Report to the Information Infrastructure Advisory Committee
by Ad Hoc Working Group
on Promotion of Wireless Services and Technology

INTRODUCTION

At its meeting on 12 June 2003, the Information Infrastructure Advisory Committee (IIAC) agreed to the recommendations of an ad hoc meeting held on 26 May 2003 to set up an Ad Hoc Working Group on the Promotion of Wireless Services and Technology (the Working Group). The Working Group was to focus on the promotion of the wider adoption of wireless services and technology at the enterprise level, and not on general promotion of adoption in the community. The Working Group should also propose actionable plans in 3 months for IIAC's consideration.

2. The Working Group comprises 12 members, including representatives of the relevant Government departments and bureaux, IIAC members who have indicated an interest to join the Working Group, and representatives from the Wireless Technology Industry Association (the WTIA) and the Hong Kong Productivity Council (the HKPC). Its membership is listed at Annex 1, and the terms of reference at Annex 2. The Director of Information Technology Services was nominated as the convenor of the Working Group.

3. The Working Group agreed that its terms of reference should exclude the consideration of regulatory and technical development issues which should be addressed by the Office of the Telecommunications Authority and the Hong Kong Wireless Development Centre (the HKWDC) respectively.

4. The Working Group held five meetings in July to October 2003. After having discussed the work plan at the first meeting, the Working Group received seven deputations from the industry at the second and third meetings held on 4 and 5 August 2003 respectively. A list of the deputations is at Annex 3. In addition, the Working Group had invited written representations from the mobile network operators (MNOs), the

mobile virtual network operators (MVNOs), major equipment suppliers and the Hong Kong Internet Service Providers Association. Three representations were received in response. A list of the organisations concerned is at Annex 4. At the fourth and the fifth meetings the Working Group assessed the present status and the potential of the wireless services market having regard to the views of the different players of the wireless technology industry solicited in the consultation exercise, and identified the key issues involved in the promotion of wireless services at the enterprise level, in order to make concrete recommendations. The details are set out below.

ASSESSMENT OF THE MARKET POTENTIAL

5. Wireless services cover a wide range of technologies ranging from the cellular technologies (including 2G, 2.5G+, 3G and beyond) to various other forms of wireless technologies such as the wireless local area network (wireless LAN or Wi-fi), the personal area network and the metropolitan area network. Regardless of the technology employed, wireless services stand to benefit society by improving the quality of life and enhancing productivity and efficiency. In particular, by untying the users from the desktop, wireless services enable a major change in the way we communicate, work and live, through enabling access to information and electronic services anytime, anywhere and by any means. They unveil a whole world of new opportunities that did not exist before. The question is how we can reap the benefits of these services.

6. Hong Kong is well placed to take advantage of the revolution in wireless technology. Through the implementation of the Digital 21 strategy over the past five years since 1998, we have made great strides in the development of an excellent Information and Communication Technology (ICT) infrastructure and a world-class e-Business enabling environment. On the network front, we have almost ubiquitous mobile phone coverage over the whole territory. Wireless LAN hotspots are also proliferating – we now have over 200 hotspots in Hong Kong. In terms of usage, the PC and Internet penetration rates have reached 62% and 53% respectively for households and 55% and 44% respectively for enterprises. Our mobile phone penetration rate at 98% is one of the

highest in the world. The Government has made an e-option available for nearly 90% of those services that are amenable to electronic delivery. We have also established a robust legal framework to support the conduct of business electronically, and have achieved a relatively high level of community awareness of information security. All these conditions provide a solid foundation for the further development of wireless services.

7. Almost everyone in Hong Kong has some experience in using wireless services and is ready to take up new services. Mobile devices such as mobile phones, personal digital assistants (PDAs) and notebook computers are popular in Hong Kong. By comparison, mobile phones are more popular than the other mobile devices, and apart from voice services, short message services (SMS) and multi-media message services (MMS) are becoming increasingly popular. The number of 2.5G mobile customers has more than doubled over the six-month period ending July 2003, to nearly 420,000, representing 6.4% of the total number of mobile users. These users are well positioned to adopt more sophisticated and value-added wireless services.

