



Mobile office:

the next breakthrough in professional productivity gains

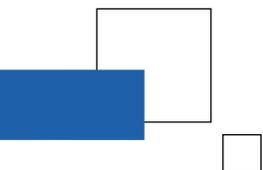
Key Topics

The next step...***What's driving wireless e-business?******The world of mobile office******Deployment issues******Mobile office and IBM******Getting started*****The next step...**

So here we are in a new year with fresh challenges plus some old ones...like retaining customers and finding new ones and outpacing competitors while continuing to cut the costs of doing business.

It's an effort coming up with a fresh panacea each year. However, one area of business investment which has continued to leverage innovation and to provide greater returns year after year is information technology. A breakthrough for your company this year could be taking the next step beyond the computing paradigm of 'cheaper, faster' to an equally powerful one based on wireless technologies and called 'anytime, anywhere'.

Wireless e-business is taking off, topping the list of planned 2001 technology investments in a recent survey of US and European CIOs (Merrill Lynch, December 2000). Not just because it's an exciting new way to get the weather report or check your flight status, although those capabilities are a reality now for millions of people. The real power of wireless e-business is its capability to help optimise communications, improve our responsiveness to customers and accelerate processes and decisions within our organisations and with our business partners — the power to get things done which seemed previously undoable.



What's driving wireless e-business?

Wireless e-business, the extension of information systems to wireless devices enabling companies to use critical data where and when it is needed, is becoming the way to get business done and done most effectively for several reasons. One reason is that business professionals across the globe are increasingly mobile. Another is the rapid advancement of wireless technology driven by IBM and other industry leaders.

What has been called the wireless revolution has the potential to reverse the paradigm of 'going' online to the Internet to a scenario where the information which business professionals or individuals seek is coming to them anytime and anywhere. Rapidly increasing industry standardisation along with four key technology developments are enabling these changes and driving the 'wireless revolution' today:

- Always-on networks with continuous data connections, higher speed and reliability
- Improved human interfaces including larger device screens, use of graphics and colour, touch pads, streaming audio and video, and voice recognition
- Security features and user authentication enabling confidential communications, with the potential for wireless platforms with 'SmartCards' to ultimately replace cash and credit cards in commercial transactions
- Context Technologies like cameras or scanners built into wireless handsets, collecting a diverse range of context information like vending machine, parking and utility meter or credit card payment data. Context technologies have begun to rapidly accelerate the acceptance of wireless pricing, promotion and payment applications.

One aspect that is most promising about these technologies is their power to bring about a newer, sleeker, 'Internet Lite' with crisp, data-rich content, enabling fast, highly productive use of mobile devices.

Due to these types of developments, information technology experts are predicting widespread industry penetration of wireless applications.

"By 2003, all e-business initiatives will include some element that is delivered across a mobile wireless channel" (0.7 probability — Gartner Symposium, October 2000)

"Wireless access to Fortune 500 websites will comprise 1.7% of overall traffic this year but 10% of traffic in 2002" (Salomon Smith Barney — August 2000)

"By 2003, there are estimated to be a billion wireless subscribers worldwide with up to 70% of wireless devices having Internet access" (IDC)



The world of mobile office

To date, great interest and momentum have been seen in Business-to-Consumer (B2C) applications such as the highly successful NTT DoCoMo i-mode system in Japan. B2C wireless applications may include wireless banking, stock quotes and trading, travel reservations and personal lifestyle applications such as messaging, weather reports, games or downloading music from the Web. However, many of the solid business benefits from wireless technology adoption are expected to be realised in the Business-to-Employee (B2E) environment.

This was reinforced by a recent study of European companies across multiple industries which found that, when managers were asked to rank a variety of wireless applications in order of importance to their company, the top three in their rankings were business-to-employee applications: wireless e-mail, mobile office organisation and sales force automation.

These applications along with *wireless Internet and intranet access* and the rapidly-evolving applied communications technologies of *unified messaging, wireless LAN* and *voice recognition* constitute the mobile office, serving to optimise business communications and to bring job-critical information and processes to business professionals when and where they need them. Let's look at these capabilities in more detail.

Wireless e-mail can provide mobile device users away from the office the ability to read, write and respond to e-mail, to send and receive short messages immediately, to receive e-mail and message notification and alerts and to create and send memos, accelerating communications and decision-making as well as responsiveness to customers.

