ICT Investments and Electronic Commerce Initiatives in ASEAN

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I. INTRODUCTION

As we move into the 21st century, there is little doubt that the Internet will increasingly play a greater role in our lives. With the cost of computer hardware and software falling and with governments moving towards the provision of infrastructure to enable their citizens to enjoy the wonders of cyberspace, the possibility of the world being linked together by the Internet may no longer seem remote.

Any observer would have noted, however, that Internet commerce has been mercilessly wretched in recent years. Many leading online businesses, such as eToys, have collapsed.¹ News items like these might not have been much of a surprise had it not been for earlier convictions that online retail would capture the major share of consumer spending and overtake the huge brick-and-mortar retail industry.

The unexpected burst of the dot-com bubble has made many take a step back to re-assess the long-term profitability prospects of online companies. The disillusionment with online business need not mean that the string of new possibilities that electronic commerce (e-commerce) can provide has prematurely reached its end. After all, other online businesses, such as eBay are still in good shape.²

Online commerce is only in its infancy. The downfall of this first generation of online businesses does not mean the failure of the Web. Rather, it has just destroyed narrow views that online commerce is only about the Web. Every successful business survived only because its business model could well integrate important business factors, including logistics, technological investments, cash-flow management and, of

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course, the needs of the end-consumer. To recover from its present shakeout, the industry needs to relook at how successful online companies have managed to differentiate themselves from traditional brick and mortar companies.

It has been predicted that the Asia-Pacific region will overtake Europe and challenge the United States as the pre-eminent e-commerce area within the next four years.\(^3\) According to this study, Australia, New Zealand, Singapore and the Republic of Korea are expected to experience far more intensive e-commerce activity than Europe and, possibly, the United States as a direct result of the current aggressive exploitation of e-commerce throughout the region. This prediction may have to be revised downwards in view of the recent SARS (Severe Acute Respiratory Syndrome) outbreak and the effect of the war in Iraq on Asian economies. Nevertheless, the forecast does portend the potential for successful exploitation of e-commerce in Asia once the negative effects of these two events start to diffuse.

Other noteworthy Asian entrants to the burgeoning field of e-commerce include India, an emerging powerhouse that recently announced a target of US$ 50 billion in export software sales by 2008.\(^4\) China, together with the Republic of Korea and Japan are leapfrogging over the personal computer (PC) era to launch straight into mobile Internet access.

The much-hyped third generation (3G) mobile technology failed to take off in Europe as predicted despite operators paying billions for 3G licenses. Instead, intermediate technology such as mobile e-mail, i.e. short message service (SMS) has taken Europe and the Asia-Pacific region by storm. Alternative applications such as the Wireless Local Area Network (WLAN), or more popularly known as Wi-Fi have also proliferated in place of 3G in hotspots all over the region, using laptops and personal digital assistants (PDAs).

Undaunted by 3G’s failure in Europe, the Republic of Korea rolled out its 3G networks in January 2002 that operates on a system called 1x RTT phones.\(^5\) A year and a half later, NTT DoCoMo Inc. followed suit by releasing its dual-network 3G handset called the FOMA N2701. These networks allow subscribers to take pictures of themselves and send them to another user, browse film reviews over the phone’s tiny screen and then book the film tickets using their phones (popularly referred to as multimedia messaging service or MMS), as well as interface with certain customized web pages.\(^6\) In fact, this new millennium can be characterized as the mobile Internet

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\(^3\) This study, conducted by Professor Steve Burdon, Visiting Professor of Electronic Commerce at the University of Technology, Sydney, Australia, was presented at the World E-Commerce Forum, held in October 2000: *Study: Asia Emerging as E-Commerce Powerhouse*, Computerworld, Vol. 6, Issue 44, 1-7 September 2000, p. 4.


\(^5\) The Economist, London, 12 January 2002, p. 60. But telecommunication operators in the region, particularly Japan’s NTT DoCoMo have refuted the 1xRTT network as a true 3G network.

\(^6\) RCR Wireless News, 2 June 2003, p. 20. The irony about 3G is that the concept which originates from Europe failed to take off in Europe but it debut successfully in Japan and the Republic of Korea (Asia). The success of i-mode in Japan prompted NTT DoCoMo to launch the network in Germany in conjunction with KPN Mobile, which will eventually extend to Netherlands and Belgium, see The Economist, London, 30 March 2002, p. 56.
era. Telcoms operators are already envisioning a 4G network that will annihilate Wi-Fi by bringing broadband on a mobile platform.7

The development and growth of e-commerce depend on three underlying core industries: the telecommunications (the telecoms) industry, both fixed and mobile applications; the Internet; and the PC industry.

With this skeletal framework in mind, this article will first provide an overview of the development and growth of these three determinants in the countries of the Association of South-East Asian Nations (ASEAN) as compared to such leading players in the Asia-Pacific region such as Japan, the Republic of Korea and China. The second part of the article will look specifically at the e-ASEAN Framework Agreement, an initiative by the ASEAN governments to capture trade and investment opportunities in the “information and communication technology” (ICT) sector. Within this framework is a specific endeavour to promote e-commerce as a growth area and, to achieve this end, the Agreement called for the establishment of the ASEAN Information Infrastructure (AII). The third and final part of the article will look at the initiatives and challenges to e-commerce in ASEAN.

II. THE ICT SECTOR IN THE ASIA-PACIFIC: PUTTING ASEAN ON THE MAP

A. THE SIZE OF INFRASTRUCTURE INVESTMENTS IN THE TELECOMS INDUSTRY

The liberalization of the telecoms sector which started in a few countries in the 1980s has now become a worldwide trend. Countries all over the world, including even former communist enclaves such as China and Vietnam, have opened up their telecoms industries to foreign participation in a bid to bring economic development and prosperity to their countries as well as to benefit from the new revolution in the information and communication industry.

More than 90 developing economies opened their telecom sector to private participation between 1990 and 1998. Total investments during this period amounted to some US$ 214 billion. Two-thirds of that amount has been invested in expanding and modernizing networks, and the remaining one-third has gone to governments as divestiture revenues or license fees.

Figure 1: The distribution of telecoms projects with private participation in developing countries by region, 1990-1998

7 The Economist, 31 May 2003, p. 61.
From *Figure 1* it can be seen that the East Asia and the Pacific bloc which houses the ASEAN countries was the second largest recipient of telecoms investments after Latin America and the Caribbean in the period 1990-1998. This amounted to 20 percent of the total investments and shows a steady growth for the telecoms sector in the Asia-Pacific. Of the US$ 214 billion in investment, about US$ 79 billion went into 350 greenfield projects\(^8\) and US$ 126 billion into 161 divestitures.\(^9\) Fifty percent of divestiture revenues went to State coffers, while the rest were deployed to network expansion and modernization. East Asian countries have opted primarily for greenfield projects, aimed at complementing the incumbent operator’s investment. Most have introduced some competition in basic services but have fully opened their mobile phone market to competition.

### B. THE SIZE OF THE TELECOMS MARKET: MARKET REVENUE AND INVESTMENT

*Figure 2* sets out the telecommunications revenues in the ASEAN countries as compared to non-ASEAN countries in the Asia-Pacific region in 2001. The three countries with the highest telecom revenues are Japan, China, and the Republic of Korea, with revenues of US$ 117,970.9 million, US$ 43,138.9 million and US$ 8,441.8 million respectively.

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\(^8\) Greenfield projects refer to a private entity or a public-private joint venture that builds and operates a new facility. It includes build-own-transfer and build-own-operate contracts.

\(^9\) Divestiture refers to a private consortium buying an equity stake in a State-owned enterprise. The private stake may or may not imply private management of the company.
17,970.9 million, respectively. These are non-ASEAN countries and their combined revenue is nearly eight times the combined revenue of all the ASEAN countries. It is obvious from Figure 2 that the ASEAN countries trail far behind behemoths such as Japan, China and the Republic of Korea. The telecoms operators in these latter countries are among the top five telecoms operators in the Asia-Pacific in terms of market revenues and the number of subscribers.

One must bear in mind, however, that the ASEAN countries have much smaller domestic markets when compared to Japan and China. One must consequently look at the telecom revenue per inhabitant to see how the ASEAN countries fare as compared to Japan, China and the Republic of Korea. Figure 3 sets out the relevant data. The telecoms revenue per inhabitant of Singapore was US$ 665.30 in 2001, which is comparable to Australia, where the revenue per inhabitant was US$ 690.30. Singapore’s figure even exceeds those for Taiwan, the Republic of Korea and China. With the exception of Malaysia, Brunei and Thailand (where the revenue per inhabitant was US$ 187.60, US$186.5 and US$57.2 respectively), the rest of the ASEAN countries had revenue per inhabitant of less than US$ 30.10 The country with the highest revenue per inhabitant is Hong Kong SAR (US $1,112.20). With a population of only 6.76 million, however, Hong Kong’s situation is similar to that of Singapore, and both are constrained by their small domestic markets. Hence, it may be concluded that the country with the most profitable margin for telecoms revenue in the Asia-Pacific is still Japan, where the revenue per inhabitant is US$ 926.80. Telecoms operators will be attracted to invest in Japan and China because of their huge populations as well as the general wealth that these populations enjoy. Figure 4, which sets out the total telecoms investments in ASEAN and selected Asia-Pacific countries in 2001, also confirms this conclusion.

