

## **INFORMATION TECHNOLOGY – SMALL OFFICE HOME OFFICE (SOHO)**

The speed of communications is wondrous to behold. It is also true that speed can multiply the distribution of information that we know to be untrue.

**(Edward R Murrow, CBS News. 1964)**

Britain is good, I think, at inventing things and at devising various types of sports; and, we appear to have the ability to concoct or conceive rules and produce guidelines or regulations. We can also determine such parameters as, for example, the size of pitch or playing area and surface, distance from and size of the target, length and shape of the object or objects used to play the game and, naturally, establishing governing bodies. However, over time, we seem to lose sight of the fact that having set the ground rules it is important to play the game to win, to remain competitive by investing in developing new talent, introducing new systems and techniques and improving equipment. And the same can be said of inventions, of equipment and of business. The net result is that we are so often overtaken by other teams and by other countries in investing in electrical, electronic and electrotechnical engineering excellence and developing technology to meet consumer demands in industry and commerce.

And so it is in the field of telecommunications. The British Post Office, predecessor of British Telecommunications and now BT, was, along with the American Telephone and Telegraph (AT&T) Company, among the forerunners in establishing and providing telephone lines and telephone exchanges to enable people and companies to communicate from their homes and offices and to conduct business. Telephone services were quickly followed by other services such as telegraph and 'ticker-tape' and then telex to provide increased information exchange to companies and individuals.

During the 1980's BT, the former state organization was, probably, the first of many European telecommunication network operators to be privatized. Privatization is based on the overriding principle that private ownership, private money and private management systems would ensure continuing investment and progress in the provision of telecommunication networks and services. However, that does not appear to be the case in UK, rather, other countries appear to have leapt ahead, in leaps and bounds, in providing improved network connectivity to small and medium-sized companies and individual homes.

Until the 1970's telecommunication networks, whether telephone, telegraph or data transmission, consisted of copper cables, copper being one of the best if not the best conductor of electrical pulses which is what the information being carried along a network is converted into. During the 20th century there was considerable growth in the provision of all forms of telecommunication networks and services. Not just telephones and telex but facsimile and networks for data transmission, mobile radio networks and during the last two decades an explosion in the provision of public and private networks for connection through Internet Service Providers (ISPs) to sources of information.

To keep pace with the ever-increasing demand for communication and telecommunication connectivity and circuit capacity the standard copper cable, and in some cases aluminium cable, has, in many countries but not so much in UK, gradually been replaced by optical fibre cabling but copper remains the primary system to connect homes to local area networks and this is one of the factors that limits bandwidth and data transfer speed.

Fibre optic cabling, and associated interconnecting active and passive devices, provides much quicker and more efficient and reliable systems of telecommunication connectivity. Not only that but fibre optic cabling provides much greater capacity and higher speeds of data transfer. However, fibre optic cabling is expensive and most households, in UK that is, still rely on single twisted-pair copper cabling to connect to local area exchanges for telephone, facsimile and Internet services. That, coupled with slower speed modulator-demodulators (MODEMS) in desk-top and lap-top computers and operating at only up to 56 Kb/s, means that communications between home and office, home and banking services, home and clients and home and shops, are not as effective or as efficient as they ought to be, thus costing the consumer more to remain connected for longer periods of time. Already, within Europe, discussions are taking place on the possibility of installing optical fibre cabling in underground sewer systems in order to provide greater access to much greater capacity and speeds.

Not only that but many people who make use of such systems and telecommunication channels often complain that connections tend to drop out and sometimes quite quickly necessitating further re-dial, wasted time and effort and additional costs. From my own experience this is something that happens quite regularly and, more importantly, too often and is a source of frustration for people trying to communicate through what is a system with enormous potential.

What BT, and other telecommunication network providers, surely must understand is that fewer and fewer are using the telephone for long-distance communication and more and more are using the Internet and e-mail systems to communicate. This is particularly prevalent in the case of smaller companies and organizations and independent consultants in the area of business now sometimes referred to as Small Office Home Office (SOHO) services. Therefore, it would make considerable economic, social and technological sense, and in the process aid productivity and competitiveness, if BT provided much higher speed access networks.

With the growth in demand for Internet connectivity, coupled with the e-commerce revolution in business-to-business (B2B), current telecommunications networks and systems are simply incapable of meeting demand. Current estimates suggest that there are more than 300 million people on-line throughout the world and this will double and perhaps even treble by 2005; that we are exchanging in excess of 7 billion e-mails a day and that this is estimated to rise to 25 billion in 3 or 4 years time; and, that traffic on the Internet is doubling approximately every 3 to 4 months. If that wasn't enough demand for mobile phones and access to mobile phone networks, including the new Wireless Application Protocol (WAP) systems that allow users to access the Internet, is also increasingly rapidly.

Major landline trunk connections between main exchanges, the backbone of telecommunication networks, and even to companies in and around major towns and cities use fibre optic cables enabling higher speed bulk services. And, although some cable network operators have installed fibre optic cabling to provide television, telephone and other telecommunication services clearly it would be prohibitively expensive for major telecommunication network providers to replace all the current copper cabling connections to homes and offices. The result is that the backlog of information happens between the local telephone exchange and the end-users who have to rely on 56 Kb/s dial-up modems and fairly slow connectivity.

And, given that the number of teleworkers or telecommuters is estimated to increase during the coming decade by between 15 and 20 per cent, mind you that prediction has been around for some time and has yet to come to fruition, it is time that primary telecommunication network operators provided higher speed data connections. Nonetheless, it will have to happen some time in the future as demand for all forms of telecommunications and media services increases. It is not a case of if but when.