Wireless office organisation tools enable users to receive calendar updates and add calendar events, to access and update address books and to use and maintain to-do lists in a mobile environment, saving time and staying up to the minute regarding important meetings, calls and deadlines.

Wireless access enables access from a wireless device to important company data and to a wealth of information on the Internet, allowing employees to continue work projects, find answers to questions and respond to customers and others even while away from the office. An extension of this concept is the company-based portal delivering access to traditional computer-based applications plus additional services to optimise productivity of the workforce. One example of company-based portal services is location-based information such as maps, weather, transportation, currency, hotel and restaurant information for mobile and travelling employees, to save them and the company time and money.

Unified messaging combines communications received through voice, e-mail, fax and paging technologies into one central repository, providing full access to all messages from a mobile device, saving time, minimising lost or misdirected messages and speeding communications.

Mobile sales force automation leverages a variety of mobile office applications for sales force support. These can include mobile e-mail and messaging, access to CRM and other customer and corporate files, Internet access, order entry, scheduling and status as well as submission of expenses, time accounting and other types of reporting. These combined capabilities can be a powerful boon to field productivity and timeliness, dramatically increasing territory coverage and shortening the sales cycle.

Wireless LAN (WLAN) technology provides two primary types of mobile office support:

- Bluetooth* technology enables short-range wireless networking, allowing devices to form a Personal Area Network (PAN), communicating up to 10 meters without cables
- WLAN technology also provides a means for inexpensive networking of personal and notebook computers and other devices, enabling communication at distances over 100 meters. In addition, WLAN technology can enable wireless high-speed Internet and Intranet access for laptops or hand-held devices, creating a virtual office environment almost anywhere.

The recent WLAN standard, often referred to as IEEE 802.11b, provides for transmission up to 11 megabits per second, enabling rapid e-mail processing, downloading of files and other bandwidth-dependent functions without the cost and challenges of installing network cabling. With a WLAN network, it is now possible to have high speed laptop access ports in mobile office locations, conference rooms and temporary off-site locations, maximising employee collaboration and productivity. Today's WLANs can also significantly reduce network costs, particularly in temporary or non-contiguous office space and in older buildings.



Voice recognition technology allows employees to quickly access information 24x7 by telephone or the Internet. It can also provide universal messaging, converting text messages to speech when other means of access are not available. Voice recognition access is highly suited to deliver small amounts of specific data rapidly to those needing it.

Combined, these mobile office applications can be a powerful force against natural corporate enemies such as wasted time, miscommunication and lack of information, all resulting in lost productivity and opportunity. Many of us can relate to the frustration of needing to communicate or access information from a car, airport, client location or other places where there is not the capability or time to get Internet connections working.

Mobile office is the critical link between knowledge upon which companies depend to be effective and the need to be in many places at many times, communicating, collaborating with others, accessing information, making decisions and being responsive to customers. Also, mobile office has the potential to deliver significant benefits to companies and organisations across virtually all industries.

Deployment issues

Four critical success factors can make the difference between a highly successful mobile office environment and one that does not quite meet expectations.

Security is often the first thing that comes to mind when one thinks of accessing valuable corporate data or exposing corporate plans through mobile communications and conversations. Wireless devices, like all technologies that provide external access to corporate networks, present security challenges. Although wireless standards will continue to evolve, there are many security standards and practices that can be implemented today and the appropriate level of security should be paramount in choosing equipment, services and applications for the mobile office.

Plans for mobile office deployment need to be able to answer the following questions:

- How will individual wireless devices themselves be authenticated?
- How will we verify that the mobile device is in the hands of an authorised user?
- What will we do if a user's device is lost or stolen?
- How will we validate each requested connection to confirm that it comes from our authorised wireless service provider?
- How will we ensure that outgoing data is encrypted from our network to the device?

In addition, it is a good idea to extend your organisation's internal privacy and intellectual property protection guidelines to include the mobile office environment.

Integration of the mobile office environment with mainline business and office support systems will be critical as it becomes a virtual Web of corporate activity, processes and decision-making. Effective systems integration will minimise disruption to the business as corporate networks and information systems continue to evolve.