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Figure 2: The telecommunications revenue in ASEAN and selected Asia-Pacific countries, 2001

2001: TELECOM REVENUE IN ASIA PACIFIC

Myanmar 18
Cambodia 22
Laos PDR 26
Brunei 59
Vietnam 1,264
Indonesia 2,167
Philippines 2,391
Singapore 2,749
Thailand 3,502
Malaysia 4,465
Hong Kong SAR 7,488
India 7,645
Taiwan 9,320
Australia 13,362

In Figure 4, “investment” refers to the annual expenditure associated with acquiring ownership of property and plant used for telecommunications services and includes land and buildings. In terms of telecoms investments in the ASEAN countries, Indonesia led the pack in 2001, with US$ 1,703.3 millions. The other ASEAN countries—Malaysia, Thailand and the Philippines—have investments of well above US$ 1,000 million, but these figures are minuscule when compared to behemoths such as Japan and China. The average total investment of Japan and China is about 19 times that of Indonesia. Clearly, the ASEAN countries have a long way ahead of them if they want to catch up with the leading players in the Asia-Pacific. Figure 5, which sets out the total telecoms investment per inhabitant of ASEAN and the relevant countries in the Asia-Pacific in 2001, also confirms this conclusion.

It is clear from Figure 5 that, with the exception of Singapore and Malaysia, the total telecoms investment per inhabitant in the ASEAN countries was only about US$26 in 2001. The total investment per inhabitant in Singapore and Malaysia was US$ 89.60 and US$ 49.60, respectively. Japan and Australia led the pack, with total investment per inhabitant of US$ 257.50 and US$ 191.50, respectively. These figures show that telecoms operators are attracted to invest in developed countries such as Japan and Australia, with sizable populations enjoying per capita gross domestic product (GDP) of US$ 37,544 and US$ 19,897, respectively, rather than in the ASEAN countries. In between these two extremes lie Taiwan, Hong Kong SAR and the Republic of Korea, with average total investment per inhabitant of about US$ 144. Despite a relatively low total investment per inhabitant of only

11 Malaysia, Thailand, the Philippines and Indonesia are generally referred to as the ASEAN4 countries as they share more or less the same characteristics and growth rates.
US$ 24.30, China continues to be an attractive market for telecoms investment because of its huge domestic market and burgeoning middle class.

Figure 4: Telecoms Investments in ASEAN and selected Asia-Pacific countries, 2001

C. ICT SPENDING

Another good indicator of the size and growth of the telecoms industry is the amount of ICT expenditure incurred by businesses, households, government and educational institutions. Table 1 sets out the ICT expenditure$^{12}$ of the ASEAN countries as compared to the other countries in the Asia-Pacific in 2000. With the exception of Singapore, per capita ICT expenditure in the ASEAN countries is nowhere near the level incurred by the non-ASEAN dominant players in the Asia-Pacific region, such as Japan and Australia where per capita ICT expenditure was US$ 3,118 and US$ 1,922, respectively. Although the figure for Singapore is close to that for Japan and even higher than that for Australia, it again has to be moderated in light of its small domestic market.

$^{12}$ “Expenditure” includes spending on information technology (“tangible” spending on information technology products purchased by businesses, households, governments and education institutions from vendors and organizations outside the purchasing entity), internal spending on information technology (“intangible” spending on internally customized software, capital depreciation etc) and spending on telecoms and other office equipment; see The World Bank, 2002 World Development Indicators, Washington, D.C.
Table 1: ICT Expenditure in ASEAN and selected Asia-Pacific counties, 2000

<table>
<thead>
<tr>
<th>Country</th>
<th>ICT Expenditure</th>
<th>% of GDP 2000</th>
<th>Per capita 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>9.7</td>
<td>2104</td>
<td></td>
</tr>
<tr>
<td>Brunei</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>6.8</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>3.6</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>3.8</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.2</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>6.5</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Laos PDR</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>8.3</td>
<td>3118</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>5.4</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>6.6</td>
<td>641</td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>9.7</td>
<td>1922</td>
<td></td>
</tr>
<tr>
<td>Taiwan</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>3.8</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>


Figure 5: Telecoms Investment per inhabitant in ASEAN and selected Asia-Pacific counties, 2001

![Graph showing telecoms investment per inhabitant]
The above data shows that the Asia-Pacific region is vibrant with investment and profit-making opportunities for the telecoms sector. This vibrancy is not witnessed in the ASEAN countries, however. Rather, it is the non-ASEAN countries that are driving demand in the Asia-Pacific.

D. THE CHANGING REGIONAL BALANCE OF POWER: FROM EUROPE TO THE ASIA-PACIFIC

In January 1990, the demand for fixed-line networks stood at 40 percent in Europe, whilst the demand in the Asia-Pacific was only 23 percent. The figures in Europe and the Asia-Pacific even out at the start of the new millennium but, by the end of the first decade, the Asia-Pacific should overtake Europe to become the region with the highest demand for fixed-line networks. Clearly, the Asia-Pacific is poised to become a leading player on the global scene. (See Figure 6.)

Figure 6: The changing regional balance of power: Fixed-line networks


At the start of the new millennium, around one-third of the world’s telephone users were in the Asia-Pacific region, but by the time the decade ends, that figure will be approaching one-half. It is expected that the region will have 700 million fixed-
lines users and around one billion mobile phone users.\footnote{Yoshio Utsumi, \textit{One Billion New Telecommunication Consumers}, International Telecommunication Forum Opening, ITU Telecom Asia, 2000, Hong Kong, 4-9 December 2000.} The impact this will have on e-commerce is simply mind-boggling. The growth of e-commerce can only be exponential. Whether ASEAN can be part of this revolution, however, is a different question altogether.

E. THE NEXT GENERATION APPLICATIONS: FROM FIXED-LINE TO MOBILE INTERNET

By the beginning of 2002, more than half the countries in the world had fully or partially privatized their incumbent telecoms operators. Although monopolies are still retained in respect of fixed-line services in the majority of countries, an overwhelming majority now allows competition in the mobile and Internet market segments.

With just short of one billion subscribers at the end of 2001, mobile telecommunications was poised to take over from fixed lines beginning in 2002. By the end of 2001, over 90 percent of countries had a mobile network, almost one in every six of the world’s inhabitants had a mobile phone and 97 countries had more mobile than fixed telephone subscribers. The compounded annual growth rate (CAGR) for mobile phone subscribers in the Asia-Pacific was 54 percent in 2001, compared to 33 percent in the Americas and 56 percent in Europe.\footnote{\textit{The Mobile Generation- World Trends}, International Telecommunication Union, <http://www.itu.int/itunews/issue/2002/08/mobile.html>
Table 2: Cellular mobile subscribers in ASEAN and selected Asia-Pacific countries, 1995-2001.

<table>
<thead>
<tr>
<th>Country</th>
<th>Cellular mobile subscribers</th>
<th>As % of total telephone subscribers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1995 (000’s)</td>
<td>2001 (000’s)</td>
</tr>
<tr>
<td>Singapore</td>
<td>306</td>
<td>2,991.6</td>
</tr>
<tr>
<td>Brunei</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1,005.1</td>
<td>7,477</td>
</tr>
<tr>
<td>Thailand</td>
<td>1,297.8</td>
<td>7,550</td>
</tr>
<tr>
<td>Philippines</td>
<td>493.9</td>
<td>11,700</td>
</tr>
<tr>
<td>Indonesia</td>
<td>210.6</td>
<td>6,520.9</td>
</tr>
<tr>
<td>Vietnam</td>
<td>23.5</td>
<td>1,251.2</td>
</tr>
<tr>
<td>Myanmar</td>
<td>2.8</td>
<td>13.8</td>
</tr>
<tr>
<td>Cambodia</td>
<td>14.1</td>
<td>223.5</td>
</tr>
<tr>
<td>Laos PDR</td>
<td>1.5</td>
<td>29.5</td>
</tr>
<tr>
<td>Japan</td>
<td>11,712.1</td>
<td>74,819.2</td>
</tr>
<tr>
<td>China</td>
<td>3,629</td>
<td>144,820</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>1,641.3</td>
<td>29,045.6</td>
</tr>
<tr>
<td>Australia</td>
<td>2,242</td>
<td>11,169</td>
</tr>
<tr>
<td>Taiwan</td>
<td>772.2</td>
<td>21,706.4</td>
</tr>
<tr>
<td>India</td>
<td>76.7</td>
<td>6,431.5</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>798.4</td>
<td>5,776.4</td>
</tr>
</tbody>
</table>


In addition, the convergence and inter-operability of mobile and Internet technologies have led to such new value-added services as the mobile Internet and SMS. SMS has taken some Asia-Pacific countries—the Republic of Korea, Japan and the Philippines, for example—by storm. Some 24 billion SMSes were sent worldwide in the first quarter of 2002. It is found that teenagers are the main drivers of the SMS market in these countries. Figure 7 shows the mobile Internet penetration for selected countries in 2001. Singapore is the only ASEAN country that has any significant mobile Internet penetration; mobile Internet has yet to make any impact in the rest of the ASEAN countries.
II. E-COMMERCE IN ASEAN

A. THE SIZE AND POTENTIAL FOR THE E-COMMERCE MARKET: HOW DO THE ASEAN ECONOMIES FARE?

The e-commerce market is expanding rapidly. Figure 8 sets out the forecasted values of the business-to-business\(^{15}\) (B2B) market for selected Asian markets. Figure 9 shows the value of B2C revenues in selected Asia-Pacific countries in 2000. Apart from Singapore, B2C e-commerce activities were too insignificant in the other

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\(^{15}\) Business-to-business e-commerce includes, for instance a firm and its suppliers who use a common network for ordering, payment and monitoring of shipment. These transactions used to be conducted over private networks using electronic data interchange. With the rise of the Internet, these companies are embracing extranets as the dominant strategy; see Laura Mannisto, *Electronic Commerce in Asia*, in *Asia and the Future of the World Economic System*, International Telecommunications Union Conference, London, March 18, 1999.
ASEAN countries to be included in the survey. Researchers such as Forrester have forecasted that Asia-Pacific e-commerce will result in US$1.6 trillion of revenues by 2004.16

Figure 8: B2B Forecasts for Selected Asian Markets, 2003

![Bar chart showing B2B forecasts for selected Asian markets in 2003.](chart)


Forrester Research is a private Internet research company listed on the U.S. NASDAQ stock exchange. It was founded by George F. Colony in 1983, and employs 442 employees worldwide in its five full-fledged research centres throughout the United States and Europe. It identifies and analyses emerging trends in technology and their impact on business and provides companies with rigorous research, practical ideas and objective guidance to help them thrive on technology change. It has a Website at [http://www.forrester.com/About](http://www.forrester.com/About).