8. Hong Kong has a fully liberalized and highly deregulated telecommunications ("telecoms") industry. Mobile licences are issued subject to spectrum constraints only. Where there is no spectrum constraint as in the case of mobile virtual network operation, licences are issued without any restriction in number. We encourage the development of new wireless services through a streamlined licensing regime. For instance, public wireless LAN services are regulated under a "negative" class licence regime from February 2003 (a negative licensing regime is a licensing regime under which no individual licence approval is required).

9. As a result of our liberal approach to telecoms regulation, we have a very competitive wireless market. There are six MNOs operating eleven networks, with another six MVNOs that can offer very competitive services. Furthermore, there are 12 licensees that provide public wireless LAN services in Hong Kong.

10. Competition drives innovation. We have around 100 developers of wireless applications and services as well as some 80 major wireless equipment suppliers. Our wireless industry is highly competent in terms of both professional expertise and business acumen. They are good at introducing cutting-edge and innovative wireless applications and services. This is complemented by an equally versatile and thriving information technology industry.

11. The Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA) is expected to bring tremendous opportunities to the wireless services industry. Its significance is twofold. On the one hand, it allows telecoms companies in Hong Kong to form joint ventures with Mainland companies to provide a basket of value-added telecoms services in the Mainland from 1 October 2003, ahead of and in addition to China's WTO timetable. This will reinforce Hong Kong's position as a gateway to China, the biggest telecoms market in the world. On the other hand, CEPA greatly enhances the level of economic activities and co-operation between Hong Kong and the Mainland. Increasingly, enterprises in Hong Kong will see the need for, and the benefit of, using wireless technologies in the enormous and fast growing China market. This will expand the scale and scope of business opportunities for the wireless services industry in Hong Kong.

12. In order to assist the local industry in capitalizing on Hong Kong's competitive advantages, the Government has provided funding under the Innovation and Technology Fund to establish a wireless solutions development centre, the HKWDC, at the Cyberport. The centre will provide end-to-end infrastructural support to the development of mobile and wireless applications in Hong Kong at different stages from consultancy, development, deployment to dissemination of product information. All key players in the wireless industry, including the network operators, equipment suppliers as well as applications and content developers are involved in the project under the leadership and co-ordination of the WTIA.

13. Among the different segments of the wireless market, the enterprise market stands out as a distinct segment that has the greatest development potential. Wireless services will enable enterprises to

extend their corporate ICT systems beyond their physical boundaries to reach their customers, partners and workers on the move. Our view is that this potential has not been fully exploited, and there is still considerable scope for enterprises to make use of wireless technologies and services for improving their productivity and efficiency, exploring untapped business opportunities and creating new competitive advantages.

14. Having examined the present status and potential of the wireless market, the Working Group is convinced that there is tremendous market potential for the development of wireless services for adoption by enterprises. To exploit and realise this potential, we need an overall strategy which should be formulated jointly by the Government, the wireless industry and the IT industry. Relevant government departments and industry bodies such as the WTIA, the HKPC and the HKWDC would need to work together at this critical stage in the development of enterprise applications that employ both IT and wireless technologies, and a strategy for this purpose.

KEY ISSUES IN PROMOTING WIRELESS SERVICES

15. At the outset, the Working Group considers that it is important to identify the key issues or success factors that will facilitate the wider adoption of wireless services by enterprises. Its findings are set out below.

16. The Working Group recognizes that the enterprise market is not a homogeneous market. Because of the differences in scale and mode of operation, different enterprises have different considerations concerning the adoption of wireless services.

17. Large enterprises are capable and ready to develop wireless applications and services in-house that are tailored to their specific needs. For example, the Hong Kong Jockey Club has developed a number of wireless services in-house. The size of its operation and the capability of its ICT department have made such technology investment feasible. We are also aware of other big companies which have seen the strategic

importance of wireless services to the development of their business and carried out such projects successfully, including some MNOs. Their value-added wireless services have evidently helped enhance their competitiveness in the telecoms market. These enterprises are the early adopters of wireless services. They have the knowledge and capability (both technical expertise and resources) as well as business justifications to develop innovative wireless service solutions.

18. There are other large enterprises that also recognize the benefits that wireless services can offer, but are more likely to adopt commercial off-the-shelf solutions with suitable customisation to meet their local requirements, rather than to develop bespoke systems. In making the business decision for the adoption of wireless services, these enterprises and their information systems personnel place great emphasis on information security concerning wireless solutions just as they would for their IT systems. However, they are less familiar with the wireless industry and products than they are in the IT environment. This is an area that would require attention in the promotion of wireless adoption.

