## *Things are Changing!....*

I went into a local school near the Labs and I had one hundred 17 year old school pupils in one of those big, banked lecture theatres. I asked them one simple question, "Think back twenty years, what was not in your home twenty years ago?" And there is always one smartie in the front row who puts up a hand and says, "Well, me actually!" I replied, "Yes, think outside of your lifetime, what was not in your home?" There were no microwave ovens, there were no CD players there were no Walkman, there were no computers, there were no games machines, there were no colour televisions, probably, there were certainly no video tape recorders, probably not even central heating in your home. Have you thought about it – there weren't even any pocket calculators. Then I asked them a question, "Do you want to see the pocket calculator I had when I was at University in the late Sixties?" 100 heads nodded in agreement, and I showed them one of these - a slide rule.

All of a sudden I had 100 pairs of eyes looking at me with but one thought behind each pair of eyes, "Where on earth have they found this one?" They were totally incredulous that anyone could use stone-age technology like that to do mathematics and calculations.
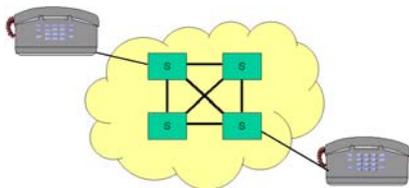
In the near future we will see much greater changes in the telecommunications and IT systems. For over one hundred years we have become accustomed to the telephone system with its exchanges. A system that allows you to dial a number and the network translates that number to a routing through the network to the far end – point to point. You then have a
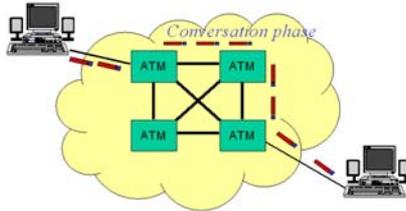
dedicated connection for the duration of the call.

When computers wee connected to the system, we forced them to talk just the same way as humans – dialling numbers on dedicated routes. Computers hate having to talk like humans. In an IT system the computer cuts the information into small packages, each with a header (the address on an envelop) and a load (the letter in the envelop). A computer would dearly love to be able to spray these packages throughout the network, and the machine at the far end collects, orders and presents the information to the human.
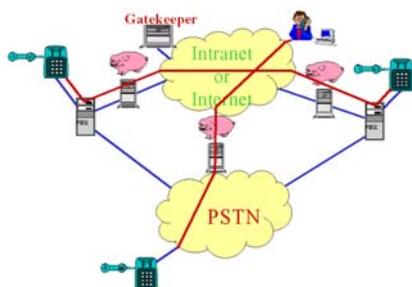
Soon, instead of Voice, Vision and Data being three separate information channels on three separate systems – they will be one information stream on one system. There will be a need for Gateways in the new IP system to ensure that speech is treated with priority – your ears are so sensitive to delay. Soon the possibility of point to multi-point communication will be an everyday event. Even multi-point to multi-point activities will be possible. We will cease thinking of moving *information* around a system and start think of moving *experiences*.

BT is no longer a phone company. It is now a Global Information Moving Organisation. The Joint Venture agreement between BT and AT&T is creating a company that will create the open IP Technology Platform, which will in turn allow others to mount application on the platform to allow the passing of packets of information. And do be careful; IP does not stand for Internet Protocols – it stands for Internet*working* Protocols! The internet of today is only the first step along the journey.

Soon I see the adults of the rich countries – and most certainly all of their children – wearing many electronic devices. These could be computers, organisers, phones, pages, games machines, and through the packetized mobile communications system they will be ubiquitously, continuously and effortlessly connected to the latest information on any topic. This will revolutionise our attitude to information and the way we work.

What I want, in the future, is a really smart desk, a desk that looks at me, recognises me. It therefore knows who I am and where I am and brings all my information to me wherever I am. It as looks after all my security, (it looks at the coloured part of the eye, the IRIS, a great measure of the body). Because this is a biometric we can have enhanced security - I don't have to use PINs or Passwords any more because we will need to put increased levels of security in systems as we start passing more and more information across networks. This desk listens to what I say and understands me without my having to train my voice to it, or it to my voice. In the BT Labs we have created a machine that understands any person speaking in English, irrespective of age, gender, ethnic background, local accent, head cold, etc. Suddenly, I can talk to a machine and it understands me. Now I can get rid of the mouse, I can get rid of the keyboard (both of which have held us back for too long) and we can start relating to machines. I also want this machine to be so smart that it starts talking back to me, in a very natural sounding voice. Now I can start communicating. With desks like this I can see us fundamentally changing the way we work. I will no longer need an office, I can work from anywhere using such devices.

As a consequence, I see the centres of our cities changing - less office space, more domestic, more leisure, in the city centres as people and the softer technologies wave out into the urban areas. Oh yes, if you are building cars you need to be in a factory where the car is being made. But more and more people start working in the softer technologies of the information age we will start working whenever, wherever we want and possibly peripatetically around the country or even around the globe. We no longer need to be in a fixed location and it is going to make a big difference. I see in the very near future the fact that we no longer have <u>a</u> job or work for one company. The idea of a job started in 1840, just after the Industrial Revolution. Before that time we had been in a barter system or a cottage industry system. Suddenly there was a transformation and we started working for one employer. This became progressively more and more the norm, until the 1950s and 60s when the concept was a job for life was created. You always worked and only worked for one organisation or company. I

see the way we work changing drastically and reverting back to a more open, free and "consultancy" based operation.

I see people working for more than one company, in maybe a rapid succession. Perhaps we could work for 15 or 16 companies during their working life and it will be thought rather strange if you only work for one company. In the past there was considered something wrong with you if you consistently continued to change jobs. Whereas in a few years if you keep your job permanently, you may be considered to be slightly weird! I even see people working for different companies at the same time.

As an example, if you ring your local bank, you expect someone in the local building in village next door to be answering the call. Your money is in there, after all, they should be looking after it for you and you need that personal service. In practice the BT's Intelligent National Network understands your need for service, flips your call across the network to a call centre and somebody up in, for example, Glasgow could be answering the call. A line at the bottom of the screen it says this call was intended for the XYZ Bank in Woodbridge; they answer the call with, 'Good Afternoon, XYZ Bank Woodbridge, how may I help you?'. You give your name and your account number and all your banking details are displayed on the screen. They can relate to you personally. One person can deal with all your banking needs. I see the same operator taking the next call and on the screen it says the call was intended for the ABC Building Society in Sheffield. 'Good Afternoon, ABC Building Society, Sheffield, how may I help you?' starts the next call. I see people working almost on a consultancy basis, almost on a minute by minute basis for many companies at different times. This is going to make a big difference to the way we start looking at how we deal with information. The modern Call Centre is only a beginning. The new communications networks will allow you to work from anywhere at any time. Companies will be able to recruit, not just from the local area, but across the country or even world-wide.

And just imagine the Human Resources issues when we all work in Virtual Teams! How will you control staff that you never come in contact with? How will you motivate staff that you never meet? How will you deal with the Cybersciver?