Figure 9: B2C e-commerce revenues – Asia Pacific 2000

16 Elizabeth Blakey, *US-Asian E-Commerce Alive and Clicking*, E-Commerce Times, 13 July 2000. Forrester Research is a private Internet research company listed on the U.S. NASDAQ stock exchange. It was founded by George F. Colony in 1983, and employs 442 employees worldwide in its five full-fledged research centres throughout the United States and Europe. It identifies and analyses emerging trends in technology and their impact on business and provides companies with rigorous research, practical ideas and objective guidance to help them thrive on technology change. It has a Website at [http://www.forrester.com/About](http://www.forrester.com/About).
Where does ASEAN stand in this e-commerce revolution? With respect to B2B e-commerce, ASEAN’s share of this burgeoning market is very small. Japan leads the pack with a forecasted value of US$ 591,300 millions worth of B2B e-commerce in 2003, followed by the Republic of Korea (US$ 93,400 millions) and Australia (US$ 89,800 millions). The only ASEAN country which B2B e-commerce has made an impact is Singapore, albeit at a distant US$19, 900 millions. The value of B2B e-commerce in Japan alone is 21 times more than the total forecasted value for B2B e-commerce in the ASEAN 4 countries and Singapore.

As far as B2C e-commerce is concerned, Figure 9 shows that in 2000, Japan was a strong leader in B2C e-commerce raking revenues of US$2.2 billion, followed by Australia trailing at a distant US$0.3 billion. Taiwan and the Republic of Korea each had revenues of US$0.2 billion each, followed closely by Hong Kong SAR and Singapore with US$0.1 billion each. Again, it is clear that the ASEAN countries with the exception of Singapore are weak players in the e-commerce revolution.17

To decide if ASEAN can actively participate in this new burgeoning electronic market, this article will look briefly at some socio-economic indicators such as per capita GDP, the density of Internet users, ownership of PCs and the digital divide between the ASEAN countries. First, a cursory glance at the countries will reveal the vast differences in their socio-economic profile. The more advanced countries in terms of their economic development are Singapore, Brunei, Malaysia, Thailand and Indonesia (before the Asian crisis). Within this group, Singapore and Brunei are way

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ahead, with per capita GDP in 2000 of US$ 23,137 and US$ 13,175, respectively. In fact, economists have usually grouped Singapore with the other newly industrializing economies of Hong Kong, Taiwan and the Republic of Korea. Malaysia, Thailand, Indonesia and the Philippines have often been classified as the ASEAN4, as they share more or less the same characteristics and growth rates. In recent years, however, Malaysia and Thailand have enjoyed economic progress that puts them ahead of Indonesia and the Philippines. The newer Members of ASEAN, namely Vietnam, Myanmar, Cambodia and Laos (VMCL) can conveniently be grouped together as they are the poorer countries in the ASEAN family with per capita GDP in 2000 in the range of US$ 148 to US$ 393. Clearly, the cost of owning a computer or a mobile phone or even connecting to the Internet is outside the reach of most of the populace in the VMCL countries and the poorer ASEAN4 countries such as Indonesia and the Philippines. As a result, the potential for e-commerce growth in these countries will necessarily be limited.

This conclusion is confirmed by data on the size of the Internet market in ASEAN as compared to non-ASEAN countries. Figures 10 through 14 show the “e-readiness”—i.e. the extent to which a country’s business environment is conducive to Internet-based commercial opportunities—of ASEAN and selected Asian countries. The indicators are the total number of Internet users (Figure 10), the density of Internet users (Figure 11), the number of broadband subscribers (Figure 12) and the estimated PC ownership (Figure 13) and estimated density of PC ownership (Figure 14).

In terms of absolute figures, Japan, China and the Republic of Korea have the largest number of Internet users. The group of Asia-Pacific countries that forms the second tier of Internet users are Australia, Taiwan and India, with an average of about 7.3 million Internet users. The ASEAN4 countries form the third tier of users with an average number of users of about 4 million. In view of its small population size, Singapore only has 1.5 million Internet users.
In terms of the density of Internet users, the Republic of Korea and Japan again top the list, with 52.1 and 43.9 users per 100 persons. Among the ASEAN countries, Singapore has the highest density (36.3 per 100 persons), followed by Malaysia (27.3 per 100 persons). The density of Internet users in the rest of the ASEAN countries (with the exception of Brunei) is generally less than 6.0 per 100 persons.
Figure 11: Internet Users per 100 person in ASEAN and selected countries in Asia-Pacific, 2001

<table>
<thead>
<tr>
<th>Country</th>
<th>Users per 100 Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic of Korea</td>
<td>52.1</td>
</tr>
<tr>
<td>Japan</td>
<td>43.9</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>38.5</td>
</tr>
<tr>
<td>Australia</td>
<td>37.1</td>
</tr>
<tr>
<td>Singapore</td>
<td>36.3</td>
</tr>
<tr>
<td>Malaysia</td>
<td>27.3</td>
</tr>
<tr>
<td>Taiwan</td>
<td>17.9</td>
</tr>
<tr>
<td>Korea</td>
<td>17.1</td>
</tr>
<tr>
<td>Brunei</td>
<td>10.4</td>
</tr>
<tr>
<td>Thailand</td>
<td>5.8</td>
</tr>
<tr>
<td>China</td>
<td>2.6</td>
</tr>
<tr>
<td>Philippines</td>
<td>2.6</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.9</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1.2</td>
</tr>
<tr>
<td>India</td>
<td>0.7</td>
</tr>
<tr>
<td>Laos PDR</td>
<td>0.2</td>
</tr>
<tr>
<td>Cambodia</td>
<td>0.1</td>
</tr>
<tr>
<td>Laos</td>
<td>0.2</td>
</tr>
<tr>
<td>Malaysia</td>
<td>27.3</td>
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<td>Thailand</td>
<td>5.8</td>
</tr>
<tr>
<td>China</td>
<td>2.6</td>
</tr>
<tr>
<td>Philippines</td>
<td>2.6</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.9</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1.2</td>
</tr>
<tr>
<td>India</td>
<td>0.7</td>
</tr>
<tr>
<td>Laos PDR</td>
<td>0.2</td>
</tr>
<tr>
<td>Cambodia</td>
<td>0.1</td>
</tr>
</tbody>
</table>


Figure 12 shows the number of broadband subscribers in Singapore and the ASEAN4 countries compared to non-ASEAN countries in the Asia-Pacific in 2001. Data is not available for the VMCL countries and Brunei. Again, the Republic of Korea and Japan top the list with the highest broadband subscribers in Asia-Pacific. The ASEAN countries, including Singapore, trailed far behind these two behemoths.
Next, how do the ASEAN countries fare in terms of PC ownership? Figure 13 shows that Japan, China and the Republic of Korea had the highest levels of PC ownership in 2001, with 44.4 million, 25 million and 12 million owners, respectively. The ASEAN countries, led by Indonesia, had an estimated PC ownership of only 2.3 million. On the other hand, the density of PC ownership, as shown in Figure 13, tells a different story. The highest density of PC ownership per 100 persons is in Australia, at 51.58. Next comes Singapore, at 50.83, and then Japan, at 34.88. Taiwan and the Republic of Korea had a density of about 25 PC owners per 100 population. The density of PC ownership in the other ASEAN countries is below 12.61 per 100 population. The VMCL countries had density of less than one PC per 100 persons. Although Singapore ranks among the developed countries in terms of the density of PC ownership, its domestic market is still very small. The density for PC ownership in the rest of the ASEAN countries is only about one-third that of such developed countries as Japan and Australia.
Figure 13: Estimated ownership of PC in ASEAN and selected countries in Asia-Pacific, 2001

NUMBER OF ESTIMATED PCs ('000s) IN ASIA PACIFIC

- Laos PDR, 16
- Cambodia, 20
- Myanmar, 55
- Vietnam, 952
- Philippines, 1,700
- Thailand, 1,700
- Singapore, 2,100
- Indonesia, 2,300
- Hong Kong SAR, 2,600
- Malaysia, 3,000
- Taiwan, 5,661
- India, 6,000
- Australia, 10,000
- Republic of Korea, 12,000
- China, 25,000
- Japan, 44,400


Figure 14: Estimated PCs per 100 inhabitants in ASEAN and selected countries in Asia-Pacific, 2001
So, what can be concluded from these data? Of the ASEAN countries, Singapore showed the greatest potential for growth in e-commerce despite its small domestic market. The Economist’s Economic Intelligence Unit ranked Singapore seventh in the world for “e-readiness”. B2B e-commerce transactions in Singapore reached S$1.2 billion in 1998. The ASEAN countries and the VMEC countries lag so far behind that they are non-starters in this e-commerce revolution. This conclusion is consistent with the forecasted B2B e-commerce market shown in Figure 8. Japan, the Republic of Korea and Australia will remain the dominant players for e-commerce in the Asia-Pacific. China will catch up with these juggernauts once more content is available in the Chinese language.

