be the only IT skill needed?
5 Which of the author's predictions do you accept?

The future of Information Technology

We are in the midst of convergence. At the hardware layer, computers, phones and consumer electronics are converging. At the applications layer, we see convergence of information, entertainment, communications, shopping, commerce, and education.

Computers have come from nowhere 50 years ago and are rapidly catching up in capability with the human brain. We can expect human:machine equivalence by about 2015. But after this, computers will continue to get smarter. There is a noticeable positive feedback loop in technology development, with each generation of improved computers giving us more assistance in the design and development of the next. Ultimately, they will design their offspring with little or no human involvement. This technology development will push every field of knowledge forwards, not just computing. It will be almost as though extraterrestrials had landed in 2020 and given us all their advanced technology overnight.

But we will never get far unless we can solve the interface problem. In the near future we may have electronic pets, with video camera eyes and microphone ears, linked by radio to the family computer. With voice and language recognition we will have easy access to all that the Internet can provide. We can tell the pet what we want and it will sort it out for us. It will be impossible to be technophobic about such an interface, and the only IT skill needed will be to speak any major language.

4 Now work in groups of three, A, B and C. Read your text extract and complete parts 1 and 2 of this table.

1 Area of IT	
2 Predictions	
3 Comments	

Text A

Telecoms applications will soon be bundled together in much the same way as office application suites are today. A major example is the electronic marketplace, which will bring customers and suppliers together in smart databases and virtual environments, with ID verification, encryption and translation. It will then implement the billing, taxation and electronic funds transfer, while automatically producing accounts and auditing. The whole suite of services will be based on voice processing, allowing a natural voice interface to talk to the computer, all the AI to carry out the request, and voice synthesis and visualisation technology to get the answer out.

Electronic money will be very secure but much more versatile than physical alternatives. E-cash can be completely global and could be used as a de facto standard. It does not have to be linked to any national currency, so can be independent of local currency fluctuations. Its growing use on the Net will lead to its acceptance on the street and we may hold a large proportion of our total funds in this global electronic cash. People will increasingly buy direct from customised manufacturers. Shops will be places where people try on clothes, not buy them. Their exact measurements can be sent instantly to the manufacturer as soon as they have chosen an outfit. The shops may be paid by the manufacturer instead.

Text B

Employment patterns will change, as many jobs are automated and new jobs come into existence to serve new technologies. Some organisations will follow the virtual company model, where a small core of key employees is supported by contractors on a project by project basis, bringing together the right people regardless of where they live. The desks they will use will have multiple flat screens, voice interfaces, computer programs with human-like faces and personalities, full-screen videoconferencing and 3D sound positioning. All this will be without any communication cables since the whole system uses high capacity infrared links. The many short-term contractors may not have enough space in their homes for an office and may go instead to a new breed of local telework centre.

Of course, workers can be fully mobile, and we could see some people abandon offices completely, roaming the world and staying in touch via satellite systems. Even in trains and planes there may be infrared distribution to each seat to guarantee high bandwidth communication. One tool they may have in a few years is effectively a communicator badge. This will give them a voice link to computers across the network, perhaps on their office desk. Using this voice link, they can access their files and email and carry out most computer-based work. Their earphones will allow voice synthesisers to read out their mail, and glasses with a projection system built into the arms and reflectors on the lenses will allow a head-up display of visual information. Perhaps by 2010, these glasses could be replaced by an active contact lens that writes pictures directly onto the retina using tiny lasers.

Text C

Finally and frivolously to the very long term. By around 2030, we may have the technology to directly link our brain to the ultra-smart computers that will be around then, giving us so much extra brainpower that we deserve a new name, Homo Cyberneticus. In much the same time frame, geneticists may have created the first biologically optimised humans, Homo Optimus. It would make sense to combine this expertise with information technology wizardry to make something like the Borg, Homo Hybridus, with the body of an Olympic athlete and a brain literally the size of the planet, the whole global superhighway and every machine connected to it. Over time, this new form may converge with the machine world, as more and more of his thoughts occur in cyberspace. With a complete backup on the network, Homo Hybridus would be completely immortal. Ordinary biological humans would eventually accept the transition and plain old Homo Sapiens could become voluntarily extinct, perhaps as early as 2200.

5 Now exchange information with others in your group to list all the predictions made in the text. Discuss with your group the predictions made and add your own comments on the predictions in the last section of the table.

LANGUAGE WORK Predictions (2): Future perfect and *It* in subject position

We use the Future perfect to predict actions which will be completed before a particular time in the future. It is often used with time expressions such as *by 2020, before the end of the century.* For example:

1 By 2010 scientists *will have developed* active contact lenses.

We can vary the strength of our predictions using the certainty verbs studied in Unit 16 instead of *will.* For example:

2 By 2030 geneticists *may/might/could* have created the first biologically optimised humans.

We can also make predictions using *It* in subject position when the true subject of the prediction is a *that* clause. For example,

1 It's likely that computers will be used to develop other faster computers.
2 It's possible that we'll work from telework centres in future.

6 Make predictions for 2020 for each of the following using the methods studied here. You may wish to use these verbs:

develop *disappear* *increase* *replace* *take over*

1 computing power
2 interfaces
3 monitors
4 teleworking
5 money
6 shops
7 machine intelligence compared to human intelligence
8 the Internet
9 keyboards
10 speech recognition

7 Write sentences similar in meaning to each of these predictions with *It* in subject position. For example:

I don't think we'll use cable connections in future. (unlikely)
It's unlikely that we'll use cable connections in future.

