

*Manufacturers need to think "outside of the box". This article is designed to create awareness of new generation thinking. Connected footwear is already being called for as all things appear to converge. We have been hearing it propounded for many years, but have seen little evidence as we have to carry more and more gadgets for every element of our business. Is this now starting to change and is this the moment for companies to take note, because convergence will impact on how business is done and on customers' expectations?*

# Convergence



**W**e have been reading about convergence for nearly a decade, but any owner of the myriad of dysfunctional gadgets needed in today's business life will know that convergence is one promise that has been slow to emerge in any real sense.

Recently things have begun to change and the Christmas 2004 shopping period has possibly been the tipping point for both business and the consumer. Curiously, the item that may have made the difference is not so much the Blackberry, which is now welded to the hand of every American business executive, but the little Apple iPod. This is doubly so since Apple is probably best known for an unwillingness to allow its machines to interact with other systems. Historically Apple has been the archetypal non-converger.

The underlying concept behind convergence was that, as the digital world expanded, all machines would link seamlessly together and life would become simpler and easier. Instead, everyone has been carrying more little bits of computer-based hardware, each containing lots of functions which are only partly utilised.

## Breaking new ground

The most obvious development of the last two or three years has been the convergence of telephony and photography. Mobile phones now function as cameras and are instantly capable of transmitting pictures around the world. The overall transfer of photography from film to digital media has been one of the fastest changes ever. The Blackberry already mentioned above has also been important in terms of giving executives on-the-go access to email and voicemail.

Over the last six months there has been a dramatic uptake of digital tools in business and consumer sectors. Certainly the iPod is the most obvious and with it has come the large scale legal downloading of digital music—much to the relief of the music industry. There has also been the rapid replacement of the video cassette by the DVD, and an associated rise in the number of computers, which can be used both to play DVDs and to watch TV.

In many parts of the world both television and radio are moving into a digital format, making them both easier to record and manage. The user gains

control of a wide range of written, picture, sound and video media, plus the ability to broadcast them in many ways on different devices. Add to this the speed of uptake of broadband and WiFi which allow consumers and travellers to have access to relatively low cost high speed Internet connections and the overall convergence in the fields of communications, photography, media management and entertainment becomes apparent.

## Latest developments

The picture becomes even more interesting when brands like Nike and Levi become involved. Both have been working with the Dutch electronic company Philips to integrate electronic products into everyday life. A year or two ago Levi combined with Philips to produce an outer jacket carrying an integrated mobile phone and MP3 player. Nike and Philips have now developed a pedometer that plays music while updating the athlete with information on distance and speed.

Incorporating technology into physical goods has been going on for a while but

has accelerated with the enthusiasm for the iPod and with the recent big cost reductions in radio frequency identity tags (RFID). These have been used in areas such as Swatch watches to operate as ski passes and for buying drinks, and in automobiles to pay for highway tolls. What is important here is that through this technology inanimate goods are becoming attached to the Internet.

### What it all means

So what is happening with convergence is not so much that the consumer will carry around one little gadget which can do everything—although sometimes it may feel like it—but rather that every bit of equipment will become interconnected in a hopefully useful and sensible way. Individuals will be continuously on-line in different forms and the physical items they use and wear will increasingly be an integral part of that connectivity. At the same time, it is also accepted that things need to be simple for users and all the complex plumbing that makes this convergence happen must be hidden from them.

Technology now permeates every aspect of business and digital communications are the core. New technologies are announced almost every day and choices can be complex and confusing:

- Mobile phones that are integrated communications devices
- Digital switchboards that can provide caller information and are beginning to integrate with web for fax and voice over IP
- The growth of different communications standards such as Broadband, WiFi, Bluetooth and GPRS
- Websites that have live links into business process servicing requests from customers, suppliers and staff on the road.

Plotting the development of technology over the last three decades has seen a number of watersheds. The advent of the PC, the development of a operating system standard (MS Windows), the commercialisation of the world wide web and the rise of the mobile phone as a must-have device. However, the business community has struggled with understanding the new technologies and deciding which systems

to back. It has also had its confidence shaken by poor and bug-ridden software and expensive dot.com failures.

### Age makes a difference

This is not helped by the fact that many of the naturally older people who hold the top jobs in industry are the least comfortable with the new technology. The Economist recently defined society as breaking into three groups. Analogues constitute by far the biggest group and have great concern about getting involved. Digital converts come next, while the young constitute the digital originals. They use the Internet as the first source of information, the text message or email as the main method of communication and are not phased by equipment and software that regularly fails to work as expected. Analogues make up about 70% of society and mostly in the older age ranges.