B. A NEW DEVELOPMENT IN E-COMMERCE: VALUE-ADDED SERVICES ON MOBILE PLATFORMS

There was a hiatus in the growth of e-commerce activities since the bubble bursts in early 2000. A new phenomenon has, however, taken centre stage since the beginning of 2002. It is mobile commerce. It all began with the simple SMS, which then evolved into what is called multimedia messaging. Photographs can be taken with camera-equipped mobile phone sets and sent all over the world. Value added services such as downloading ringing tones, logo characters, music and video clips

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and games were the next innovation. Beyond content came other mobile commerce applications such as paying for carpark charges, buying train/airline tickets and buying fastfood etc. For example, in the U.S, online retailer Food.com, Boston Market, Donatos Pizzeria and Starbucks have tied up with wireless operators such as Motorola to accept orders from web-enabled mobile phones or PCs including PDAs. In the U.K, Orange subscribers were given access to Mobile Commerce location-based services to get information on the nearest bars, restaurants and clubs through the Metro Text and Text Hotspots services.

More value-added services came in the form of the MommyTrack system developed by Cenuco Security. With two video cameras, a base receiver station that plugs into a PC, a wireless or mobile phone and software, MommyTrack allows users to view the live video anytime they are away from home through the PDA or mobile phone.

Not content with just rolling out value-added services, wireless operators partnered with the TV media to produce reality TV shows like the “Big Brother”, Pop Idol and Survivor etc which had viewers SMS their votes to the TV stations. Then came the SMS-to-TV chats where viewers send premium cost SMS messages to its chat board. These applications generated significant revenues for wireless operators. For example, the British series “Big Brother” generated 5.4 million SMS and £1.35 million in revenue. From synergy with TV came synergy with wired operators. Mobile operators like O2 and TDK systems have developed software that allows the transfer of data (eg e-mail) from a PC to a mobile phone so that users can view and save text messages from a mobile phone. Hewlett-Packard has introduced software to enable users to print from the phone to HP Deskjet 450 mobile printers via Bluetooth technology. Needless to say, simpler data services such as scores of football games, previews and financial services news are being delivered on mobile platforms.

In the Asia-Pacific, China’s Beijing Aerospace Z-Tone Electronics launched the country’s first mobile stock trading and query system based on SmartTrust’s Delivery Platform. In Malaysia, YesMobile (M) Sdn Bhd allows banks and securities firms to offer value-added banking and stock trading services to their customers. Similarly, Macro Kiosk Sdn Bhd developed the eTracker which allowed its subscribers to purchase goods and services using their mobile phones. Even governments are harnessing the benefits of such innovations. In the Philippines, Smart Communications Inc. teamed up with the Bureau of Customs to develop the world’s

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24 The Straits Times, 30 June 2003.
first mobile phone-based billing and payment of custom taxes and duties.\textsuperscript{28} In Singapore and Thailand, SMS, MMS, Java 2 Micro Edition and mobile video streaming are driving customer demand and have contributed significantly to telecommunication revenues.\textsuperscript{29}

It is clear from the above that 3G has finally arrived. Mobile commerce has taken Europe and Asia by storm. SMS is particularly popular in the Philippines and Singapore. The ten million mobile subscribers in the Philippines send an average of 75 million text messages per day. WLAN has been introduced in Australia, Japan, China, the Republic of Korea, Hong Kong SAR, Taiwan and Singapore. It is particularly popular in Japan and the Republic of Korea, and it is a free service.

Table 2 confirms that the mobile commerce market has proliferated in the Asia-Pacific. Most countries in the Asia-Pacific, including the ASEAN countries, had healthy growth rates of at least 30 percent between 1995 and 2001. The VMCL countries (except Myanmar) and the poorer ASEAN countries such as the Philippines and Indonesia had CAGR of at least 58 percent. About one-half of the total telephone subscribers in most of these Asia-Pacific countries are cellular mobile subscribers. Clearly, the Asia-Pacific is poised for the mobile commerce market.

But where does ASEAN feature in this new phenomenon? Although the ASEAN countries enjoy healthy growth rates in the cellular mobile market that is comparable to the big players in the region, mobile commerce has yet to make an impact there. Such 3G applications as WLAN, video on demand, music on demand and interactive TV, etc. have not been introduced in any ASEAN countries except Singapore. Although Singapore may be "ICT-savvy", its fixed and mobile line operators and Internet service providers (ISPs) are not among the top ten operators in Asia-Pacific in terms of market revenue. This is due to Singapore’s small domestic market. Thus, ASEAN has a long way to go with respect to the mobile commerce market.

C. E-ASEAN INITIATIVES

Despite being non-starters in the ICT sector, the ASEAN countries have banded together to pursue a more holistic vision called the e-ASEAN vision. This initiative will dovetail into such existing work as the AII, e-commerce, telecoms and other relevant sectors such as trade, tourism, and science and technology. It aims to tie up all these separate initiatives into a comprehensive plan for greater synergy to fulfill the ASEAN 2020 Vision. This vision hopes to develop a strong ICT infrastructure, vibrant electronic services and a dynamic ICT sector within ASEAN. The e-ASEAN initiative shall be government-led but private-sector driven and will be a model of public–private-sector collaboration.

On 25 November 2000, the Heads of State of ASEAN signed the landmark e-ASEAN Framework Agreement\textsuperscript{30} at an informal summit meeting. The Agreement aims to promote co-operation and to develop, strengthen and enhance the competitiveness

\textsuperscript{30} A copy of this agreement can be accessed at: \texttt{<http://www.easeantf.org/docs/eframework_agreement.doc>}. 
of the ICT sector in ASEAN. The Agreement also seeks to reduce the digital divide within individual ASEAN Member States and amongst ASEAN Member States to facilitate co-operation between the public and private sectors in realizing e-ASEAN. Another stated aim of the Agreement is to liberalize trade in ICT products, ICT services and investments. The Agreement commits ASEAN Members to an implementation schedule (see Table 3) to achieve digital readiness for the region in order to develop the basis for ASEAN’s competitiveness into the future, better the lives of their citizens through the application of ICT and foster the spirit of the ASEAN community.

<table>
<thead>
<tr>
<th>End 2000</th>
<th>ASEAN Portal: Establish a well-known brand portal to link to various ASEAN information sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>End 2001</td>
<td>Connectivity: Forge agreements on design, standardization, interconnection and inter-operability</td>
</tr>
<tr>
<td>End 2002</td>
<td>Flagship Applications: Demonstrate key flagship applications</td>
</tr>
<tr>
<td>End 2003</td>
<td>e-Commerce Code of Practice: Establish a common code of practice for e-commerce</td>
</tr>
<tr>
<td>End 2004</td>
<td>Commercial Applications: A thriving environment for cross-ASEAN commercial applications</td>
</tr>
<tr>
<td>End 2005</td>
<td>Harmonization: Harmonize relevant policies, regulations and standards</td>
</tr>
</tbody>
</table>


Following the adoption of the Agreement, each of the ASEAN governments is now moving towards implementing it in its domestic legal and regulatory framework. To drive and facilitate the implementation of the above-mentioned initiatives, two formal groups were formed. They are the e-ASEAN Task Force (EATF) and the e-ASEAN Working Group, comprising government and private-sector representatives.

In essence, the vision of the e-ASEAN Agreement is to achieve a globally competitive ASEAN e-economy in the 21st century. This is to be complemented with efficient and convenient e-government processes and services, a competent workforce and an info-savvy e-society.

The EATF has identified pilot projects for each of these sectors and is working on guidelines to clarify policy issues involved in the establishment of an electronic marketplace in ASEAN. While focusing on encouraging and facilitating the growth of e-commerce, e-ASEAN would include prescriptive measures to narrow the digital divide within the region.

The Agreement takes a holistic approach to achieving digital readiness and acts as a binding mechanism for action by all the ASEAN governments in the following six key elements:

i. **Establishment of All**. In an effort to localize Internet traffic within the region to encourage the growth of indigenous content and services, the Task Force is also working on establishing an All and has initiated consultative dialogues with the private sector to explore short-
long-term plans for it. As envisioned, Members bind themselves to facilitate interconnectivity and technical inter-operability among their ICT systems, leveraging current national networks and evolving these into a regional information infrastructure. To begin with, a private-sector led ASEAN ISP Forum will be convened to explore ways of promoting the more efficient flow of Internet traffic, including regional mirroring and hubbing and the setting up of national and regional Internet exchanges and Internet gateways. Together with this, an effort is underway to develop measures to encourage the production of regional and locally relevant content.

ii. **Electronic Commerce.** Developing e-commerce is to boost the competitiveness of ASEAN businesses and industries. To foster the growth of e-commerce in the region, the Task Force has formulated plans to accelerate the development of e-commerce across the region and identified key factors, such as cyber laws, secure messaging infrastructure, payment gateways, and online services and products for regional development. It hopes to create a seamless legal and regulatory environment in order to get buyers and sellers to do business online. The task involves measures to promote trust and confidence in the Internet, including the establishment of a system of mutual recognition of digital signatures; secure electronic transactions, payments and settlements; protection of intellectual property rights; promoting personal data protection and consumer privacy; and dispute settlement mechanisms.

iii. **Liberalization of Trade and Investments in ICT.** An element already covered in the original ASEAN Agreement is liberalizing trade in ICT products and services and allowing for a freer movement of ICT investments and ICT talents within ASEAN.

iv. **Facilitation of ICT Trade in the Common Marketplace.** This element has as its goal to facilitate the flow of ICT goods and services in the region and to promote investments in the sector. Duties and non-tariff barriers on intra-ASEAN trade in ICT products will be eliminated in three tranches. Liberalization for most goods will be completed over a three-year period beginning 1 January 2003. The VMCL countries will undertake the same measures beginning on 1 January 2008. ASEAN will conclude mutual recognition arrangements covering ICT products.

v. **e-Society and Capacity Building.** Narrowing the digital divide and nurturing an e-society through human resource development and the deployment of easy-to-use ICT services is the objective here. To promote an e-ASEAN community, Member countries will encourage the development of skills and proficiency in using ICT through training and exchange of experiences. The more advanced Member countries will assist less ICT-enabled Members in their capacity-building efforts through sharing of training resources.
vi. **e-Government.** More government services will be delivered using ICT to make them more efficient and more widely diffused. The application of ICT will reach more people than is the case with traditional means and will also allow greater interaction between governments and their citizens.

