THE DEVELOPMENT OF E-COMMERCE AND WIRELESS AND MOBILE DEVICE TO ACCESS CORPORATE INFORMATION

The development of e-commerce in general

When a company conducts business electronically, it can practically do business from anywhere to anywhere, 24 hours a day, 7 days a week. E-commerce differs from traditional commerce in the way information is exchanged and processed. In the traditional business world, information is exchanged through direct person-to-person contact or through the use of the telephone or mail systems. In e-commerce, information is conveyed via a communications network, a computer system, or some other electronic media.

IT advances attained in the past 25 years enable companies to reap the benefits of ubiquitous data access through the use of advanced enterprise networks. E-commerce harnesses the power of networking to create a virtuous cycle of business communications. This heightened level of communications cultivates e-commerce among businesses. IDC estimates that the number of Internet users worldwide will grow from approximately 155.6 million in 1998 to approximately 525.7 million by 2003. The rapid growth of the Internet in conjunction with free or inexpensive browser software has propelled the development of e-commerce in an unprecedented pace.

From the business point of view, the increasing competition and globalisation among businesses and the growing interactivity all encourage the development of e-commerce in general and B2B in particular. B2B solutions enable businesses to better manage their operations, reducing both product and process costs, allowing an enterprise to gain critical competitive advantages, while at the same time, enhance customer reach for suppliers and open access to buyers to multiple suppliers worldwide.

IDC forecasts worldwide B2B Internet commerce to explode to US$1.3 trillion in 2003 from US$48.4 billion in 1998. In Hong Kong, e-commerce revenue is expected to grow to US$5.3 billion by 2004 from US$15.9 million in 1997 (see Figure 1 - Internet Commerce Market in Asia by Country (Source: IDC)).
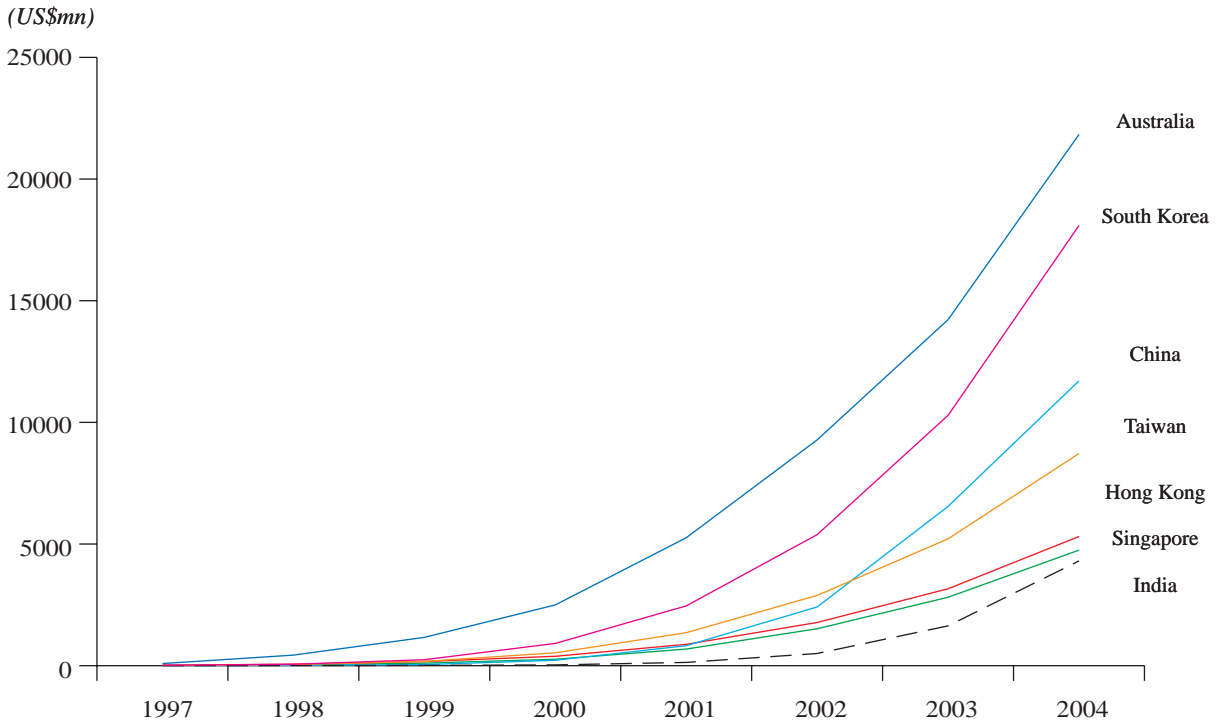
Figure 1: **Internet Commerce Market in Asia by Country**