19. There are around 300 000 Small and Medium Enterprises (SMEs) in Hong Kong with a lean company structure. Decisions to adopt wireless solutions in these enterprises are usually made by the business owners themselves. They are particularly concerned about the direct and immediate business benefits such as savings that wireless services can bring. Once a decision is made in the adoption of wireless services, they would be inclined to purchase commercial off-the-shelf solutions from retail outlets if the price of the products or solutions is competitive and the ongoing cost of management and support is acceptable (i.e. not very high).

20. It is evident that suitable consideration should be given, and appropriate solutions should be devised, to the specific needs that the different categories of enterprises have in order to offer them the maximum business benefits (both perceived and real) that the adoption of wireless services will bring.

21. The Working Group has identified three types of key issues that must be addressed in order to promote the adoption of wireless services

by enterprises, namely, user awareness, product and service readiness, and market issues, as detailed below.

User Awareness

22. The level of awareness in enterprises has a strong effect on the demand for wireless services. Some enterprises may not be fully aware of the opportunities and benefits that wireless services can bring. Others may be interested in adopting wireless services but may not be adequately informed of the types of products, services and solutions that are available in the market. Some other enterprises are concerned about the adequacy of information security protection in wireless solutions. All these factors may discourage enterprises from adopting wireless services. The Working Group acknowledges that these are hallmarks of a developing technology, in this case the wireless technology, and they need to be properly addressed in order to facilitate the development.

Communication Between the Industry and Enterprises

23. Larger enterprises are likely to be conversant with the use of conventional IT solutions that utilize the fixed network. They are familiar with IT products and services and have a good understanding of the IT industry. However, many of them are less familiar with the wireless solutions, products, services as well as the wireless industry. Indeed, hitherto there are not many examples of successful integration of wireless technologies into large conventional enterprise IT systems. The business opportunities and benefits of wireless exploitation in enterprise systems have yet to be clearly articulated and understood.

24. The Working Group considers that major benefits could be derived by extending the capabilities of the information systems of the enterprises to cover wireless services. Information security in IT systems is a prime concern of business managers and IT personnel in enterprises as well as their customers. They all need to be convinced, fairly and reasonably, that the security safeguards are equally robust in enterprise information systems with a wireless extension. Concerns about wireless security are often exaggerated especially when the

capabilities and security provisions of wireless services are not fully understood.

25. The Working Group considers that better liaison and communication between the wireless industry and enterprises, particularly the IT personnel in enterprises, is necessary to enhance understanding and inspire confidence. This is especially important as new and improved wireless security technologies emerge. Eliminating the communication gap and raising enterprise awareness will help encourage adoption.

Understanding Wireless Services Offering

26. We note that in the case of SMEs, the business owners typically decide on the adoption of IT or wireless services. They look for direct and immediate business benefits, and they prefer ready solutions. The key is the availability as well as the SMEs' awareness of ready off-the-shelf packaged solutions with demonstrable business benefits, and strong post-sale user support as SMEs normally do not have any technical expertise in IT or wireless technology.

27. In Hong Kong, there are already many innovative and reliable wireless products and services. For instance, all six MNOs offer secure mobile corporate e-mail services. Indeed, Hong Kong is the first in Asia to introduce such services. Video monitoring services are available to enable enterprises to oversee their remote operations efficiently through mobile phones. However, more can be done to enhance SMEs' awareness of these services, and the productivity and efficiency benefits that they offer.

28. The Working Group therefore sees the need for raising the awareness of the enterprises, especially the SMEs, of the benefits that they may gain by adopting wireless services, and the different types of wireless solutions available in the market that they may choose according to their needs.

Awareness and Adoption by the Government

29. The Government makes extensive use of IT to enhance the efficiency of its operation and services. It takes the lead in the adoption of new technologies, including mobile technologies, and is well positioned to take advantage of the wireless technology as it develops. Its knowledge workers, business managers and IT personnel have a relatively higher degree of technology awareness and literacy. In any event, there is a well established system for promoting awareness and sharing information on ICT developments within the Government. As a major IT user, the Government is well placed to encourage the adoption of the wireless services. Wireless technology is also a good way to enhance the quality of services to the public through more direct and personal contact with citizens. Government adoption of wireless services also creates an exemplar effect for enterprises.