Hopefully, the e-ASEAN initiatives discussed above will positively impact on the growth of e-commerce in ASEAN. This common front and unified stance would also give the ASEAN grouping further leverage at an international level.

IV. **ISSUES AND CHALLENGES FOR E-COMMERCE IN ASEAN**

A. **THE U.S. AND EUROPEAN TELECOMS MELTDOWN**

The current telecoms sector is in the doldrums. Many telecoms companies in Europe and the United States are bleeding in debt. All told, telecoms players worldwide have raised US$ 650 billion in debt and equity since 1996, according to Thomson Financial Securities Data. How did the U.S and European telecom companies get into this jam? First, following the deregulation of the telecoms sector in the United States in 1996 and the opening up of the sector to competition in Europe, many established players spent billions expanding their networks to carry the booming voice and data traffic in order to capture a slice of the US$ 300 billion revenue market that was growing at 10 percent each year. With very upbeat estimates of demand, telecoms companies followed in the footsteps of MFS Communications Co., which was: first raise money, then put the telephone lines in the ground, and you could make a bundle. They also issued junk bonds to finance these gargantuan expansions. Secondly, many European telecoms companies overpaid for new wireless licences without really knowing what the usage would be like. For example, France Telecom rolled out US$ 7.5 billion for a high-speed wireless licence in Germany—a figure that is three times the company’s 2000 revenue. Sonera had to sell off telephone businesses in the United States and Turkey to finance its US$ 5 billion bid for 3G expansion across Europe. The upshot of it all is that the industry is now in the consolidation phase. Global telecoms companies have revised their earnings downwards and slashed spending, and some telecom companies may even face bankruptcy, as did happened in the case of WorldCom. But telecoms companies in Europe and the U.S appear to be gradually climbing out of the red as evidenced by the success of mobile commerce described in section B above.

Fortunately, telecoms companies in Asia are generally faring much better than their U.S and European counterparts. As far as 3G licences are concerned, they are paying much less than their European counterparts. In the Republic of Korea, the government charged Korea Telecom and SK Telecom Co. less than US$ 1 billion for the right to build the 3G networks and staggered payment of 50 percent of the licence fees over ten years

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31 Some analysts have estimated that more than US$ 100 billion in junk bonds will end up in default or restructured; see *Telecom Meltdown*, Business Week, 23 April 2001.
What does all this spell out for Asia (and ASEAN)? The short answer to the question is that these dominant U.S. and European players who possess the cutting-edge technology in the ICT sector will be staying put in their “home-ground” in the short term. Asia will have to look to its own indigenous telecoms companies to take the lead in developing the ICT sector. To this end, Asian telecoms companies have done quite well for themselves in terms of developing value-added services such as SMS, WLAN and other mobile commerce applications.

B. THE DIGITAL DIVIDE

Figures 10 through 14 clearly show the gaping digital divide amongst the ASEAN countries. Singapore and Malaysia can be loosely grouped into the “have” category, while the VMCL countries are clearly the “have-nots”. The ASEAN4 countries, with the exception of Malaysia are closer to the “have-nots”. ICT spending in Thailand, Indonesia and the Philippines is low (less than 4 per cent of GDP) compared to that in Singapore and Malaysia. Quite clearly, Singapore and Malaysia are the leaders in ASEAN in the new ICT revolution.

In terms of the density of Internet users, Singapore and Malaysia again lead the pack, followed by Brunei, Thailand, the Philippines and Indonesia. The density in the VMCL countries is generally below 1 per cent. These data indicate the level of readiness of the ASEAN countries for e-commerce. Figure 8 confirms that Singapore, Malaysia and possibly Thailand are the only ASEAN countries that will have a viable e-commerce market in the near term. It will be a long time before the “have-nots” can bridge the gap that separates them from the “haves”. In Myanmar, a 1996 law provides that unauthorized ownership of a modem can result in a jail sentence of seven to fifteen years. Availability of e-mail is restricted to a few hundred foreigners and a limited group of Myanmar officials and businessmen.

A 1999 survey carried out by the Information Technology Private Sector Core Group for the ASEAN leaders on the AII revealed, inter alia, the following actual conditions in the ASEAN countries.32

Basic infrastructure and technology: Most ASEAN countries have low teledensities of 0-5, with only one country having a teledensity above 40 and three countries in the 10-40 range. Most Members have less than 25 percent of their total geographical area with access to digital wireless, with only two Member countries above 25 percent and at least one Member with no available service. Geographical areas with cable access vary from no access to 75 percent coverage. Current studies on wireless Internet access show that the VMCL countries had bandwidth in the range of 2-34 mbps; the ASEAN4 had bandwidth in the range of 237-733 mbps; whilst Singapore enjoys bandwidth of 2,639 mbps. Most ASEAN members have ISDN subscribers per 1000 main lines in the 0-1 range. Internet access is generally expensive, with leased-line connections to the Internet costing above US$ 1,000. Half of the ASEAN Members surveyed had less than 5 percent of their population with easy access to PCs, while the other half enjoyed at least 20 percent or more of their population having access to PCs

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32 Building the Bridge to the Future, a Dialogue with ASEAN Leaders on the AII, Recommendations of the IT Private Sector Core Group, 28 November 1999, Manila, Philippines.
through the home, school or place of work. Three ASEAN Members still have monopolies for the basic telecoms market, while three other ASEAN countries allow multiple licensed companies. Most ASEAN countries restrict or regulate foreign participation in telecoms, but this is set to change as most ASEAN Members are in the process of opening up their telecoms market in line with WTO commitments.

**Access to Necessary Services:** Leased lines or dedicated access channels of less than 1.5 mbps are available, and two ASEAN countries are able to offer symmetric bandwidth services greater than 1.5 mbps. Most Member countries have ISPs providing basic access for both individual and business users. Only one country’s ISP market is competitive, while most of the other countries have individual or class licence requirements for their ISPs to operate. With the exception of one country, ASEAN Members allow their citizens to freely choose their ISP.

**Level and Type of Use of the Internet:** Most ASEAN countries indicated that at least two to three people share one ISP account to access the Internet. Only one country indicated that, on average, one account is shared by more than seven people. Only two ASEAN countries indicated that 25-50 percent of their businesses access the Internet directly, while in most ASEAN countries this number is less than 10 percent. Only one country indicated that it has more than five secure Web servers per 100,000 inhabitants. In most ASEAN countries, the Internet is used by individuals and businesses alike for e-mailing, random surfing and information on products.

**Promotion and Facilitation Activities:** Most ASEAN countries pursue strategies to increase awareness of e-commerce and to disseminate best e-commerce practices among small and medium-sized enterprises, with one ASEAN Member having an integral programme for e-commerce best practices awareness. Most ASEAN Members placed the current year-to-year growth in the number of Internet users between 5 and 50 percent, while only one country has a growth rate of greater than 50 percent. More importantly, the survey revealed that there is no congruence in policy on standards and inter-operability among ASEAN Members. Some countries want to develop and mandate national standards; others support the development of proprietary standards. Still others promote inter-operability while some encourage their domestic players to co-operate with international global standards.

**Skills and Human Resources:** Only one ASEAN country has 90 to 100 percent of its schools able to access the Internet. Most ASEAN countries have less than 30 percent of their schools with Internet access. Most ASEAN Members have, however, incorporated some form of information technology education into their basic education curricula, especially in tertiary institutions.

**The Digital Economy:** Most ASEAN countries veer toward the conservative side when it comes to encryption issues, and most governments are aggressive in monitoring cross-border data flows. There is no congruence in policy regarding the development of industry self-regulation. Only one country espoused self-regulation, while in two countries self-regulation is not supported. Five countries have legislated e-commerce regulations along the lines of the Model Law on Electronic Commerce developed by the United Nations Commission on International Trade Law (UNCITRAL).
The actual conditions found in the ASEAN countries show that it will take a long time before the e-ASEAN vision can be achieved. There can only be a vibrant e-commerce market within ASEAN when Thailand, the Philippines and Indonesia, together with the VMCL countries, catch up with their more advanced brothers such as Singapore and Malaysia. There is presently a lack of critical mass in ASEAN.