Source: IDC 1999

Wireless and mobile devices to access corporate information

Mobile computing is rapidly becoming one of the foundation blocks of e-commerce, allowing users to work in any place at any time, accessing real-time data. Intelligent agent technology, reducing the amount of information needed on the screen, makes it easier for mobile users to find information and complete tasks. The hottest trend in mobile computing in 2000 will be mobile access to the Internet. With the advancement in technology, wireless mobile data is finally becoming a reality. World-renowned IT companies have already committed to provide wireless and mobile hardware and software support.

While most of the efforts focus on supporting hand-helds, palm-top computers and notebook computers, there is a trend to provide and receive information directly with mobile phones. Mobile phones are becoming ubiquitous and fairly simple to use. It is now possible to access information on the Internet through mobile phones. WAP provides a uniform technology platform with consistent content formats for delivering the Internet and Intranet-based information and services to digital mobile phones and other wireless devices. WAP creates new business opportunities for corporations by providing a new channel for existing services and the possibility for totally new services that can reach customers 24 hours a day wherever they are.

THE E-COMMERCE APPLICATION MARKET IN GREATER CHINA REGION

Internet penetration growth

The rapid increase in Internet usage in the Greater China Region has been driven by the following factors:

- *PC penetration*

  Since most people access the Internet through PCs, PC penetration rates are closely correlated with the growth of the Internet. Hong Kong has one of the highest PC penetration rates in Asia, and the PRC is the largest and fastest-growing PC market in the region excluding Japan.

- *Increasing wireless Internet access*

  The penetration of mobile phones is very high in Hong Kong. This combined with the decreasing cost of Internet capable phones and a growing range of wireless content providers should contribute to Internet growth in the future. In less developed China market, where fixed line penetration is low, wireless Internet access systems such as the satellite system, could be the access mode of choice and could drive Internet growth as a result.

- *The proliferation of locally sourced and targeted content*

  One area of focus in the Greater China Region is the development of Chinese-language/localized content. This in turn attracts more users which stimulates the creation of more content and commerce, creating a virtuous circle of usage, investment and growth.

- *Deregulation of telecommunications markets*

  Deregulation of Asian telecommunications markets should foster competition and reduce the cost of getting on-line through lower access and telecommunications charges. Hong Kong is furthest along the road of deregulation and liberalisation. The recent agreement between China and the US that paves the way for China's accession to the WTO, holds out the prospect of significant liberalisation of the PRC telecommunications market as well. As it has been seen in the developed countries, falling telecommunications costs are very important in stimulating the growth of the Internet market.

- *Government initiatives*

  Keenly aware of the importance of the Internet, the governments of Hong Kong, Taiwan and the PRC have announced initiatives with a technology focus. IT infrastructure and other developments in the IT fields are major topics in the Hong Kong government's "Digital 21" IT Strategy, a comprehensive strategy for the development of Hong Kong into a leading digital city in the 21st century, and in China, government departments are encouraged to offer on-line service. In Taiwan, tax incentives are offered to companies adopting B2B solutions.