The young digital originals are important pointers to the future both in terms of how business might look as well as how consumers will behave. Both aspects are vital for product developers to understand. These are consumers who have probably read few books by the time they reach 18 but have been prolific users of SMS text messages. Classed as Digitally Literate they can be considered —Always on, Mobile, Experiential and Community-oriented.

The Internet is their primary communication tool. According to

NetDay (2003) of this group:

- 81% email friends and relatives
- 70% use instant messaging to keep in touch
- 56% prefer the Internet to the telephone.

They frequently watch TV simultaneously with surfing the Internet, are not interested in conventional advertising, but do participate in a good viral marketing campaign.

### Significance of wearable computers

A wearable computer is no more than a computer that is always with you, is comfortable, easy to keep and use and is as unobtrusive as clothing. There are some key aspects to wearable computers. A wearable should be able to convey information to its user even when not actively being used and known as 'Attention-getting': they should also be 'always on'. By default, a wearable should always be on and working, sensing and acting. This is opposed to the normal use of 'Personal Digital Assistants', which wait until a task needs to be done.

When the concept of ubiquitous computing was first raised in around 1991, it came with a vision of people and environments augmented with computational resources that provide information and services when and where desired. While we are still a long way from that goal, even the ordinary ➤

Dr. Oblinger, Manager Academic Programs and Strategy for the Higher Education division of IBM North America notes that by the age of 21 these new consumers and potential employees will have:

- spent 10,000 hours on video games
- sent 200,000 emails
- spent 20,000 hours watching TV
- spent 10,000 hours on cell phones

All this while having spent less than 5,000 hours reading. The following table tells us more about this developing social group.

|                    | TV Generation | PC Generation     | Net generation       |
|--------------------|---------------|-------------------|----------------------|
| <b>Web</b>         | What is it?   | Web is a tool     | Web is oxygen        |
| <b>Community</b>   | Personal      | Extended personal | Virtual              |
| <b>Perspective</b> | Local         | Multi-national    | Global               |
| <b>Career</b>      | One career    | Multiple careers  | Multiple reinvention |
| <b>Loyalty</b>     | Corporation   | Self              | Soul                 |
| <b>Authority</b>   | Hierarchy     | Unimpressed       | Self as expert       |

To these new citizens, convergence is an assumption and they do not need definitions of ubiquitous computing, wearable computers or convergence. They expect and anticipate all this.

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consumer is now recognising that things are happening to make many aspects of life overlap, or appear much more joined up.

Increasingly, we need to anticipate the future expectations of consumers and employees who are digitally literate. They may not define themselves as computer-minded or technical, but they will be using many digital tools in a wide and perhaps unexpected number of ways. And they will increasingly expect higher levels of customer service, immediacy,

customisation and choice. This will in turn involve expectations of good quality self-service for those accustomed to buying on-line.

In this regard convergence has begun to display itself in many other ways. For example, both Google and Amazon are starting to present books and libraries to customers in different ways. It was hard to imagine a few years ago that an on-line mail order book-seller like Google, would develop Google Scholar or be working with some of the most famous

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libraries in the world. The Wall Street Journal describes what is happening as 'reshaping old standbys and broadening their use'.

### Further implications

We are also witnessing the emergence of the ubiquitous computing paradigm. Many organisations now extend computing technologies such as personal digital assistants (PDAs), 'smart' mobile phones and other handheld computing devices to extend 'the office' wirelessly to employees' briefcases, shirt pockets, cars and homes. Even within the organisation itself, computing technologies such as intranets entice various sub-units outside the traditional IT function and, even individuals, to become involved with 'their own' implementation activities.

Research in this direction has indicated that ubiquitous computing enables individuals to switch freely and easily between work and private use contexts. This is seen to be an environment where interconnected computing devices allow enhanced use, while at the same time remain transparent to the user. This makes the point that the gadgets are not just joining up and the individual not just always connected, but that the way we do things and use things is changing.

Few inventions lead to the expected outcome and, there will be as many unimagined results from convergence, as there will be simple solutions to communications problems. One aspect is personal freedom. The always-on individual can always be found. Good in an avalanche but is it what we want in everyday life? 

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