C. STRATEGIC ALLIANCES AND PARTNERING

The dot.com collapse in early 2000 brought an abrupt end to the e-commerce revolution on the Internet. E-commerce has taken a new twist, ie mobile commerce. The singular lesson to be learnt from the dot.com crash is not to develop technology and applications that do not create any perceived value to the customers.

The temptation to overstate the value of mobile applications for every kind of environment and every kind of transaction continues to haunt telecoms operators. In the initial phase of mobile commerce, every company thought that most transactions could go mobile. But it did not happen, and probably will not happen. For instance, paying for goods and services at a store and restaurant clearly does not add much value to the customer, existing payment systems via credit cards are more than adequate. On the other hand, a mobile environment such as driving into a parking garage can establish a great deal of perceived value for the customer. Pointing a mobile device at some machines would be much more convenient than fumbling for change or credit card at the exit point. Thus telecoms operators have to be discerning when developing new technology and interfaces. The foremost questions to be answered are whether consumers would want those services? Whether it is necessary to change entrenched consumer attitudes and behaviour?

In short, telecoms operators must build long-term relationships that place customers at the centre of all technological innovations. Firstly, they must work outward from the customer value proposition to the technology, not inward from technology to customer’s needs. Secondly, they must make ongoing education of consumers a goal. E-mail, stock quotes, weather, traffic reports and location-based applications will be mobile content that alters consumer behaviour and make them more dependent on their mobile devices.

Thirdly, they must co-operate to harmonize standards that will support an international mobile commerce platform. But unfortunately, this is not happening. In the area of payment systems, different payment system models have emerged. In January 2002, First Data, a Denver payments company bought the mobile commerce division of Brokat Technologies, a wireless vendor based in Stuttgart, Germany to exploit a technology called Encorus that will enable consumers to load their credit card accounts on a mobile phone and use the phone like a credit card.33 Next, we see the Mobile Payment Forum pioneered by American Express Card, Visa International, Mastercard International and Japan Card Bureau Co , which runs parallel to the Mobey Forum to support mobile commerce in the financial services sector.34 In February 2003, a consortium of Europe’s leading mobile operators, namely,

Vodafone, Orange, T-Mobile and Telefonica Moviles set up the Mobile Payment Services Association to facilitate mobile commerce. It will start with transactions that costs under $10, ie “micropayments” and later upgrade to interface with credit card payments, much like the Encorus technology utilized by First Data.\(^{35}\) As early as January 2002, a variant of this technology, branded as Smart Money was launched by Smart Communications Inc. in the Philippines through collaboration with 1st eBank and MasterCard International.\(^{36}\)

Just as strategic alliances were aggressively forged between telecoms operators and other content providers in the dizzy days of e-commerce on the Internet, the same phenomenon is happening in the mobile commerce sector. For instance, Motorola offered a hosted solution called the Mobile Services Café which enables wireless carriers to pick and choose from among a suite of applications and services.\(^{37}\) This smorgasbord approach enables carriers to bundle mobile applications from the Mobile Services Café as well as content designed by third party vendors of their own choosing under a private label wireless portal.\(^{38}\) In other words, strategic alliances are being forged to bring more value-added services, particularly data services to consumers. Whether any of these services will take off depends very much on its perceived value to consumers and pricing.

So what strategy can the ASEAN government use to uplift their economies onto the ICT bandwagon? Firstly, the more advanced countries such as Singapore and Malaysia need to develop an indigenous group of ICT workers who can deliver value-added services to the transnational ICT companies when they come looking for investment opportunities in the Asia-Pacific. In particular, ASEAN countries can train ICT workers to produce local content in local languages so as to reach out to ASEAN’s non-English-speaking consumers. Secondly, it is self-defeating for the e-ASEAN Agreement to accord national treatment to ASEAN investors for ICT products and services only. No ASEAN fixed and wireless telecoms or Internet company can be said to be a dominant player in the region, not even Singapore’s Singtel. The telecoms and Internet companies in ASEAN do not possess the cutting-edge technology in ICT. The innovators and pace-setters in ICT are the Americans, Europeans and Japanese. ASEAN thus needs to attract these global players by offering them strategic alliances that can help them capture the domestic markets.\(^{39}\) Thus, the e-ASEAN Agreement should adopt an “open regionalism” ideology and accord national treatment to all investors. Thirdly, the newer and poorer Members of ASEAN have to educate and improve the skills of their workforce, improve the physical and information infrastructure to create supporting institutions and services and break the poverty cycle.

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\(^{37}\) Wireless Week, Radnor, 1 April 2002, p. 25.

\(^{38}\) Wireless Week, Radnor, 1 April 2002, p. 25.

\(^{39}\) For example, Philippines’ mobile operator Smart Communications Inc. through its subsidiary Smart Money Holdings Corp. has partnered with Sun Microsystems Inc. to develop and market its mobile commerce applications such as the Smart Money abroad, see BusinessWorld, Manila, 26 July 2002, p.1 and 20 August 2002, p.1. Immediately thereafter, it was reported that Malaysia’s TM Cellular Sdn Bhd has licensed the Smart Money technology from Smart Money Holdings Corp., see BusinessWorld, Manila, 16 September 2002, p.1.
3G in Japan and the Republic of Korea has generally struggled. In the Republic of Korea, the CDMA 1x EV-Do service had only attracted 1,200 subscribers for SK Telecom and 14,000 for KTF as of September 2002—a disappointing figure compared to the original target of 800,000 by year-end 2002. Similarly, in Japan, NTT DoCoMo’s subscriber base for its CDMA services was just 136,000 in September 2002, less than one-tenth of its full-year target. The reasons for this slow growth are the current geographic range for 3G services, the lack of content and the pricing strategies. As a result, the WLAN was innovated and has caught on popularity. 3G is often a pay-as-you-go service, whilst WLAN is free. In addition, the data transmission speed for WLAN is much higher than that for 3G. The most popular 802.11b WLAN can go up to 11mbps, compared with speeds of below 384 kbps for 3G standards. In 2002, Japanese handset makers started to integrate Wi-Fi cards into mobile handsets.

The development of such alternative technologies as WLAN poses a serious challenge to 3G services. As the number of WLAN hotspots increases, they will be used more and more to substitute for 3G. There is a danger of WLAN cannibalizing 3G revenues. The best strategy for telecoms operators is to embrace WLAN and integrate WLAN with 3G capability. Clearly, upgrading the content and quality of mobile Internet applications is the next rung in the ICT ladder. Wireless operators are already upgrading the simple SMS technology into the enhanced messaging service and multimedia messaging service, where simple melodies, pictures, sounds, animations and formatted text can be transmitted over the mobile network. In Japan and the Republic of Korea, handset makers have already manufactured mobile phones with built-in digital cameras.

At present, wireless operators are teaming up with wired operators and software companies to produce software that brings convergence between the mobile phone and the PC. But all these applications do not come free; not to mention that consumers may not fancy accessing and viewing their e-mails over small, low resolution screens that are less than secure platforms. So, a Canadian firm called Research in Motion innovated the “Blackberry”, a pocket-sized device that gives the user access to his e-mail while on the move. Such wireless devices pose significant competition to mobile operators and handset makers.

One discernible trend in the development of electronic commerce laws of Asia (although there are some notable exceptions) is that the passing of appropriate legislation tends to lag behind similar action taken by countries in the West. For example, we see that Japan’s Draft Bill Concerning Electronic Signatures and

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41 One example would be Singapore’s early embrace of UNCITRAL’s Model Law via its Electronic Transactions Act 1998.
Certification Authorities was passed only on 14 April 2000 and came into effect only on 1 April 2001. In similar vein, Malaysia’s Digital Signature Act 1997, which is based on the Utah Digital Signature Act, was passed two years after the latter was passed.

A question this raises is whether Asia is destined to be a mere follower in the field of e-commerce law, policy and regulation and is merely rubber-stamping similar initiatives taken in the West as opposed to actively dictating the development of international e-commerce laws. It must be noted, however, that caution in the field of e-commerce law is not necessarily a bad thing, as it enables a country to critically assess similar initiatives undertaken by other countries and to implement a model that suits its specific needs and aspirations. In the field of e-commerce law, the need for uniformity is as important as—if not more important than—the substance of those laws. Viewed from this perspective, wholesale replication of existing laws that have found a degree of acceptance in the major trading nations of the world is not only an acceptable practice but also a desirable and necessary act to ensure harmonization in the field.

B.   REGULATING ELECTRONIC COMMERCE

The pervasive growth in e-commerce in recent years has raised concerns that existing legal and regulatory regimes are too inconsistent or inadequate in dealing with the issues that e-commerce raises. Most commentators have, however, noted that ironically it is the lack of substantial legal or regulatory infrastructure that has made the unbridled growth of e-commerce possible, and this has caused some to worry that the application of too much traditional regulation will stifle growth. Some other commentators have taken the point further and argue that modern information markets should largely be defined by agreements and other manifestations of market choice rather than by regulation.

At various stages during the development of the Internet, several commentators have also lamented the inadequacy of domestic legal systems in dealing with issues in cyberspace. This is hardly surprising, as the principles developed to deal with legal issues in the physical world are sometimes inadequate to deal with the emerging legal conundrums thrown up by the Internet.

Most countries have sought to respond to the novel legal problems that crop up in cyberspace by enacting new legislation, whilst others have sought to extend the

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42 This model has been criticized for entailing significant governmental licensing and State involvement in digital signature regulation; see Sanu K Thomas, The Protection and Promotion of E-Commerce: Should There be a Global Regulatory Scheme for Digital Signatures?, 22 Fordham International Law Journal 1002, 1999.
ambit of their current laws to cover the novel scenarios occurring in cyberspace. In this flurry of activity, it is not surprising that most countries have not addressed the fundamental issue of whether it would be wise or desirable to apply existing national laws, which have evolved mainly to deal with “territorial-based” concepts and rights, to the realm of cyberspace.