  According to IDC, the number of Internet users in Hong Kong is expected to increase to 2.6 million by 2004 from 0.49 million in 1997, representing a CAGR of 26.9%. The number of Internet users in Taiwan is expected to increase to 4.91 million by 2004 from 0.67 million in 1997, representing a CAGR of 32.9% and the number of Internet users in the PRC is expected

to increase to approximately 33.14 million by 2004 from approximately 1.38 million in 1997, representing a CAGR of 57.5%. Although the PRC is still a technologically developing country, it is expected that the Internet market in the PRC will achieve significant growth within the next five years. Figure 2 shows the forecast number of Internet users expected in China, Hong Kong and Taiwan.

Figure 2: Number of Internet users by country, 1997 - 2004
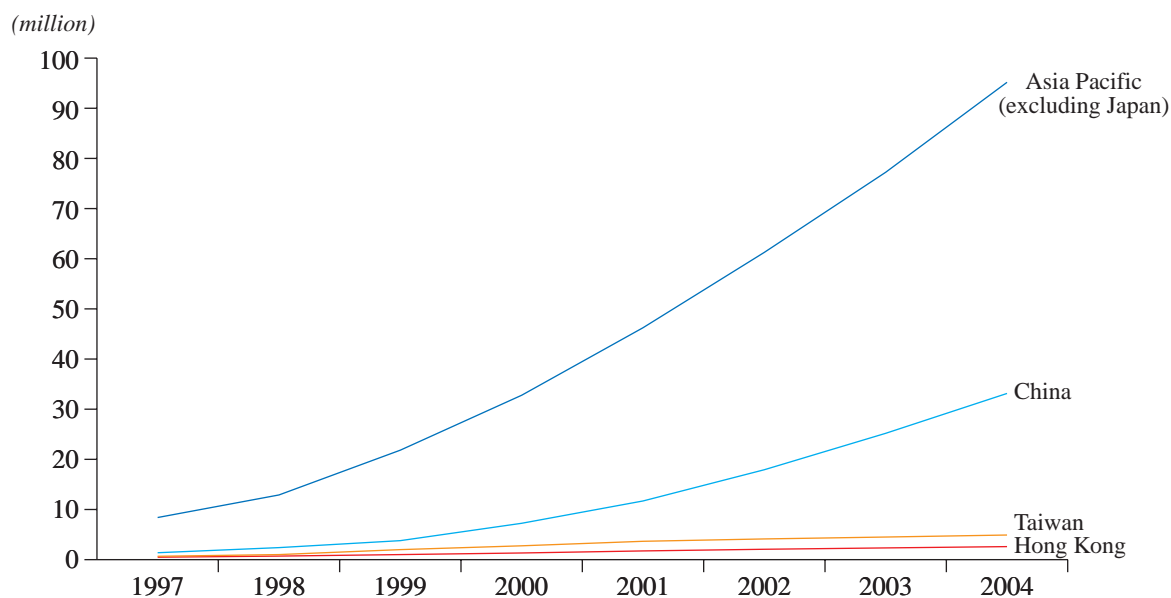
Source: IDC, 1999

Note: The number of Internet users has taken into account the overlap of business users who are also home users, without double-counting them.

B2B e-commerce market

Figure 1 above shows that the Internet commerce market in each of Hong Kong, the PRC and Taiwan is expected to grow at a great speed, with a CAGR of 129.4%, 254.6% and 163.2% respectively for a period of seven years from 1997 to 2004.

IDC estimates the Internet commerce market in the Greater China Region to reach US$25.7 billion by 2004 from US$27.5 million in 1997. As B2B adoption accelerates in the West, some buyers from the West are introducing policies whereby they source their products from suppliers that manage orders on-line. This forces suppliers in the Greater China Region to adopt B2B. On-line e-commerce sales in the Greater China Region are, therefore, expected to surge.

