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The Rise of the Wireless Internet

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Abstract
The introduction of the mobile phone revolutionised the way people traditionally communicated with one another. People suddenly became accessible independent of their location, at any time of the day or week. A salesperson in business for instance, who was always on the road could now be reached and could in turn make phone calls conveniently between customer meetings. Bundled with the basic mobile voice service was messaging in the form of voice or text. The latter has especially proven to be a useful and cost-effective method for conveying a short message. Collectively residential and business mobile subscribers use the short message service (SMS) to send millions of text messages per day (each not more than 160 characters in length). Information 'push and pull' services in the form of SMS, such as the latest sports results or betting odds, are now commonplace value-added features offered by second-generation (2G) mobile service providers.

THE RISE OF THE WIRELESS INTERNET

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THE MOBILE REVOLUTION

The introduction of the mobile phone revolutionised the way people traditionally communicated with one another. People suddenly became accessible independent of their location, at any time of the day or week. A salesperson in business for instance, who was always on the road could now be reached and could in turn make phone calls conveniently between customer meetings.

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One of the shortcomings of 2G networks is the limited bandwidth data transmission rate that is only 9.6 kilobits per second (Kbps) per user. Most 2G handsets contain modem adaptors that allow users to plug their laptops in and send fax or email transmissions but that is as far as the capabilities will stretch. The majority of users never utilise this modem feature (save for emergency situations) because on-air tariffs are timed and it becomes too expensive and cumbersomely slow due to the speed of transmission. Sending one megabyte (1024 Kb) of information using a 2G mobile phone would make for a very expensive call. And why? The GSM network was never built with a data world in mind.

Mobile meets Internet

Only a few years after mobile telephony was launched in Europe, the Internet browser also made its way into the fore. At the time no one predicted that the World Wide Web would become so popular and there were more than a few sceptics who doubted the impact of mobile telephony. However, what was to follow was rapid growth in household and business adoption of information technology (IT). Mobile telephony became a vital part of how people communicated, and the Web, among many other capabilities, gave people the opportunity to conduct commerce online. As mobile handsets became smaller and broadband access was offered to Internet users, a vision of third-generation (3G) mobile networks began to formulate. Two of the most influential technologies of the late twentieth century were set to converge. The wireless Internet concept was embraced by network equipment vendors like Nortel Networks,[54] handset providers like Nokia[55] and many other software vendors like SignalSoft[56] who spent hundreds of millions of research and development dollars to ensure the theory would soon become practice.

Towards 3G mobile networks

While the third-generation (3G) mobile spectrum has been auctioned off in most parts of the world, service providers have hesitated to act on their initial investments concerned with the unpredictable state of the market. However, a number of Asian countries like Japan and South Korea are committed to having fully functional 3G systems in operation by the end of the year.

NTT DoCoMo's i-Mode and c-Mode

Japan's NTT DoCoMo launched i-Mode[57] in 1999 to trial a packet-switched mode of transmission over the current 2G mobile environment. Some three thousand companies are now offering transaction capabilities over i-Mode officially linked to DoCoMo's mobile commerce billing system. The results speak for themselves; more than 25 per cent of the Japanese population use i-Mode and some 40 000 new subscribers are joining the network each day (see figure C11.1).[58] The phenomenal growth is attributed to satisfying consumer and business demand via i-Mode application offerings, and the added convenience of centralising subscriber messages and providing a single bill.

Current i-Mode applications allow the user to do almost anything that the 'fixed' Internet offers, such as book airline tickets, buy and sell shares on the stock market, play their favourite games, check the latest weather forecasts, shop and browse for products, play government-approved lotteries, download images and even use the company's intranet. Currently, movies cannot be downloaded using i-Mode due to the limited bandwidth but as soon as 3G is launched, this too will be possible.