Accordingly, there have been calls to treat cyberspace as a separate jurisdiction for the purposes of legal analysis. Some commentators have suggested that a separate law of cyberspace, akin to the law of the high seas, should be devised. Others have proposed that the norms and practices of the users of the Internet could be relied upon in determining the applicable and appropriate legal principles that should apply to transactions conducted via the medium of the Internet.46 This would include “Netiquette”, which has the potential to constitute the foundation pillars of a workable uniform cyberspace law47 (at least uniform in the sense that the laws are uniform across jurisdictions: there is still adequate scope for formulating differing levels of “Netiquette” to apply to different activities in cyberspace and to the different

46 Ibid., note 34.
47 There should also be harmonization of the private international laws of the different jurisdictions so that parties are better able to determine the countries that could legitimately exert jurisdiction over their activities. It should be noted that there continues to be considerable controversy on the appropriate approach to adopt in determining issues relating to the scope of personal jurisdiction. The difficulty is further compounded by the different conceptual approaches, such as the realist, representational, post-modern and liberal-constructivist approaches, that could be employed when dealing with jurisdictional issues.
communities that exist in cyberspace. There would, doubtless, be specialized fields of activity where complete uniformity of laws would not be possible, but, for most types of transactions, uniformity is not only achievable but increasingly desirable to avoid needless confusion in cyberspace.

In the same way that early legal precepts drew upon the customs of commercial parties for their evolution, the information technology era presents us with the opportunity of observing the customs of persons in cyberspace in formulating appropriate rules to apply to parties engaged in activities in cyberspace.

This exercise would have the added benefit of allowing the laws of cyberspace to develop in a textured manner that takes into account the vagaries, idiosyncrasies, complexities and nuances of cyberspace. In this manner, the law will hopefully be able to encompass the unique norms and customs that have developed in cyberspace and to provide a regime that is practical, real and familiar to persons engaged in activities in cyberspace. This is, no doubt, a much more attractive proposition than

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48 As can be easily appreciated, there are various types of communities that exist. These communities also evolve over time. Of particular significance is the current popularity of communities that deal in less interactive and more commercial exchanges as contrasted to the popularity of the interactive and non-commercial communities that dominated the Internet in the past. It should also be appreciated that the Internet allows a single individual or corporate entity to take on different roles, depending on the context and circumstances, and one can be a member of different communities in cyberspace. See, generally, A. Shapiro, *The Disappearance of Cyberspace and the Rise of Code*, 8 Seton Hall Constitutional Law Journal 703, 1998; and L. Lessig, *The Zones of Cyberspace*, 48 Stanford Law Review 1403, 1996.


50 Such as securities regulation and activities impinging on issues pertaining to civil and constitutional liberties.

51 In fact, the better part of English commercial law owes its legacy to the *lex mercatoria*, otherwise known as the law merchant. *Lex mercatoria* refers to a body of law that had its source in the trading fairs and merchant communities of medieval Europe and the Middle East. As trading fairs evolved in the late 7th century, merchants developed sets of commercial customs to regulate their activities. These customs followed the merchants when they traveled to other cities, and gradually, over time, these customs gained the force of law as governments recognized that merchants should be able to resolve their disputes by their own rules.

52 These include such norms as open participation, consensus-building, a prioritization of freedom of speech and grassroots organization that have become identifiable with the Internet.
ramming clearly inapplicable rules and principles developed for a physical world into a setting that is alien and vastly different.\textsuperscript{53}

This approach also has the added benefit of allowing a “universal” Internet law to eventually develop free from the shackles of domestic laws.\textsuperscript{54} Different national legal systems provide different answers and responses to legal problems and this creates enormous difficulty whenever an individual participates in an activity which potentially subjects him to the overreaching arms of multiple jurisdictions. A uniform law,\textsuperscript{55} that applies equally to all jurisdictions would help to introduce a degree of sanity to the conduct of activities in cyberspace. In addition, the emergence of a uniform cyberspace law may go some way in minimizing the prospects that a decision given in one jurisdiction might be unenforceable in another jurisdiction on the grounds that the decision fails to adhere to minimum standards of law.

\section{Regulation of Electronic Transactions}

The sheer number of electronic transactions taking place worldwide has inspired a plethora of proposals for their regulation. In addition to the patchwork of national laws that already govern electronic transactions, regulatory bodies worldwide are constantly promulgating new proposals for laws and conventions intended to facilitate e-commerce.

\textsuperscript{53} As one commentator aptly puts it: “… advanced computer technology undermines the assumptions of older categories [of the law]. For example, interactive networked hyperlinked media eviscerates the idea of authorship, and with it one of the fundamental concepts of … copyright law … Second … advanced computer technology conflates distinctions that made much sense under older regimes and which informed law that grew up in the older regimes. New technology eviscerates the distinctions between public and private, the telephone and mail, the written and spoken word, broadcasting and point-to-point communications, and between the publication, consumption, and distribution of information … Third, increased automation, with a concomitant reduction in the role of effective human oversight, creates difficulties in the assignment of liability or legal blame … The legal system is inhibited in its use of traditional metaphors and analogies for a fourth reason. The pace of technological change is not only rapid, it is, more importantly, highly uneven. Whereas we may have a relatively coherent and congruent set of assumptions about the way the physical world works, we do not have that common basis in the fabricated world of the computer, in what we might call the electroverse.” See C.E.A. Karnow, \textit{Future Codes: Essays in Advanced Computer Technology and the Law}, Artech House, 1997.

\textsuperscript{54} It has been argued that complete harmonization of the law pertaining to cyberspace may be difficult to achieve because of the lack of an emerging consensus on some key issues and areas of the law such as formality requirements, joint liability of intermediaries and the law of conflicts; see C. Reed, \textit{Internet Contracting}, Computers and Law, February/March 1999, p. 36. It is suggested that these problems are not insurmountable and that, as an appreciation of the importance of having uniform laws apply to transactions in cyberspace develops, countries will come under increasing pressure to resolve these differences in their laws. It is noteworthy that we are already starting to see some strains of convergence in hitherto controversial areas of the law, such as the effect of an offer and acceptance in the formation of contracts, copyright issues in relation to hyper-text linking and framing and the liabilities of network service providers.

\textsuperscript{55} Judges and other adjudication bodies may, of course, adopt differing perceptions of what this “universal” law is, and therein lies some potential for the law to develop in divergent paths in different jurisdictions. In order to overcome this difficulty, it is suggested that the practice of courts when interpreting the provisions in multilateral treaties or conventions be followed. In this regard, it should be noted that the principle of good faith imposes on every court that is hearing a dispute involving the provisions of a multilateral treaty the obligation to harmonize its decision with those of other courts and, where there are conflicting precedents, to harmonize the precedents.
Essentially, there are two key approaches that could be adopted for the regulation of electronic transacting. The approach more commonly utilized is the “functional equivalency” approach. This entails an examination of the role currently played by a particular legal rule in the non-digital commercial world, identification of the way in which the same function can be achieved in electronic transactions and extension of the existing rule by analogy to electronic transactions. As can be seen, this approach attempts to fit cyberspace within the ambit of familiar legal rules.

A second approach to the regulation of electronic transacting is to move away from a preoccupation with picking out the best rules devised in a non-digital context and importing them into cyberspace and towards a reassessment of the new situation, starting with the identification and application of first principles. This approach stresses the need to identify the fundamental principles that inspired the rules governing non-digital transactions and to look afresh at how those principles could be best served in the uniquely different realm of cyberspace. It conceivably has the merit of leading to a much more healthy development of the law in the long term. This is because engaging in a deeper consideration of principles would probably lead to the discovery of sui generis rules for electronic transacting that take into account the unique features and potential of computer-based communications systems.

Whilst both approaches have been used in developing regulatory regimes for cyber-based transactions, it is noteworthy that the functional equivalency approach has dominated proposals for regulating electronic commerce. One familiar example is the Model Law on Electronic Commerce prepared by UNCITRAL and adopted by a United Nations resolution in 1996. Another example is the draft Electronic Commerce Directive published by the Council of the European Union. This Directive seeks to address the issue of how electronic communications can complement existing modes of worldwide commercial activity rather than developing a new system of regulation that could respond more flexibly to new and unanticipated practices that might emerge with technological advances. The functional equivalency approach is also employed in the United Kingdom’s Electronic Communications Bill, which embodies the principle that electronic documents should be treated the same as paper-based equivalents, although this is to be accomplished in stages rather than through a single Act.

D. THE MODEL LAW ON ELECTRONIC COMMERCE

The UNCITRAL Model Law on Electronic Commerce is a generic law which can be extended and enhanced by individual countries should they so wish. In

57 The full text of the Model Law is available at: <<http://www.un.or.at/uncitral/english/texts/electcom/ml-ec.htm>>.
59 The full text of this Bill can be viewed at: <<http://www.publications.parliament.uk/pa/pabills.htm>>.
devising the Model Law, **UNCITRAL** set out to develop rules that could be used in all countries regardless of their technological proficiency or the legal framework under which they operated. This automatically preempted the possibility of developing **sui generis** rules that are sensitive to the full possibilities of digital technology. The Model Law provides generally that electronic communications should be given equivalent legal effect to paper-based communications and specifically addresses how certain types of electronic communications could substitute for existing paper-based means of satisfying requirements of writing, signatures and contract formation. The Model Law has received a mixed reception in Asia. As of 20 March 2003, the countries in the Asia-Pacific region that have adopted the Model Law are Australia, Hong Kong, India, New Zealand, Pakistan, the Philippines, the Republic of Korea, Singapore and Thailand. The e-A**SEAN** Task Force has also announced that there has been agreement among the various A**SEAN** Member States to base their respective national electronic commerce laws on **UNCITRAL**’s Model Law by 2003.