SMEs as an important driver of B2B economics

The SMEs in Hong Kong are the basic building blocks of the economy with their relatively low start-up costs and structural flexibility in a changing business environment. In Hong Kong, they account for 98% of the local business establishments and provide job opportunities to over one million people, about 60% of the workforce. In December 1999, there were more than 290,000 SMEs in Hong Kong, the majority of which was engaged in the import and export sector, followed by the wholesale, retail, restaurant and hotel sectors.

The Directors believe that the SMEs in Hong Kong, like their counterparts in the US, will also be an important driver of B2B economics in Hong Kong for the following reasons: (1) the Internet provides SMEs with the capability to operate their businesses efficiently and affordably, allowing them to compete with larger corporations through a networked and level playing field; (2) as more small businesses access the Internet and set up corporate web pages, the more they will employ the Internet to execute their business strategies; and (3) the Internet also let SMEs compete on a more equitable basis with larger corporations with vast resources, arming them with on-line distribution and reach so that they can gain exposure to geographically diverse markets.

The SMEs in Taiwan, like those in Hong Kong, form the backbone of the economy of Taiwan, accounting for 97.81% of the local business establishments and providing job opportunities for 78.4% of the workforce. Without the support of the PRC vast inland resources, the SMEs in Taiwan encounter keener competition in today's globalisation of business than their counterparts in Hong Kong. In the PRC, according to the China Statistical Year book 1999, there were 14,877,000 SMEs[#] in 1998. Among the total number of SMEs in the PRC, 4,642,000 are located in the southern part of China, and 4,495,000 and 2,779,000 are located in the eastern and northern parts of China respectively.

[#] Only business establishments in the industry sector and in the sectors of commerce, catering, trade and other services industry are included.

Opportunities for growth

In its blueprint for IT development as laid out in the "Digital 21" IT Strategy, the Government plans to build a better IT infrastructure. Once this infrastructure and its accompanying legislation are completed, Hong Kong should be able to offer a more "Internet friendly" environment than many of its regional competitors. Overall Internet growth is expected to be further enhanced by government incentives to encourage the use of the Internet such as the "Cyber-Port" initiative, which aims to build incubation facilities to establish Hong Kong as a technology/Internet hub in Asia.

Recognising the importance of the development of IT and other technology to China's economic growth, the PRC central government has granted a deduction of the value-added tax on software sales to 6% or lower from 17% for the purpose of encouraging technology development.

Taiwan has created financial structures and tax incentives to encourage companies to adopt B2B solutions. The Ministry of Economic Affairs of Taiwan announced that it expects up to 50,000 local companies to conduct commercial transactions on the Internet by the end of 2001, by which time the annual e-commerce turnover is projected to exceed US$16 billion (NT$500 billion).

THE E-COMMERCE APPLICATION MARKET IN ASIA

Internet penetration

There were an estimated 21.83 million Internet users in other countries in Asia Pacific (excluding Japan) in 1999. IDC forecasts that there will be 95.18 million Internet users by 2004 (see Figure 2 above). South Korea's Internet market is supported by a relatively large and wealthy population. Malaysia, the Philippines, Thailand and Indonesia rank relatively low in Internet infrastructure development but they are making steady progress. The government of Singapore has been extremely supportive of building an advanced information infrastructure.

B2B e-commerce

Asia is embracing e-commerce sooner than anticipated. Figure 1 above also shows the Internet Commerce Market in Australia, Singapore, India and South Korea. Like their counterparts in the Greater China Region, suppliers in other countries in Asia are also forced to adopt a B2B model. IDC estimates that non-Japanese Asia Pacific e-commerce will grow to US$87.5 billion in 2004 from US$160.3 million in 1997. The increased availability of B2B products from a range of global vendors since 1998 also accelerates e-commerce applications in Asia.

As discussed above, Asia is tapping e-commerce aggressively. However, the Asia market is fragmented through language, geography, customs and regulatory systems. As a result, it is more difficult to execute e-commerce in pan-Asia than in the US. This diversity poses unique e-market challenges for cross border communications, logistics, and customs. While B2C preceded B2B e-commerce in the US, the situation in Asia might be the reverse. Asia's deep manufacturing roots should help accelerate the B2B adoption curve.