In the meantime there is a solution to providing quicker and more efficient broadband connections through copper cabling and that is the use of Digital Subscriber Line (DSL) technology that allows for far greater capacity. DSL makes use of modem technology that transforms an ordinary telephone line, through digital coding techniques, into a higher-speed digital line for quicker Internet access by squeezing or compressing capacity. The system works by having a special modem at each end of the connection, office or home and network exchange, to transmit data over unused frequencies on the line. There are variants of DSL such as Asymmetric Digital Subscriber Line (ADSL), Synchronous Digital Subscriber Line (SDSL) and ISDN Digital Subscriber Line (IDSL). The latter system is for customers who already have Integrated Services Digital Networks and want to change to DSL technology.

DSL technology enables simultaneous telephone, facsimile and Internet connections and provides a cost-effective solution for telecommuters or teleworkers whilst also providing increased data security. And, computer connections are maintained 24 hours a day and there are no busy or dialing signals. All these facilities are of particular value to people who work, full-time or occasionally, from home or who cover a geographical area and are required to submit daily reports to their company head office and of course to gain access to sources of knowledge.

The main difference is, apparently, that unlike the normal warbling tones you hear when a current modem is connecting you to the network you cannot hear the DSL modem because it uses a much higher part of the frequency spectrum that you cannot hear. It also operates at much, much higher speeds than present systems, for example, a 1.5mb file will take approximately 40 minutes to download using a 56 Kb/s modem and 90 seconds using Asymmetric or Asynchronous Digital Subscriber Line (ADSL) systems.

The major drawback with the system appears to be that the maximum distance from the telephone network operator exchange switch to a company or a house subscriber is in the region of 16,000 feet or 5250 yards or approximately 3 miles or 4 Kilometres. The other major drawback in UK, at present, is that there is still no competition in the provision of ADSL services coupled with the fact that BT is currently unable to deliver to meet the present demand until, apparently, the middle of 2001.

Further, although an EU directive has stated that local area loop exchanges, within EU member countries, should be opened up, or unbundled, to allow other companies to install the appropriate terminal equipment BT is still, allegedly, dragging its feet on this issue and indicating that there is little or no room in some local exchange buildings. Primary excuses for not allowing access to local area loop exchange buildings range from being unsuitable for expansion or too expensive to provide the necessary space; that excuse surely must be unacceptable given the decreasing size of technology equipment.

The result is that US companies like Global Crossing and Worldcom and other telecommunication network providers have decided to abandon plans to offer ADSL services in UK.

So, the European Commission competition section has apparently begun legal proceedings against the UK government over delays in allowing new entrants access to the existing infrastructure. This is not good for competition, it is not good for customers and consumers and it is not good for UK Plc. Indeed, e-commerce and the growth of access to competitively priced electronic communication networks are too important for progress to be stymied through apparent intransigence.

In the rest of Europe many former state telecommunication network providers, such as Deutsche Telekom, France Telecom, KPN Telecom of the Netherlands and Telefonica of Spain have raced ahead in the installation and provision of higher speed cabling connections to enable homes and small companies to access Internet services more quickly. And, many are predicting that the speed of data transfer will continue to increase as they replace and improve those national and regional networks with fibre rather than copper lines.

In the United States, where higher speed broadband services have been available for 5 years, a fifth of households now take advantage of access speeds up to 10 times the connection speed provided by a standard 56 Kb/s modem. In Austria Telecom Austria estimates that DSL services will be available nationwide by 2003 and in Belgium, Belgacom intends to provide coverage to 75 per cent of the country by the beginning of 2001. In the Republic of Korea it is now estimated that one in four households have access to ADSL and that is mainly because some 90 per cent of households are within 4 Kilometres of local area exchanges.

In each and every country, apart from the UK it seems, this has been and is being done to meet the increasing demand for teleworking or telecommuting, on-line banking and financial services, on-line shopping and access to education and information. And, if the UK is to remain competitive and increase productivity in the growing global marketplace then it must, as a necessity, improve telecommunication connectivity and services.

So, from having been first at the table of privatisation and competition there is a real danger that the UK will fall behind in e-commerce because of the lack of progress in providing broadband telecommunication services. As at the end of 1999 the UK is way behind Germany, France, Italy, Spain and other European countries in providing broadband services for small and medium sized enterprises (SMEs) and to individual households. What makes this scenario even worse is the fact that, yet again, small companies and householders will be charged the highest access fees, when compared to other countries, for broadband channels and this is not helping business to grow. How long before our major telecommunication network provider gets its' act together?

The Internet is already an important tool in providing access to information and education and the growth of e-commerce means that those who are not connected are not only likely to be disadvantaged but disenfranchised from participating in society and more especially if and when increasing numbers of companies realize that they could sell more direct to customers through the pages of their own website.

If greater effort is not made to re-grade, update or simply replace existing telecommunication networks and connectivity arrangements, and in the process increase the speed of data transfer, the system is likely to achieve 'gridlock' in the near future as more and more people in companies, organizations and at home connect to the Internet.

We are so often advised that companies in future will need to concentrate on knowledge management or the management of knowledge if they are to maintain productivity and remain competitive in the growing global village and marketplace. Already most companies rely on computer systems, databases of information and telecommunication networks to exchange the information that allows them to operate. If and when telecommunication networks or computer systems slow down, or cease to function, it will increase frustration with the management and administration of people and with the handling of information necessary for business.

Unless and until we learn to keep pace with the global growth of information and telecommunication systems, through positive decision-making and investment, then productivity and competitiveness in the UK will decrease and so will profitability. In which case it is time for government and government Quasi Non-Governmental Organizations (QUANGOs) who advise on such issues to get a grip and encourage investment and reform.

(2430 words)

**KENNETH ARMITAGE**

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