



ROADMAP TO THE 'INFORMATION ECONOMY'

Background

We are now at a pivotal point in the growth of Internet technologies. Within six months GPRS (General Packet Radio System) technologies will enable mobile Internet access with the same performance as current modem technology. Subsequently, the migration to UMTS (Unified Message Transport System) technologies over the next three years will provide mobile Internet speeds approaching those of fixed networks. This will herald the way for a new 'Information Economy' where any time, any place, anywhere people can access the services they need to be successful. An aspirational society where people can use their time effectively and enjoy life to the full, an age in which pervasive, always on information is the key to a competitive edge.

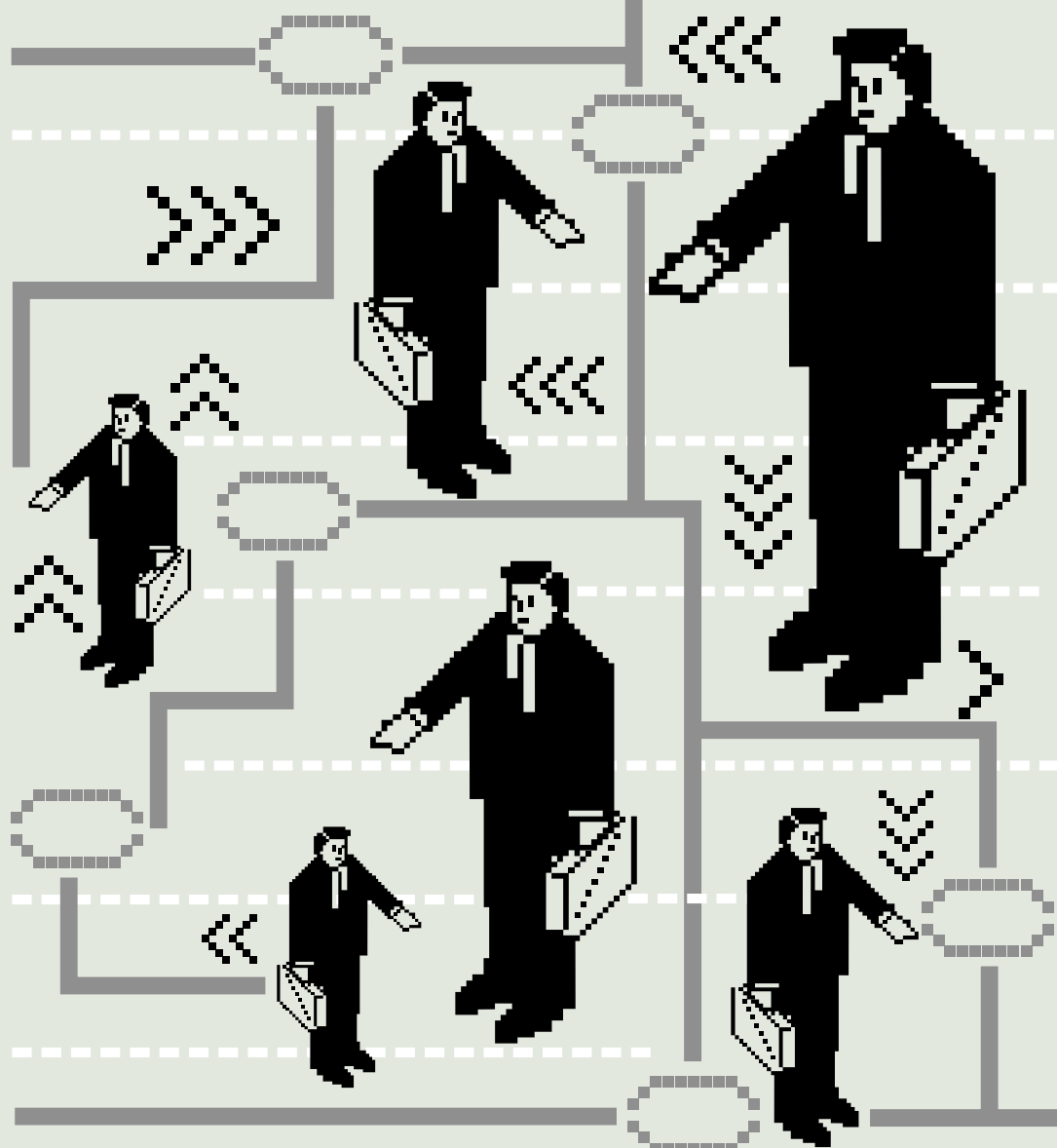
Every week a new technology, product, or service appears that not only enhances, but also challenges our view of this future. This mood is captured in a quote by Victor Hugo (1802-1885):

"There is one thing stronger than all the armies in the world and that is an idea whose time has come"

Victor was referring, in this instance, to the French Revolution, a revolution which fundamentally changed the way society as a whole operated. I believe the Mobile Information Revolution will have an equally huge effect on society in the future. We are seeing the convergence of computing, telephony, media and Internet allowing final delivery of the 'Information Economy'.