SMEs as an important driver of B2B economics

SMEs form a significant part of most Asia economic landscapes. Given the fragmented demographics across Asia, the Directors believe that the rest of Asia displays similar metrics to those in Hong Kong. The e-world has opened up endless new possibilities for SMEs. Physical size is no longer an overpowering constraint. Since e-commerce transcends physical boundaries, distance and geography can no longer limit a company's aspirations or the scope of its market. By means of e-commerce, SMEs can search new partners and suppliers easily and cost-effectively. They can therefore effectively conduct their business and serve their local and international customers, providing value-added services in a very economical and rapid manner.

Opportunity for growth

The state of B2B e-commerce in Asia is so nascent that there are few metrics which can attest to the growth or opportunity of B2B e-commerce. However, it is not difficult to foresee to some extent the potential in Asia by comparing Asia to the US market. B2B e-commerce adoption is helping Asia make most of its manufacturing base, in effect expanding demand for its products to new markets. Greater outsourcing to, and procurement from, Asia appear to be one result of the Internet growth.

APPLICATION SERVICE PROVIDERS

B2B Internet Commerce Organisation Structure

In B2B Internet commerce, only 1% of the companies involved represents the front-end part (i.e., building a mission critical, reliable e-commerce website), while 99% represents the back-end, i.e., the vast area of the infrastructure of e-commerce, which is required to build the website mentioned above. The B2B Internet commerce infrastructure consists of many components that are critical for the operation of B2B. ASP is one of them.

Emergence of ASPs

An ASP, in its simplest form, is a third-party service firm which deploys, manages and remotely hosts a pre-packaged software application through centrally located servers in a rental or lease arrangement. These software applications are accessed remotely over the Internet. ASPs, being one of the components of the infrastructure of B2B Internet commerce, provide the expertise to manage the software applications.

With the pervasiveness of the Internet and continuous development of Internet-based enabled solution application, the migration from in-house application management to a hosted application solution has become feasible. ASP industry is now in the embryonic stage of its life cycle. The emergence of ASP was mostly attributable to the convergence of software and IT infrastructure toward an Internet environment. Software has evolved from custom-coded, proprietary applications to pre-packaged or off-the-shelf applications and now to the development of net-centric applications. Net-centric software allows Internet-enabled commerce, communication and the management of information content. Likewise, IT infrastructure has evolved from a closed, mainframe environment to distributed computing and now towards a net-centric infrastructure linking all stakeholders.

Future Growth and Target Market

In the US, the ASP market has grown rapidly in the last year or so. According to Dataquest Inc., a unit of Gartner Group Inc., as published in Electronic Commercial World, March 2000, the ASP market is forecast to increase nearly ten times from US$2.7 billion in 1999 to US$22.7 billion in 2003. In a world of business based on the Internet, adoption of the ASP model is a win-win proposition all around. Since applications are run on the Internet, they can be easily distributed. End-users gain faster access to leading edge applications at sharply reduced on-site labour costs and without complex installations and updates. The early adopters and targeted markets for the ASP alternative have been SMEs which have a big pent-up demand for advanced applications which level the playing field between themselves and their larger competitors.

SMEs can rent a service that is operated by an ASP, avoiding large upfront expenditures for application implementation and upgrading, and IT staff for maintenance of new applications, operating systems and networks, and allowing them to concentrate their personnel resources on their core business or strategic value-added activities. ASPs have opened to them leading-edge software applications for accounting, human resources, manufacturing, distribution, and many other functions on a predetermined monthly fee per user licence, or on a fee-per-transaction basis.

As the US ASP market is growing at an unprecedented speed, the Directors believe that the Asia ASP market will emerge soon as e-commerce is the future for the business world. As such, the above-described model will become the most sensible, affordable and flexible for the deployment, management and enhancement of business application in the age of information, and growth in the ASP segment will be the anticipated result.