The dangers of too much distributed intelligence

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Steve Jobs and Apple Computer are past masters at polarising opinion. Take the latest MacBook laptop, the ultra-thin "Air". Supporters admire its slim good looks; detractors marvel at Jobs' chutzpah in promoting less as more.

One wag, writing online, predicts a future product launch in which Jobs strides on stage bearing nothing more than an elegantly designed USB cable to rapturous applause from the faithful.

The launch of Air raises an interesting question, however. Its design philosophy means there is no optical drive, no firewire port and no Ethernet jack. There is simply not the room to incorporate them. How minimalistic can a computer be and still be acceptable to buyers whether corporate or domestic?

In an interview on the back page of this edition of Digital Business, for example, Paul Jacobs, chief executive of the mobile device development group Qualcomm, discusses research the company is undertaking which will lead to cell phones capable of performing, after a keyboard and screen have been connected, as a fully featured computer.

Conventional wisdom has it that computers are becoming so small and powerful that they will be ubiquitous, conferring "intelligence" and memory on all kinds of currently dumb objects.

However, the dangers of too much distributed intelligence and memory are already obvious: computer discs bearing confidential information go astray; laptops and mobile phones are lost or stolen; memory devices with the capacity to store a company's entire database are readily available at little cost.

Information systems managers are already protecting their data by installing the modern equivalent of the original mainframe: intelligence at the centre linked to dumb terminals - thin clients, although not necessarily thin in the MacBook Air sense - at the periphery. The aim is to shut the door on any possible misuse of corporate information.

Fredrik Linaker, a research manager in the consultancy Accenture's Sophia Antipolis laboratories in France faced a different problem. Software capable of sophisticated speech and image recognition was available but the calculations were too much for the computing power in a mobile phone.

He had been working on a mapping robot, a wheeled, visual device capable of making its way around a building and registering the equipment it recognised there - telephones and furniture, for example - for insurance purposes.

The robot's visual system was up to the job of pattern recognition, but the computing load was significant. First, one laptop was attached to handle the computations, then another. By the time the third laptop had been added, the physical load was more of a problem than the computing load.

Mr Linaker's solution was to use the video transmission capability in smart mobile phones and the 3G network. The images captured by the robot could be transmitted over the 3G network using the built-in video calling facility to a powerful computer based elsewhere for processing.

Video calling has been available in European mobile phones for years but is not hugely popular.

This inspired Mr Linaker to devise a new product combining the pattern recognition and video transmission capabilities of the mobile phone with the power of the supercomputer.

The result is a kind of pocket encyclopaedia, a mobile phone capable of recognising and analysing complex images and providing information about them.

"Say you are looking at a painting," Mr Linaker says "Point the cell phone at the painting and you can
quickly receive on the screen information about the painting - who the artist is and some historical details."
Add speech synthesis and you have a device which could greatly benefit the blind or poorly sighted.

A prototype exists and Mr Linaker says it will not be long before a commercial product is available. Apart from consumer uses as, for example, a pocket tourist or supermarket guide, he thinks it will find a diversity of business applications.

One interesting example is a device to help new employees find and identify specialist manufacturing tools from a shared toolset. Experienced engineers have no problem recognising the best tool for the job; for novices it is more of a problem. As the tools are mostly made of metal, RFID tags may not be suitable.

Variations on the Accenture theme are being researched by a number of organisations including Hewlett-Packard and Nokia - whose system depends on location as well as pattern recognition.

The drawback, of course, to universal thin clients is the load on the network. Mr Linaker claims his system can recognise an image and send back information about it in a second or less; but that means transmitting a huge amount of data in both directions.

Today's networks are not up to this kind of challenge. It will take further excursions up the electromagnetic spectrum to provide the needed bandwidth.

For the moment, then, conventional wisdom would seem to hold the winning hand and thin computing will be synonymous with the MacBook Air - providing it doesn't join the remote control down the back of the sofa.

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