Product and Service Readiness

30. High quality wireless products, services and solutions are needed to meet the expectation of enterprises that are keen to capture the benefits of the wireless revolution. In this respect, the Working Group has examined the current technology status and technical challenges of the wireless industry, including those for the mobile phone systems and other wireless network systems (metropolitan area network, wireless LAN, personal area network). Details are set out in Annex 5. The Working Group is of the view that the following key aspects have to be addressed.

Capability to support Chinese language

31. Although Hong Kong is a bilingual city, Chinese is still the only language used proficiently by the majority of the population. In recent years, more and more enterprises in Hong Kong deal or collaborate with enterprises or partners in the Mainland, and this trend is expected to grow further under CEPA. The ability of wireless products and services to handle Chinese language effectively, and to ensure compatibility of use in both Hong Kong and the Mainland, is becoming a crucial factor in encouraging adoption by the enterprises.

32. Most new handheld devices including mobile phones and PDAs are Chinese-enabled. The majority of these devices support the 3 000 to 4 000 most commonly used Chinese characters. Some high-end PDAs can support up to 10 000 Chinese characters. However, efficient Chinese character input through the keypad remains a major problem to users. At the application level, reliable and efficient Chinese language processing capabilities are generally lacking in information systems with wireless connection to handheld devices. This remains a handicap for mobile connections using wireless technology to enterprise systems. The Working Group considers that there is a strong need to develop and promote end-to-end Chinese language processing capabilities (from mobile devices to backend systems).

Security concerns

33. As mentioned in paragraph 24 above, there is a general concern on the standard of security in wireless solutions for enterprise applications. There are worries about intrusion into enterprise networks and systems through the wireless connection, and loss of corporate information through the loss of handheld devices, etc. Security features are progressively implemented and improved in wireless and mobile products and system components but the user community looks for seamless end-to-end solutions that secure the total environment from the mobile device to the back-end servers and across the wired and wireless networks. The Working Group takes the view that continuous enhancement of the existing security measures, and development of end-to-end security products and solutions to meet the high standard required for wireless-enabled systems, will encourage its adoption in enterprises.

Convergence of IT and Wireless Technologies

34. Most enterprises that stand to benefit from the adoption of wireless services are likely to be established users of e-business with IT infrastructure in place. Wireless services will enable them to capitalize on the existing environment and extend their e-operation and e-services to their workers, partners and customers to enhance productivity, service quality, and to gain competitive advantages. To facilitate migration, we

should encourage closer collaboration between the IT industry and the wireless industry in order to create/generate the synergy required to exploit the latest developments in the fast converging technology market. The Working Group sees a need to foster a collaborative environment between the IT industry and the wireless industry.

Standards and Development Platforms

35. Wireless end-user devices come with a variety of features such as screen size and colour depth. They also make use of different operating systems and software protocols. There are a number of mobile networks, but there is no common standard as yet for the end-to-end connection of information systems from the back-end servers through the fixed and wireless networks to the end-user devices. In order to encourage the development of more wireless services and solutions, we need to streamline the system development process, facilitate interconnection and integration between the IT and the telecoms components as well as the fixed and wireless networks, and ensure consistency among different types of end-user devices. The Working Group is of the view that efforts should be made to develop more generic products including application solution packages, development and testing tools, functional components and middle-ware, all based on open and interoperable standards as well as device-independent technical design models and interface protocols. This should facilitate the development and deployment of enterprise e-business solutions with wireless capabilities. It should also help to lower the entry barriers for SMEs to deliver services and solutions in the converging ICT market.

Market Issues

36. The last category of issues considered by the Working Group relates to the mode of operation of the wireless industry, and the inherent characteristics of the wireless market. Market forces play a significant role in these issues. The details are set out below.