1 I'm sure we won't use magnetic tape. (certain)
2 We may well have electronic chips in our bodies. (probable)
3 Computers could easily be used to develop other computers. (likely)
4 I don't think we'll replace teachers with robots. (unlikely)
5 There's a chance we'll develop alternatives to silicon. (possible)
6 I really don't think we'll have replaced the motor car before 2020. (very unlikely)
7 I'm almost sure we'll replace the CRT monitor in the next few years. (highly probable)
8 I'm definite we'll have more virtual personalities on the Web. (certain)
9 We might adopt Bluetooth as a standard for wireless applications. (possible)
10 Doctors may be able to operate on patients at a distance. (quite likely)

SPEAKING **8** Think of arguments for and against this statement.

Computers will catch up with the power and speed of the human brain by 2050. Some time after that they will start outstripping us and taking over from us.

9 🎧 Choose one side only - for or against the statement. Now listen to the recording and note down any points in support of your side.

10 Using your notes and your own ideas, try to persuade the rest of your group to accept your views on the statement in Task 8.

WRITING **11** Summarise the views of Pearson and of the experts you heard on the recording on the Future of Information Technology. Give your own comments on their views. Write about 250 words.

SPECIALIST READING

A **Find the answers to these questions in the text below.**

1 Of what is Professor Cochrane completely convinced?
2 What is stored in the professor's signet ring?
3 What will change dramatically when we start using rings like these?
4 What is the BT lab developing with artificial intelligence?
5 What effect are the professor's AI experiments having on evolution?
6 What does the professor see as the negative side of the electronic revolution?
7 What was the result of combining the Internet with TV?
8 What developments does the professor suggest in the field of biotechnology?
9 According to the professor, what will happen by the year 2015?

FUTURES

Talking to Professor Cochrane is probably as close as you can get to time travelling without leaving the current dimension, as his vision stretches far into the 21st century and beyond. His seemingly unshakeable conviction is that anything is possible if you really put your mind to it. In fact, BT (British Telecom) is already sitting on a host of innovations poised to blow your mind during this century.

Designed for the 21st century, Peter Cochrane's signet ring is built around a chip that holds all the details of his passport, bank account, medical records and driving licence. According to Cochrane, it's set to revolutionise shopping. The ring is already a fully operational prototype, but it will be some time before you'll be trading your credit card in for the ultimate fashion accessory.

It's not just jewellery that's set to get smarter. One of the biggest projects down at the Lab is looking at artificial intelligence as a way of creating software programs, networks, telephones and machines with a degree of intelligence built in. By sensing their environment, they should be able to develop new capacities as demands change. 'I have software that is breeding, which is interchanging genes and creating adaptable behaviour. This means you'll see the network come alive - it will watch what you do and it will adapt.'

It doesn't stop there, though, as BT has taken artificial intelligence one step further and created machines that are solving their own problems. 'We've created solutions that a human being could never have dreamed of. We have solutions, and although we don't understand how they work, they do work. We're effectively increasing the speed of evolution', says Cochrane.

It's already good to talk, but with artificially intelligent phones on the way it will be even better. Cochrane is at present working on smart phones that can translate English into German, Japanese and French in real-time. 'Some of it's

rocket science, but a lot of it's extremely simple. What we've built is a kernel of understanding inside a machine that extracts meaning from the sentence itself - at the moment we can do simple things such as phrase books,' he says. The system uses a non-linear approach that sends the English to the understanding kernel in the machine and then fans it out to all the other languages simultaneously.

There's no doubt that Cochrane is putting a lot of faith in intelligent machines, particularly when it comes to cutting through the deluge of information that he says is the downside of the electronic revolution. BT's solution is the development of intelligent agents that watch, learn and start communicating.

It's not all work down at the Lab, though. BT's also involved in an on-going trial that it claims will revolutionise our leisure time, in particular the way we watch TV. 'We put people on the Internet and broadcast TV at the same time, so that the people at home could actually influence what was happening on their TV sets. As a result, it became interactive and therefore more active.'

BT has its fingers in multiple pies and has made biotechnology another core focus of R&D. 'Personally, I think hospitals are very dangerous places to be. There are lots of viable alternatives. For a start, we can stop bunging up hospital wards by putting people online.' BT has already developed a pack for heart attack victims that monitors their progress and uploads information via a radio link back to the hospital.

So what will the 21st century hold for us if Peter Cochrane and his futurologists have their way? Well, by the year 201 5, it's likely that we will be eclipsed by a supercomputer more powerful than the human brain. And if that's got visions of Terminator dancing in your head, don't worry - Cochrane's got it covered. 'I'd really hate one morning to find myself considered an infestation of this planet. Our inclination is to nurture life and not to destroy it. Before we let loose a bunch of artificial intelligence, we ought to be thinking through the necessity of building in a number of rules that hold your life as a human being sacrosanct.'

[Adapted from 'Futures, Celebrity Squares', Professor Peter Cochrane, PC Pro Magazine, February 1998]

B Re-read the text **to find the answers to these** questions.

1 Match the terms in Table A with the statements in Table B.

Table A

a	BT
b	Smart phone
c	Intelligent agent
d	Rocket science
e	R&D
f	Upload
g	Supercomputer

Table B

i	A computer program that watches, learns and communicates with the user
ii	Most powerful type of computer
iii	Research and development
iv	Transfer data from a client device to a server computer
v	A telephone that can translate English into various languages in real-time
vi	British Telecom
vii	Very advanced study

2 Mark the following statements as True or False:

a BT has a lot of new ideas that will astound people.

b Jewellery that can store large amounts of personal data has started to replace credit cards.

c BT's smart phone can only translate English into one other language at a time.

d Intelligent agents can help users deal with an overload of information.

e Watching TV will be a more active pastime in the future.

f The professor thinks that humanity will be destroyed by very powerful computers in the future.