Usability of mobile office systems will be a key factor in fully realising financial and other benefits. Critical components in mobile office application usability which should be evaluated early in the planning cycle include:

- Bandwidth or access speed, which will be driven by the frequency and data-intensity of the application
- Selection of the most appropriate mobile device and screen size for the required applications
- Type of access required — continuous or on demand
- Regional service coverage
- Application design to deliver the right information to users 'just in time' when they need it. For text and graphics, 'pulling' selected information to mobile devices versus 'pushing' unaltered records or Internet content can significantly increase productivity at the mobile end. For this purpose, transcoding programs are often used to reformat and filter information for specific users and to optimise communication with specific types of mobile devices.



Availability of the mobile office network must also be assured to maximise its use. Reliability in a wireless network depends upon factors such as seamless network coverage and state-of-the-art systems management tools, alternate user access channels and fallback procedures at the hosting location.

Scalability & affordable growth must also be planned for. The constant advancements in wireless technology portend a continuing progression of more and more sophisticated and user-friendly mobile devices. Wireless networks moving towards 3G, the eagerly anticipated high bandwidth third generation technology, are transforming themselves into high-speed channels for voice, data and full multimedia communications.

To take advantage of these trends, the capability to continually and rapidly prototype, test and deploy new technologies will be critical. A Wireless Portal can facilitate this process, with ongoing network maintenance cost reductions estimated at 20% (Gartner Group). A Wireless Portal is a combination of hardware and software with integrated network development, management and security mechanisms to enable communications between wireless networks and devices. An effective portal should be built on open standards to accommodate new devices and technologies as well as other industry advances and globalisation.

Mobile office and IBM

IBM has been a leader in the development of products, services and technologies to support the mobile office and the exploding wireless marketplace. Together with IBM Business Partners, leading network, service and application providers and mobile device suppliers, IBM is committed to continued development and enablement of wireless technologies and to providing best-of-breed wireless products and services for our customers.

IBM wireless technology

IBM was the first to introduce Silicon Germanium (SiGe) chips to the marketplace as well as the first to produce them in high volume. These chips are exerting a powerful influence on wireless communications, greatly accelerating performance of wireless devices like cellular phones and significantly reducing the drain on their batteries.

In the area of mobile device storage, IBM pioneered and brought to market in 1999, the IBM Microdrive[®], receiving over 20 international awards for product innovation. The IBM Microdrive, a breakthrough in memory technology, is no bigger than a matchbook and lighter than an AA battery. Its second-generation implementation with one gigabyte of capacity has already reduced the cost of storage in some mobile devices by over 75%.

Another contribution to wireless advances is IBM's transcoding technology, developed over three years through collaboration between IBM research and development labs. IBM's transcoding technology simplifies Web pages before transmission to mobile devices, filtering, reformatting and customising them to accommodate user profiles, matching the capabilities of the receiving device. This technology is being used in advanced wireless applications like BT Cellnet's mobile internet service *Genie* to offer a consistent high level of consumer experience across an ever-growing variety of end-user devices.

IBM was also an early leader in development of the Bluetooth technology for short-range wireless connectivity between PDAs, notebook computers, cellular phones and other devices and is continuing to extend the flexibility of this exciting technology through middleware innovations such as transparent Internet connections for Bluetooth devices.

IBM wireless deployment

IBM's leadership in wireless technology development is equalled only by our commitment to enabling that technology in support of our customers' business objectives. To this end, IBM has deployed over 1500 professionals worldwide in support of customer wireless initiatives.

IBM Global Services (IGS), with over 400 wireless customer engagements during the past year, offers consulting and integration services for all of the mobile office capabilities we have discussed. Specific mobile office services available from IGS and its Partners across the globe include:

- wireless e-mail and database synchronisation
- database and Internet access for wireless devices
- deployment of Mobile Notes and Domino[®] Everyplace for Lotus[®] Notes users
- Mobile office hosting services

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- IBM Work Pad[®] enablement for sales force automation
 - Bluetooth and Wireless LAN services for Mobile Office
 - Research in Motion (RIM) BlackBerry solution integration.

Integration of the RIM BlackBerry solution was recently added to the IGS portfolio and includes advanced wireless hand-held devices, integrated e-mail and organiser software, PC docking cradle, desktop utilities, enterprise server software, Lotus Domino single mailbox integration, advanced encryption technology and flat rate airtime on national wireless networks.