Pricing

37. Under the current regulatory regime, the Government does not regulate the retail tariff of mobile or wireless services. Individual operators and service providers are free to determine their business plans and pricing strategies. In recent years, competition in the wireless market has intensified in different ways. In the voice market, competition has driven prices down to highly competitive level like less than 10 cents per minute. Competition has also driven prices down in the data market, but to a much lesser extent compared with voice services. Indeed, the costs of mobile services such as GPRS, SMS and MMS in Hong Kong are significantly higher than those in other economies in the region. Some members of the industry are of the view that price competition in the voice market is actually a factor contributing to the slower than expected adoption rate for mobile data services. From the users' perspective, the lack of a simple and uniform charging scheme makes it difficult for enterprises to evaluate different service options. The Working Group has taken note of the situation with concern but considers that pricing issues are complicated and fall outside its terms of reference.

Industry collaboration

38. The Working Group believes that the successful promotion of wireless services depends on the close collaboration of the different sectors of the ICT industry. For example, the content and application developers creating value-added services to be delivered on mobile devices have to have a good understanding of the habits of the mobile user. The software developers for mobile devices have to be able to integrate wireless solutions with enterprise information systems to create end-to-end mobile solutions. The wireless and fixed network operators will need to ensure interoperability and a common interface so as to develop a seamless network connection that assures system integrity and information security. The enterprises will need to collaborate with multiple network operators in order to maximize the penetration into their own markets, as in the example of the mobile betting service offered by the Hong Kong Jockey Club. They all need to work together.

Market size

39. Compared with Hong Kong, which has a population of only 6.8 million people, the Mainland market especially the Pearl River Delta (PRD) Region provides much greater scope for the wireless industry to develop. If the potential of the vast Mainland market can be tapped, the growth of the wireless industry will be very substantial. We share the same culture and speak the same language, and in the PRD region, even the same dialect. We have an international outlook and a good understanding of the global market. The suppliers in Hong Kong are capable of creating a competitive edge in developing innovative wireless enterprise solutions and in delivering high quality products and services. The Working Group believes that it is important for the industry in Hong Kong to make every effort to create a strong branding for their wireless products and services in the regional and global markets.

Product Life Cycle

40. Wireless technologies and products are characterized by short shelf life and fast obsolescence. For example, mobile phone and PDA models are out-of-date much faster than their PC counterparts. Fast obsolescence can create a disincentive for enterprise users to make use of wireless services, or to upgrade to the latest technology and services because their past investments are yet to pay back fully. The Working Group sees the need for the industry to develop new service models such as subscription-based or application service provisions to overcome these limitations.

RECOMMENDATIONS

41. The Working Group recommends that the Government, the industry and the academia should, together with the HKWDC, work out an action plan to promote and facilitate the adoption of wireless services in enterprises. A summary of its recommendations are set out below :-

(a) Enhance enterprise awareness of the application opportunities and business benefits of wireless services and solutions. *(Paragraph 23)*

(b) Enhance the understanding of enterprises, especially their IT personnel, of the capabilities of wireless services and solutions, with particular regard to system integrity and information security, as well as the safeguards that can be implemented when extending enterprise information systems to mobile devices through the wireless networks, in tandem with developments in the security technologies. *(Paragraphs 24 to 25)*

(c) Encourage the development and promote the understanding of simple-to-use, easy-to-implement, complete wireless e-business solutions with clear value propositions supported by cost-effective after-sale services, for the benefit of SMEs in various sectors. *(Paragraphs 26 to 28)*

(d) Continue to promote the wider use of wireless services and technology within the Government to improve the quality of services to the public, in line with the established e-Government policy. *(Paragraph 29)*

(e) Encourage and facilitate the development of seamless end-to-end Chinese language processing capabilities for enterprise information systems with wireless extension to the mobile users. Wireless technologies and services capable of supporting Chinese language should be developed, covering input methods, the Chinese character repertoire and traditional / simplified character interoperability. *(Paragraphs 31 to 32)*

(f) Encourage and facilitate the continuous development and enhancement of information security technologies and solutions in tandem with developments in wireless and mobile technologies as well as in response to the emergence of new vulnerabilities. Complement these efforts with the continuous promotion of general awareness. New security products and services should be developed. In particular, we should aim at developing end-to-end security solutions from the mobile devices to the backend IT application software systems. *(Paragraph 33)*

(g) Forge closer cooperation and encourage information sharing among various related ICT industry sectors; create stronger synergy between the IT sector and the telecoms and wireless sectors as well as various parties in the supply chain (including the application system integrator, solution provider, network operator, device supplier, etc.) to foster the adoption of wireless capabilities in enterprise systems. *(Paragraphs 34, 38)*