ROADMAP

2001.....



NEW

GO TO

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Grid icon

Social Climate

Consumer society and businesses now share the following common traits:

- Acceptance of self-service
- Demand for value
- Access to PC technology and the Internet
- A requirement for service at their convenience
- Price awareness

Confidence in the Internet is still being hindered by:

- Security/reliability concerns
- Cost of connections (although reducing rapidly within the UK market)
- Availability of resources
- Ease of use
- Misplaced perceptions

Industry Trends

There are increasing forces in the market which are encouraging mobile workforce developments. These are driven by the need to increase customer experience, reduce costs, increase efficiency and overcome critical skills shortages.

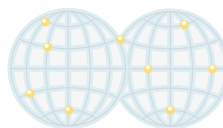
In addition, governmental pressure in terms of fuel prices, or tax concessions are further stimulating the growth of B2E (Business to Employee) markets and tele-working is being actively encouraged by US governmental legislation to reduce congestion and costs (TeleWork Tax Incentive Act May 2000).

Recent surveys have suggested that:

- 40% of Internet transactions will be mobile within three years
- 60% of IT directors believe that mobile Internet will have as much impact as the business Internet has thus far.
- The majority of corporate profit made in the past 100 years was due to the unavailability of ready comparison of (value, quality, price, etc).

Imagine what these trends could provide over the next three years.

Sweating Assets - This is well known in terms of physical assets, for instance making the most use of a machine, which costs large sums of money and, therefore, increasing the return. This practice is



equally relevant to information sources and we can sweat the assets of intellectual property by taking information from key internal company sources and putting it in the hands of the workforce.

Technology Trends

The technologies required to provide high bandwidth, secure services and ease of use are only just becoming available and include:

GPRS - Packet switched telephony operating at a theoretical maximum 170Kb/sec, one of the key benefits over current mobile telephone technologies is performance improvements and the fact that you are always connected to the network. This will be an essential building block to allow live access to corporate data via a handheld device.

Bluetooth - This is a market standard for local area wireless communication at 1Mb/sec between two devices, e.g. a PDA to a mobile phone. It will allow the mobile worker to be free of connection worries and be able to communicate with multiple devices anywhere within ten meters.

ADSL - Business to home Internet link at 400Kb/sec.

WAP - Allows mobile phones to access simple Web pages using a Micro-Browser.

3G - Third generation mobile phone standard, providing 'always connected' access to Internet sites at a theoretical 2Mb/sec.

E-Speak - Software environment that enables brokering of E-Services between companies.

Information Appliances/PDAs -

Fast, flexible with good displays and integrated telephony.

CRM (Customer Relationship Management) - Allows a business to profile and target its customers.



Infrastructure

HP is investing internally to provide bundled solutions and mobile access to key Intranet applications, thus demonstrating its continued thought leadership in technologies represented by the intersection of the three vectors:

- Information appliances - Mobile phones or PDAs (personal digital appliances) are dramatically increasing in functionality from personal calendar and telephone lists to full video, audio, mobile Internet and online business capabilities.
- E-Services - Is information readily available, current and pertinent to the user.
- Always on infrastructure - The reliance of the 'Information Economy' on technology will further push the envelope of computing and demand 'always on' or 'utility levels' of availability, for instance how often do you use a plug and get no electricity, this is what is meant by always on infrastructure.

Application

Companies can provide mobile Internet portals specific to their employees job function and using data compression provide all required data in a timely manner to handheld devices. For a salesman this data could include CRM solutions to understand the

customer's view of the company, pricing information, delivery dates, data sheets and territory management. In addition, the salesman could order parts and supplies in front of the customer and beam confirmation of the order to a local printer. A service engineer could access workflow and logistical information,

service notes and parts availability, plus directions on how to find the customer site. A knowledge worker could utilize instant messaging between remote employees, access to knowledge databases, email and video based training.



Emergency Services

We imagine you have a large mobile workforce who has only limited access to the technology, and more importantly to the information that will make them successful in their roles. Fast and immediate access to rapidly changing records as well as logistics information such as work-force rotation and schedules are essential.

Just e-magine:

Imagine that your officers have access to a Global Positioning System with them at all times. They can receive spoken directions to an address or location of their choice, and you can know the precise location of your officers at all times. Imagine one officer being able to identify the exact location of one of their colleagues with the skills they need to address a particular situation. Imagine they are able to request their help without the intervention of others.

Imagine your staff can instantly check information without the need to waste the time of others in the office. No more 'ringing-in' to check basic information.

Imagine a PNC (Police National Computer) check instantly available at the touch of a button, with full details being displayed privately rather than being read out.

Imagine being able to search for criminal records on the move and have those records displayed instantly.