IBM Global Services also offers accelerated mobile office enablement services which may include integration services, middleware, installation and setup services. Examples are *Mobile Notes Getting Started*, *Domino Everyplace Quick Start* and *Sametime Everyplace Quick Start*.

Some of the IBM wireless offerings which can be used stand-alone or as part of an IBM Global Services engagement are described below.

Domino Everyplace and *Mobile Notes* provide a total wireless solution enabling Domino customers to easily develop, implement and access wireless applications built on their existing Domino infrastructure. Functions include wireless access to corporate e-mail, calendar and databases along with the ability to send and receive short messages to and from paging or SMS devices and instant e-mail notifications and alerts from any Domino-based application.

With broad flexibility of mobile devices and platforms, including Palm, Windows[™] CE and EPOC, Domino Everyplace with Mobile Notes extends beyond basic mobile office capabilities into business applications such as sales force automation, field service and customer relationship management.

Sametime Everyplace provides an 'always connected' environment for GPRS (General Packet Radio Service) networks and devices.

AVT's CallXpress for Lotus Notes and Domino provides advanced unified messaging, allowing users to manage all of their messages from the convenience of their Lotus Notes inbox, the telephone, or a Web browser.

WebSphere® Everyplace Suite accelerates wireless enablement of customer e-business applications, including:

- Wireless gateway (portal)
- Transcoding to tailor content to screen size, storage and other characteristics of wireless devices
- Message queuing for connected and disconnected end user scenarios
- Device, service and subscriber management
- Synchronisation for offline processing
- Encryption and authentication
- Load balancing, fault tolerance, caching and other scalability features.

WebSphere Portal Server enables the aggregation of information from various content sources and applications into a personalised portal, providing predefined device- and network-independent portlets along with standard connectors which can be modified and customised as needed.

The IBM WorkPad PC acts as a powerful pocket-sized extension of desktop or notebook computers to keep professionals organised, informed and productive.

IBM's Bluetooth solutions and *WLAN (802.11b) products* provide wireless access for IBM's ThinkPad® family of notebook computers and can include services from initial planning through installation and support.

IBM wireless security

Because security is so critical to IBM and our customers, not only do IBM mobile office solutions like Mobile Notes, Domino Everyplace and the WebSphere suite of wireless enablement tools provide some of the most reliable and secure wireless networking environments available, but IBM offers additional security products and services to address a variety of specific customer needs.



IBM Global Services mobile security services help customers attain the level of security they need in their wireless networks by offering:

- Security Assessment and Planning, including security workshops, security health checks and ethical hacking testing
- Security Architecture and Design, developing an information asset profile, security policy definitions, standards, controls, enterprise security architecture principles and guidance in designing secure wireless and Internet applications
- Security Implementation, including detailed product analyses, selection and implementation
- Security Management, providing preventative, pro-active intrusion detection and emergency response to private network infiltration attempts.

Tivoli® Personalised Services Manager manages subscriber validation, services access and customised content and device management, including personalisation to match subscriber preferences.

Tivoli Smart Hand-held Device Manager provides wireless systems management and security functions including central identification of hand-held devices, configuration management, application installation and removal, and collection of real-time inventory data.

IBM's SecureWay® Wireless Gateway extends legacy applications such as 5250, AS/400 and 3270 (CICS, IMS) to mobile and/or wireless users via an Internet-based portal. Features include satellite network support, Windows secure CE client support, point-to-point connectivity via dial-up and other connections through standard operating system features or network and Internet service providers.



Getting started

Mobile office investments can produce rapid payback due to the shortened deployment time over traditional wired applications and the immediate benefits such as professional productivity, more effective territory coverage resulting in increased sales and reduced infrastructure and network costs.

Due to the nature of wireless communications and non-wired infrastructure, a pilot can be done quickly and inexpensively. IBM offers Innovation Workshops with our customers to identify wireless applications with the greatest potential return. These workshops, based on successful business models, include discussion of business challenges and how wireless technology has solved business problems in other companies; identification of technologies to solve business problems and potential cost benefits; benefit evaluation, pilot project selection and prioritisation.

Talk to your IBM representative now to start figuring out how much it could be worth to your company to save up to an hour per day of your business professionals' time...and your own.

For more information

To learn more about Wireless e-business contact your IBM sales representative (or Business Partner if applicable) or visit:

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