(h) Encourage and facilitate the development of generic products, technical design models and interface protocols based on open, interoperable and device-independent standards so as to facilitate the development of wireless e-business solutions. *(Paragraph 35)*

(i) Continue to let market forces determine prices and commercial relationships in respect of wireless services. *(Paragraph 37)*

(j) Forge industry-wide collaboration to generate a critical mass for wireless services development and adoption in Hong Kong for the creation of a branding effect that demonstrates Hong Kong's strength in innovation and technology exploitation as well as the industry's ability to excel in the supply of wireless services, products and expertise. *(Paragraph 39)*

(k) Encourage and facilitate the development of innovative service models such as subscription-based application service provision as an incentive for enterprises to adopt wireless services with lower capital expenditure commitment. *(Paragraph 40)*

42. The concerted efforts among the parties involved should be able to make the synergistic use of a number of available channels :

(a) Major industry promotion events such as the ICT Expo 2004 through which Hong Kong can project the image of an advanced, wireless enabled business environment with an innovative and versatile ICT industry;

(b) Promotion and education seminars and workshops that can utilize the facilities of the HKWDC and of the Information Technology Services Department's IT Solution Centre (ITSC), both located at the Cyberport;

(c) Showcasing of wireless application solutions, services and products through the HKWDC and ITSC facilities;
(d) Various information dissemination and knowledge sharing channels in the industry as well as within the government; for example, the WTIA has started to publish a series of "Success Cases and Best Practices of Adopting Wireless Enterprises" for Hong Kong and Overseas;
(e) Collaborative pilot projects undertaken jointly by various concerned parties.

The Way Forward

43. The Working Group considers that in order to sustain the momentum created by the HKWDC project and the Working Group, it is important that an action plan should be drawn up to bring together the concerted efforts of the Government, the ICT industry, the academia and related organizations for promoting the adoption of wireless services in Hong Kong. To this end, the Working Group recommends that the ITSD should play a leading role and coordinate the inputs from all interested parties including CTB, WTIA, HKPC, HKWDC, the ICT industry and itself to implement the recommendations set out in paragraphs 41 and 42 above as soon as possible. The action plan should make good use of the promotional facilities of the HKWDC and the ITSC at the Cyberport, which could be used as an operational base for enhancing the awareness and understanding of wireless services, and for the fostering of industry collaboration in developing wireless solutions.

Advice Sought

44. We welcome Members' views on the Working Group's recommendations on the promotion of wireless services and technology.

Secretariat
IIAC Ad Hoc Working Group
on Promotion of Wireless Services and Technology
November 2003

Annex 1

Information Infrastructure Advisory Committee
Ad Hoc Working Group
on Promotion of Wireless Services and Technology

Membership

(1) Mr. WONG Chi Kong, Alan
Director of Information Technology Services (Convenor)

(2) Hon SIN Chung Kai
Member

(3) Mr Charles MOK
Member

(4) Mr John URE
Member

(5) Mr Daniel LAI
Member

(6) Dr Lawrence CHEUNG
Member

(7) Mr Duncan LAU
Member

(8) Mrs Marion LAI
Deputy Secretary (Communications and Technology)
Commerce, Industry and Technology Bureau

(9) Mr PANG Chi Tat, Dennis
Assistant Director (Technology & Sourcing)
Information Technology Services Department

(10) Mr T F SO
Acting Assistant Director (Support),
Office of the Telecommunications Authority

(11) Mr M T WONG
Deputy Director (Construction and Development)
Deputy Head of Cyberport Companies

(12) Miss Linda SO (Secretary)
Assistant Secretary (Communications and Technology)
Commerce, Industry and Technology Bureau

Annex 2

Information Infrastructure Advisory Committee
Ad Hoc Working Group on
Promotion of Wireless Services and Technology

Terms of Reference

(1) To identify obstacles and ways to overcome them in respect of the adoption of wireless services and technology at the enterprise level; and

(2) To recommend to the IIAC on concrete measures, apart from regulatory or technical development issues, that the Government may take in promoting the adoption of wireless services and technology at the enterprise level.

