

Pointers

The improvement in performance of Internet content and delivery, as a result of technology such as DSL and cable, is already opening up demand for applications requiring the higher transmission speeds that are becoming available.

There is sufficient pressure through regulation or market forces to see high speed networks made available to any customer requiring the capacity.

Experience in the US suggests that the transition to higher Internet access speeds can be gradual: while there are applications for 400 Kbps to 700 Kbps rates today, the content providers have yet to react fully to the prospect of multi Mbps bandwidths.

There has not been the investment in backbone upgrades and routers to deliver much of the extra performance to the user. Within a year, however, there will be 20 million users with the bandwidth for a quality video performance.

Implication of speed is that it moves the bottle neck back to the server – people will need very fast and very powerful servers. Content providers will place a huge demand on the provision of server and data storage technology - to the relief of players such as IBM.

As the worldwide Vice President of Internet Technology at IBM, John Patrick spearheads the corporation's thrust into the Internet and the applications which have been implemented or are still on the drawing board. He is uniquely qualified to provide an insight to IBM strategy on the single most important determinant of Big Blue's fortunes for far into the future. Mr Patrick shared IBM's vision in an interview with *EuroComms* during a recent visit to Europe. What emerged from the discussions were the seven principles which the corporation believes are fundamental to the future of the Internet.

Consistent with IBM's role as a supplier of IT solutions to government and the academic community, the corporation has been closely involved in the development of the Internet from its earliest incarnations. IBM was responsible, for example, for building the infrastructure of the National Science Foundation (NSF) network in the US in the late '80s. The Government had sought to create a backbone network linking several regional and university networks that were running as separate intranets.

With MCI as the long-haul communications partner, IBM was able to develop a single coherent IP network. That experience found the organisation implementing both a web environment in the form of IBM.com and W3.com, an enterprise-wide intranet.

It took the arrival of Lou Gerstner as Chairman and Chief Executive Officer in 1993 for IBM to tap the potential of the increasingly sophisticated network. "His reaction when he saw our web sites was to ask where was the 'Buy' button", John Patrick noted. "This was years before the Amazons of this world had been launched."

It would be a calumny on IBM to suggest that the corporation had not been active in electronic business transactions: it had set up EDI services for the many of the largest US and international corporations in its client list.

Though the sums of money being handled by EDI transactions were very large, the processes involved were at the best arcane, and the systems highly customised to meet the requirements of the 'sponsoring' party. EDI was developed for the benefit of the major retailing and supermarket institutions and bears little relationship to the Internet-based open-standard trading systems of today.

Within months, IBM had established an Internet Division to capitalise upon the commercial opportunity that the IP protocol and the Internet infrastructure would provide. "At a time when most IT companies were dismissing the notion that the Internet had business potential, that was an adventurous position for us to take."

Perhaps the most significant step by IBM has been to promote the use of the term 'e-business' but without trying to trademark the term: the red letter 'e' styled like the Internet ampersand was the only attempt to secure proprietary rights.

As John Patrick observed, keeping 'e-business' in the public domain was intended to encourage the public to use the term while allowing the corporation, with its first mover advantage, to leverage from it.

UBIQUITOUS THOUGH the Internet might appear to an observer intimately connected with business and communications, IBM sees its effective take-up worldwide as being very limited at present. Depending on the criterion selected, less than 2% of the world's population is able to access the Internet.

For this percentage even to approach double figures will require a step change in the Internet and the environment in which it operates.

IBM VP John Patrick believes that the next generation Internet will achieve that objective, representing a fundamental change in the principles on which today's network is founded. "The developments we have in mind for the next few years will make today's Internet experience feel primitive." There are, he maintains, seven facets to the 'new' Internet environment.



Speed of the network

The Internet user probably could not appreciate just how fast the network is set to become once high speed technologies such as DSL take to the stage. Speeds in excess of 1 Mbps will be commonplace across the network. This provides developers such as IBM with a huge opportunity for creating applications capable of utilising that capacity.

"By adopting DSL, operators can mount a huge threat to the cable companies, while wireless companies have added a further dimension: their progressively higher bandwidths are able to challenge both the cable and 'copper' telcos."

Total availability

Technologies such as DSL on fixed lines and GPRS on mobile inherently open up new markets by providing 100% connectivity 100% of the time. The act of powering up a PC device, waiting while it dials out to the service provider and then going through the security checks is sufficiently onerous and time-consuming to deter all but the most determined users. Those hurdles, John Patrick maintains, are a major barrier to the take-up of the Internet.

Accessed from anywhere

While 90% of all Internet access is through a PC, the next generation of user will link in through a much broader array of devices. "It is only a question of time before this market share is eroded by PDAs, mobiles and domestic television sets. There will also be a growing demand for access through kiosks."

Natural Interface

Until the Internet can provide a more 'natural' interface with the user, it will not achieve its full potential. The aim should be to ask a question in one language, have it translated into the language of the person responding, then convert it back for the questioner. "A classic example would be using a voice recognition system to request details of flights from New York to Paris. The user ideally needs to have the information fed back through a text-based medium such as a WAP mobile or a PC."

Intelligent data extraction

It is impossible to extract more than a fragment of the information held on the Web. The HTML language uses tags which describe their layout and characteristics. In contrast, the XML protocol tags pages for their content so that data can be extracted to order. A format for VAT invoicing, for example, contains all of the fields to make an electronic invoice acceptable to the VAT authorities.

Easy to develop applications

The widespread acceptance of Linux will help ensure that applications can be developed easily and without involving scarce resources. "The other major advantage of Linux is that it permits standardisation: output can be taken from one environment and optimised over many different platforms."

Trusted environment

The acceptance and adoption of Digital IDs across business, the government and the financial sector, will have the most profound effect on the take-up of the Internet as a medium for conducting business. "Trust is a question of attitude: users have to realise that it is no good having maximum security encryption if they leave their passwords on a Post-It note on the side of their screen. Digital IDs are for everybody: I cannot wait to get my medical records on the Internet, where they will be safer than in paper files in a doctor's surgery or the practice PC."

Pointers

Seven factors will promote the growth of the Internet by an order of magnitude in this decade:

- speed of access
- constant access
- universal availability
- no barriers to use
- extraction of data
- ease of development
- confidence of users

Internet will see a large number of applications for which the Web browser is not a suitable interface. Developers will use the Internet increasingly for tasks such as the remote acquisition of data and the control of remote systems. Monitoring a heart pacemaker is an example often cited.

The browser will revert to its original role for the browsing of text and hyperlinking.

A diversity of delivery mechanisms for the Internet, including TV, PDAs, mobile phones and pay-as-you-go kiosks will help stimulate the use of the Internet. There will be not be a single device that becomes a universal Internet interface.

Increased effectiveness of the Internet will be achieved through users being able to harness multiple applications in what appears to be a single coherent system, which is achieved without huge development costs.

IBM identifies factors which
VP of Internet Technology gives *EuroComms* an insight to

will promote usage of Internet
the seven pillars on which the 'new' Internet will be built