Imagine all of your officers being able to being able to instantly access pictures of known criminals, pull up a floor plan of a burning building, or a diagram showing a remedial operation to be carried out by a paramedic.

Imagine being able to record interviews as you take them and have these instantly deposited and archived for historic reference. Imagine these 'transcripts' being available to your colleague's just seconds after they have been taken.

Imagine your officer finds someone requiring medical attention, but they need to re-familiarize themselves with a particular procedure. Imagine they can get step-by-step instructions on the current procedure for dealing with this incident and are not relying on procedures that may be out of date.

Imagine that these employees who are often remote from the head office and its infrastructure can browse your Intranet to get the latest guidelines and policies, see the latest announcements. They can browse the Internet for more general information.

Services Organizations

We imagine that your staff is visiting customers daily and they need to represent your company and its products. As well as quick access to customer information, job schedules, logistics and other information to carry out their job, they also need access to sales tools and other information that will leave your customers with the knowledge that they are dealing with an effective organization.

Just e-magine:

Imagine that all your staff has access to a Global Positioning System with them at all times. They can receive spoken directions to an address of their choice, and you can know the precise location of your service team at all times.

Imagine your staff can instantly update call information, or retrieve new information at the touch of a button.

Imagine your service staff using the latest technology effectively and the impression this will make on your customer.

Imagine your representative meeting a customer, not just with the technical information for the 'call' in question, but with information and news feeds relating to the customer from the previous day and being able to engage the customer in discussion about them.

Imagine your companies Service Professional having immediate access to the latest technical manuals and training materials at the point when they need it most - onsite and in front of the customer.

Imagine that your staff can check on the availability of resources such as spares and other staff with particular technical skills, that they can arrange for delivery of a part, or a call back from a colleague with specialist knowledge.

Imagine your service staff finding a lead for new business, and being able to instantly collect just the right information to enable your sales staff to follow-up with the customer at a more convenient time. Imagine that they can select the latest brochure for the service and have it printed on the customer's printer. Imagine they follow this up with a miniature presentation on the subject, whilst a full presentation arrives in the customers e-mail account.

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Imagine your mobile staff with a wireless information appliance, supported by an always-on infrastructure, delivering the key information they need, when they need it, over the Internet. This is e-Services on a pallet.

HP utilizes mobile e-Services internally

Pilot Testing

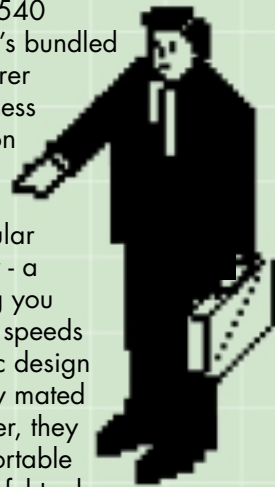
An implementation of the technology has been constructed in HP in the UK providing mobile connectivity between HP internal applications and various handheld devices.

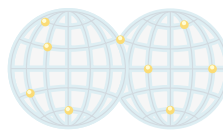
The pilot provides handheld HP Jornada PDA devices with Bluetooth connectivity to mobile phone networks. These can access a mobile portal based on job function and provide access to industry information, Intranet and in-house applications.

This technology is in pilot at the moment across HP's consulting, support and sales organizations and is being used to quantify the business benefits and understand user feedback. Following analysis of these results and the commercial availability of the GPRS networks, the expected production roll out is scheduled for June '01.

The Novatel Minstrel 540™ Wireless Modem, combined with your HP Jornada 540 Series Pocket PC, is a tightly integrated mobile computing tool that enables secure, 2-way wireless access to email, corporate LANs and the Internet. The Novatel Minstrel 540 modem is compatible with the Jornada's bundled Pocket Inbox and Pocket Internet Explorer applications, delivering untethered access to your important data when you are on the road.

The Novatel Minstrel 540 uses Cellular Digital Packet Data (CDPD) technology - a secure, open standard network - giving you reliable, real time data transmission at speeds up to 19.2 KBPS. The sleek, ergonomic design of the Novatel Minstrel 540 is perfectly mated to the Jornada 540 Series; and together, they provide the functionality of a single, portable device - resulting in a smart and powerful tool for the mobile professional.





Business Benefits

- These trends will make the Web accessible any time, any place, anywhere and provide employees with all the information they need to be successful in the palm of their hand.
- It is easy to communicate with remote employees.
- They have an holistic view of the customer experience and all the information they need as opposed to spending more time in the office trying to search for it!
- Improved customer experience.
- Increased productivity allowing employees more time with customers, thus maximizing the return on intellectual property within the company. ITJ

Ian Brooks is currently head of HP Services Internet Strategy for the UK. He has worked for HP for 15 years, leading HP's software business in the UK, managing channel partner relations, and working in other operations and support positions.



Mobility