Annex 3

Information Infrastructure Advisory Committee
Ad Hoc Working Group on Promotion of
Wireless Services and Technology

List of Industry Professionals
Who have Given Views to the Working Group
on 4 and 5 August 2003

(1) Mr Erwin Huang, President & Chief Technology Officer, Magically Asia Ltd

(2) Mr Shrikant Patil, Director, Solutions Platform Marketing, Intel Semiconductor Ltd.

(3) Mr Francis Fong, CTO & Senior VP, Synergy Technologies (Asia) Ltd

(4) Mr Steve Beason, Executive Director, Information Technology, The Hong Kong Jockey Club

(5) Mr Duncan Lau, Chairman of the Wireless Technology Industry Association

(6) Mr Lee Chik Yuet, Director & Legal Counsel, Mobile Telephone (MVNO)/Trident Telecom Ventures

(7) Mr John Lipp, Director, Mobile Internet, Business Development, Asia Pacific, Alcatel

Annex 4

Information Infrastructure Advisory Committee
Ad Hoc Working Group on Promotion of
Wireless Services and Technology

List of Organisations which have been Invited to
Submit Written Representations and
which have Given Written Submissions

Organisations which have been invited to Submit Written Representations

Mobile Network Operators

Peoples Telephone Company Limited

New World PCS Limited

Mandarin Communications Limited (Sunday)

Hutchison Telephone Company Limited

Hong Kong CSL Limited

Smartone Mobile Communications Limited

Mobile Virtual Network Operator (MVNO)

Trident Telecom Ventures Ltd.

China Motion Telecom (HK) Ltd.

China Unicom International Limited

i100 Wireless (Hong Kong) Limited

China-Hongkong Telecom Ltd.

CITIC Telecom 1616 Limited

Major Equipment Suppliers

Sony Ericsson Mobile Comm. Int'l AB

Motorola Asia Pacific Ltd.

NEC Hong Kong Limited

Nokia (H.K.) Ltd

ISP Association

Hong Kong Internet Service Providers Association

Organisations Which have Given Written Submissions

Hutchison Telephone Company Limited

Hong Kong CSL Limited

Smartone Mobile Communications Limited

Annex 5

IIAC Ad Hoc Working Group
on Promotion of Wireless Services and Technology

Discussion Brief
on Technology Status and Challenges of the Wireless Industry

Introduction

This brief aims to provide some background information on the current technology status of the wireless industry, and some remaining technical challenges faced by the Wireless Industry.

Technology Status of the Wireless Industry – Mobile Phone Network

2G Mobile System

- Short Messaging System (SMS)
  - suitable for small scale broadcasting, mainly designed for point to point communications
  - messages can be sent to any mobile phone on the GSM network

- Cell Broadcast
  - Suitable for large scale broadcasting, designed for one to many communications
  - Only mobile phones within the coverage areas at the time of broadcast will receive the message
  - Feasible for setting up a Government broadcast channel

- Data Communications
  - Communications by circuit switched
  - Speed limited to 43.2 kbps
  - Charged by time

- General Comment for 2G – stable, mature, reliable

2.5+ G Mobile System

- Multi-media Messaging System (MMS)
  - Multi-media includes images, text, sound, video and animation
  - No standard in screen sizes, colour depth, sound and video format
  - Translation in image sizes performed at the MMSC level
  - No guarantee for the sound and video to work across different make of handsets
  - Phone (MMS) to Computer (email) can be performed
  - GPRS is the Bearer, as such, MMS roaming can be achieved if GPRS roaming exists in the overseas countries.

- Location Based System (LBS)
  - Mobile phone can be used as a device to provide the location information.
  - Current systems on the market provide an average accuracy of around 150 – 200 metres.
  - Special terrain conditions in Hong Kong provide a difficult challenge. As such, mobile network operators are reluctant to roll out services
  - On-going research (funded by Innovative and Technology Fund) to improve the accuracy to under 50 metres, an accuracy acceptable by the MNOs and FCC.

- WAP
  - WAP over GPRS reliable
  - With more powerful phones coming onto the market, WAP will eventually be replaced by xHTML on the smart phones.
  - Almost all new phones come with at least the WAP browsers.