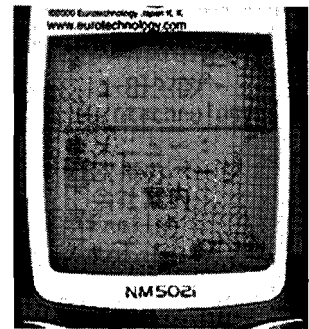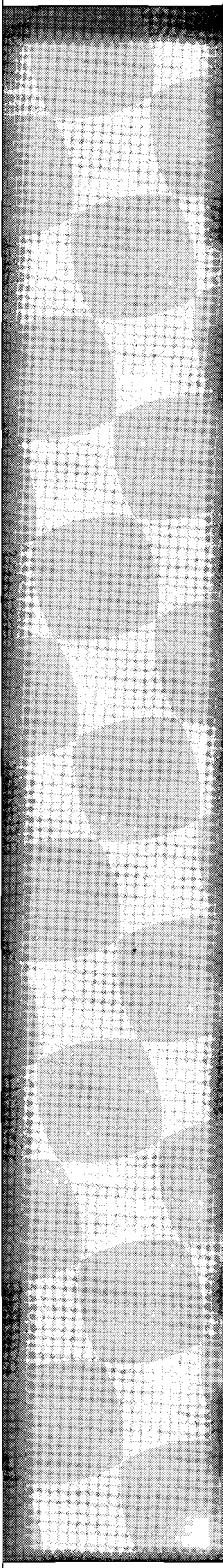imode screen (256 colors)

imode screen (black & white)

FIGURE C11.1: i-Mode in use

SOURCE: www.eurotechnology.com/imode/faq-use.html.

DoCoMo's newly marketed c-Mode is also set to challenge the way in which consumers make purchases. Using their wireless handset, they will be able to purchase items from vending machines and be billed accordingly on their i-Mode bill. In the future it is not inconceivable that the wireless personal digital assistant (PDA) or e-wallet will become the future mechanism by which all purchases, even government transactions, are made. In this manner, it is not difficult to see why analysts forecast that the value of mobile commerce transactions will exceed that of electronic commerce by 2010.

The future of mobile data

Among the plethora of mobile commerce applications that are expected to do very well are location-based services (LBS). The types of remote queries that LBS applications may answer include: Where is the nearest restaurant? How do I get from here to there? How far away is the next petrol station? In terms of emergency services, 3G applications will give authorities opportunities to locate exactly the position of a wireless caller who is in need of urgent assistance. LBS applications have the potential to save lives, whether used by the police, ambulance or fire department.

4G mobile and beyond

And if 3G is not pioneering enough, fourth-generation (4G) intelligent communications based on software solutions are already on the drawing board. 4G will use location-based and scheduling information to intelligently allocate or re-allocate resources according to a set of generically defined rules for a variety of applications. 4G can only work in smart environments where real-time data is collected, filtered and updated regularly. A typical 4G example could be as follows. An employee who works for a multinational company is travelling from Sydney to China and making a stopover in Singapore. While on his way to Sydney airport, the employee encounters a major traffic accident on the Harbour Bridge. Traffic comes to a standstill while police and ambulance treat people at the scene. A camera on the bridge tracks all delays, alerting the roads and traffic authority (RTA). The RTA (with additional police information) estimates that the delay will be in excess of two hours and sends this information to the central information bureau. The employee is alerted by the wireless service provider that he will most likely miss his flight and will have to stay at Sydney's Airport Hilton overnight waiting for the next available flight which is scheduled to depart in the morning. The employee replies to the message and updates are made to his itinerary as detailed on his reply message. The panic of having to reorganise everything is removed from the traveller. Though he will end up missing the first meeting in Singapore, he is relieved with the almost instantaneous knowledge that he will be leaving Sydney in time for subsequent meetings.

All the essential signs for a future where mobility is the key driving force in communications are already present. The most vital attribute of mobile commerce is ubiquity. Future applications will utilise both the time-critical and location-based factors to enhance the way we work and live.

QUESTIONS
1. How have mobile communications changed the way people communicate? What are some of the key attributes of mobile communications?
2. Define mobile commerce. How does electronic commerce differ? Give examples.
3. Visit NTT DoCoMo's web site (www.nttdocomo.com/top.html). What mobile commerce services are currently being offered via i-Mode and c-Mode?
4. What are location-based services (LBS)? Give some examples of the LBS solutions offered by SignalSoft (www.signalsoftcorp.com/).
5. Visiti Nokia's web site (www.nokia.com) and describe the wireless PDA handsets that are being marketed and sold today.

Questions

1. What do you believe are the main inhibitors of Australian companies taking up m-commerce in the near future?
2. Will broadband infrastructure be capable of delivering the Internet-based commercial transactions and business information we demand in the future?
3. Are there some aspects of business which do not lend themselves to online delivery? Explain.
4. Will some countries' economies be disadvantaged because of the Internet? Explain.
5. Will 'e-business' just be 'business' in the near future? Explain.
6. Make five predictions for future trends in Internet commerce in the next decade.
7. If usage costs dramatically increase, will Internet users continue to use the Internet?
8. Will the global marketplace diminish?
9. What are the other possibilities for next generation devices?

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