- Data Communications
    - GPRS – the network coverage in HK is good. The network is reliable and provide a viable platform for both mobile phone and PDA based communications. Almost all new phones come with GPRS in Hong Kong.
    - Roaming is not uniformly available across different countries although roaming is OK in China in certain major cities that have GPRS coverage (such as Shenzhen, Guangzhou, Shanghai).
    - EDGE – the network coverage in HK is unknown. Service is not generally available with only small number of handsets supporting. It is likely that this will become a stop-gap technology before the introduction of 3G. EDGE is backward compatible with GPRS and will fall back to GPRS speed if EDGE coverage is not present. EDGE coverage in overseas countries including China is doubtful.

- General Comment for 2.5+ G – growing, some technologies, such as GPRS, are becoming mature and reliable

3G Mobile System

- Pluses – The higher bandwidth will open up services and opportunities that are not viable and practical in 2.5+ G technology. The high availability of coverage and service for a territory wide network will give 3G the edge of WLAN if the users are on the move all the time.
- Threats – There are a number of cheaper substitutes such as WLAN and the upcoming MAN (metropolitan area network, IEEE 802.16) can pose a strong challenge to 3G.
- Gap – Compatibility between 2G/2.5G/3G networks, 3G networks of different standards (CDMA2000, W-CDMA, TD-SCDMA), 3G network roaming etc need to be resolved very soon!

- General Comment for 3G – a lot of unknown factors still but strong potential for content development; need to delineate the behaviour for computer users and general consumers!

Technology Status of the Wireless Industry – Other Wireless Network Technology

MAN (Metropolitan Area Network – IEEE 802.16a)

- Evolving standard for a territory wide wireless backbone
- Could form a backbone for WLAN as well as LAN infrastructure
- Also considering a standard for a direct access to the 802.16a network at the client end.

WLAN (Wireless Local Area Network – IEEE 802.11a/b/g)

- Rapid adoption in SME, mobile personnel and personal use due to the ease of setting up and low costs.
- Enterprise wide adoption limited due to concerns on the security
- 802.11b is the dominant standard while a and g are competing for the next dominant standard
- Concerns on overcrowding 2.4GHz spectrum
- High speed and low cost could form a substitute for 3G for computer users

PAN (Personal Area Network – Bluetooth)

- Slow adoption in data communications due to the difficulty in setting up, slow speed and earlier hiccup in compatibility.
- Mainly use in mobile phone related products
- Will not be the dominant wireless data communications standard although it will mainly use for computer/PDA to mobile phone communication standard.
- Less than 20% of new phones on the market are Bluetooth enabled.

Technology Status of the Wireless Industry – Devices

Chinese Language

- The most commonly use 3,000 to 4,000 Chinese characters are available on all Chinese enabled mobile phones.
- NOT all mobile phones are Chinese enabled although most new phones will have a Chinese version.
- The internal code for Chinese is Unicode while Big5 is mainly used by Hong Kong based computers and GB is mainly used for Mainland China based computers.
- A Chinese character can be displayed in Simplified or Traditional format that is settable by users.
- For PDAs, most Chinese Systems are add-on for Palm although there is OS level Chinese support for Microsoft Windows Mobile.
- There is no standard Chinese System, font system and data entry system on mobile phones or PDA.
- General Comment for Chinese Language – Chinese Language support is mostly available in all phone and PDA devices. For mobile phones, the difficulty in Chinese character entry becomes one of the major barriers against more use of Chinese. Some mobile phone manufacturers are beginning to use Chinese handwriting recognition.

Phone handsets

- There is currently no universal standard for screen sizes, operating systems and colour depth for all the mobile phones.
- Mobile phone operators have recognised this will form a barrier against the wider adoption of mobile phone as a device for data use.
- One of the most common operating systems is Symbian OS. While Palm and Microsoft are trying to break into the phone market with mobile phone versions of their operating systems.

PDAs

- There is currently no universal standard for screen sizes, operating systems and colour depth for all PDAs.
- The market is mostly dominated by Palm OS and Windows Mobile based PDAs.

Technology Status of the Wireless Industry – Security

- Security becomes one of the major barriers against the growth in Enterprise usage of Mobile and Wireless Technology
- There are many individual security measures for phones, PDA and other mobile devices
- The effort is hampered by the low processing power and slow data transmission speed of PDA/phones.
- It is necessary to form a working group to study and deal with the concerns of data security in mobile and wireless technology.

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