It must be noted, however, that the Model Law is not without its fair share of detractors. One commentator, for instance, has rightly noted that it is damning that the Model Law does not deal with the question of when a message is effective but instead concentrates on the issue of when the message is received. This approach may suit the contract regimes in civil jurisdictions, but it makes little sense in those based upon the common law. This is because the common law focuses on when a message takes effect and not so much on when a message is received. A classic example of this focus is seen in the “postal rule”, which does not depend on the receipt of a message at all for the message to take effect. The rule simply provides that a message takes effect once it has been sent, irrespective of actual receipt. The Model Law appears to have simply attempted to clarify certain issues of message communication and has failed to address the tenuous and difficult issues associated with the postal rule. It would therefore be prudent for parties that are subject to the Model Law to continue to take steps to avoid the application of the rule or, alternatively, to adopt the arduous process of analysing the communications topography to determine if the rule applies.

In this respect, it can be seen that the approach adopted in the Draft Revision of the Uniform Commercial Code is better suited in dealing with the difficulties highlighted above. The Draft Revision of the Uniform Commercial Code stipulates that a message takes effect when they are received, even if no individual is aware of its

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60 See the Model Law, ibid., Article 5.
61 See, in particular, ibid., Articles 6, 7, 11, 12, 13, 14 and 15.
63 **ASEAN** Countries Agree on e-Commerce Laws, Computer World, Vol. 6, No. 43, 25-31 August 2000, p. 11.
64 The American Law Institute (A**LI**) and the National Conference of Commissioners on Uniform State Laws (NCCUSL), the two organizations jointly responsible for drafting, updating, and promulgating the Uniform Commercial Code (U**CC**), in August 1999 announced the formation of a new Drafting Committee to continue the effort to revise Articles 2 (Sales) and 2A (Leases) of the U**CC**. The U**CC** has achieved substantial uniformity of commercial law throughout the United States through enactment, in whole or in part, in all fifty states as well as in the District of Columbia, the Virgin Islands, and Puerto Rico. The present revision of Articles 2 and 2A is part of an ongoing undertaking by the A**LI** and NCCUSL to modernize the U**CC**, originally promulgated in 1952, and keep it responsive to contemporary commercial realities; see the A**LI** and NCCUSL joint press release dated 18 August 1999, available at: <<http://www.nccusl.org/pressrel/ucc2a2.htm>>.
receipt. It then goes on to state that contracts may be formed by electronic transactions or by the use of electronic agents.

In the specialized area of digital signatures, some commentators are of the opinion that the written signature requirements pose the greatest stumbling block to the development of e-commerce and advocate a unified global regulatory scheme for digital signatures. It must be noted that different countries or, in some cases, different states within the same country have considered or proposed digital signature statutes. These statutes address digital signatures from different approaches and may have the unintended effect of hampering international electronic commerce transactions.

E. **SOME TOUGH QUESTIONS AHEAD**

1. **Cyberspace—A Separate Legal Arena**

   As the above commentary suggests, it may be timely for there to be a concerted global effort to deal with some excruciatingly difficult questions which may require a complete reorientation of hitherto held opinions of how law should operate. In particular, a pertinent question is whether the unique characteristics of the Internet should create a separate legal jurisdiction. An ancillary question that may be asked is whether a separate jurisdiction would be beneficial to the development of the Internet.

   At this juncture, one could rightly query whether the global nature of the Internet naturally forms a separate legal arena. This leads us to another question. If there is an inherent and separate jurisdiction that can be “reserved” for Internet-based activities, should special laws be enacted to govern the Internet? In this vein, an important issue is whether a convention of cyberspace should be drafted similar to the separate international conventions governing the law of the sea and admiralty law.

   The answers to these questions rest, in part, on whether we accept the Internet as a community and self-regulating body and on our understanding and perception of the scientific traditions and philosophies that govern such technology.

2. **Property Rights**

   Another important issue is whether electronic commerce will trigger the creation of new forms of property. An important sub-issue is whether these forms of property can be adequately protected by existing legal systems or whether businesses will have to resort to self-help to adequately protect their rights. Some commentators argue that property in cyberspace is no different from that which exists

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65 See UCC, Articles 2, 2A and 2B.
66 See ibid., s 2B-102(18).
67 See ibid., s 2B-102(16).
in the real world and that existing doctrines are well equipped to deal with any legal dispute that arises. The practical reality, however, appears to be that new forms of property are emerging with their own unique legal frameworks. The field of domain names and the accompanying registration systems provide a good illustration. The controversy over the domain name system has resulted in unique laws being developed—such as the Anti-Cybersquatting Consumer Protection Act in the United States—a governing body being set up—namely, the Internet Corporation for Assigned Names and Numbers (ICANN)—and the creation of distinct dispute resolution mechanisms—such as ICANN's Uniform Domain Name Dispute Resolution Policy.

The Internet also poses a viable threat to the protection hitherto afforded by intellectual property rights. In the past, where production and distribution channels were visible and capable of being regulated, intellectual property rights could be enforced through legal remedies. With the instant transmission and global distribution enabled by the Internet, legal protections for intellectual property owners appear to be inadequate.

Electronic commerce also requires us to ask some fairly hard-hitting questions in relation to intellectual property rights that may have been taken for granted along. One such question would be the position the law should take in relation to applications for patents for online business methods. The recent furor in the United States over the issuance of patents for some online business methods is probably indicative of the expected debate that will ensue when other patent registries in other parts of the world are similarly inundated with claims of this nature.

In the same vein, mobile commerce which is currently taking the world by storm raises difficult legal wrangles such as whether airwaves should be treated as property, and hence auctioned, or as a common resource, much like the sea. In May 2003, the U.S Federal Communications Commission decided to allow leasing and trading of frequency licences, i.e. the property model as a first step towards establishing a market in radio frequency. But it is likely that when regulators meet on a global platform, they will try to expand that part of the spectrum that can be used without a licence, treating it as a common resource. Such regulatory quagmire has enabled companies to exploit technologies like Wi-Fi which works on an unlicensed spectrum.

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71 See, generally, Olivia Maria Baratta and Dana L. Hanaman, *A Global Update on the Domain Name System and the Law: Alternative Dispute Resolution for Increasing Internet Competition—Oh, the Times They Are a-Changin’*, 8 Tulane Journal of International and Comparative Law 325.


75 The Economist, London, 31 May 2003, p. 76.
3. Political and Legal Institutions

Technological change transforms not only substantive rights and obligations but also the political and legal institutions involved in the creation, development and enforcement of these rights. It is envisaged that in the coming years we will see greater institutional changes in legislatures, courts, regulatory bodies, and law enforcement agencies. It is noteworthy that some countries in Asia have taken strong steps to ensure that the judicial system and such problems as delayed court dates due to backlog of cases does not act as a damper on parties’ willingness to engage in electronic commerce. Singapore, for instance, has launched <<@dr>>, a new electronic alternative dispute resolution system where the subordinate courts will provide mediation and settlement conferences for e-commerce transactions via the Internet.76

The very real problems posed by technological development to the work done by legislatures cannot be underestimated. The social repercussions of many recent technological developments will inevitably trigger quick and broad legislative responses. The relentless pace of technological change, however, sometimes has the effect of undermining legislative formulations. Legislatures around the world must therefore ensure that their appreciation of the ramifications of technology remain relevant and that they endeavor to predict future trends in technology or to enact technology-neutral legislation.77

In the future, legislatures may also have to seriously rethink their roles and contemplate the possibility of delegating large chunks of their rule-making authority to specialized administrative agencies that typically have the added benefits of being more nimble and flexible in devising solutions to the problems that may arise.

Increasingly, many governments must also give due weight to the clarion calls from certain quarters of society for a hands-off regulatory approach to electronic commerce. It must be appreciated that sometimes this appears to be the best course of action to adopt, especially when viewed against the backdrop of scenarios where regulatory agencies have blindly enacted legislation only to find that these efforts serve to frustrate technological advancement.78 Regulatory agencies must also increasingly seek to engage industry and other stakeholder groups in formulating their policies and, in appropriate cases, promote industry self-regulation as a first-step response to the issues that crop up before implementing legislation. There are, however, limits to industry self-regulation and, in appropriate instances, governments must have the courage to make hard decisions and formulate suitable responses.

76 According to Chief Justice Yong Pung How, "@dr" is “[a] first of its kind in the region and the world for a judiciary” and “[i]n addition, our partners, namely the Singapore Mediation Centre and the Singapore International Arbitration Centre will offer services in mediation and arbitration, respectively, for such disputes”; see Julia Ng, Singapore Judiciary Launches E-Commerce Dispute Resolution Hub, 16 September 2000; available at: <<http://www.channelnewsasia.com/articles/2000/09/16/singaporenews16926.htm>>. The "@dr" service may be accessed at <<http://www.e-adr.gov.sg>>.

77 In some cases, the latter course of action may, however, defeat the purpose of enacting legislation in the first place.

78 Some commentators have argued that the United States’ Digital Millennium Copyright Act is one such example; see Pamela Samuelson, Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to Be Revised, 14 Berkeley Technology Law Journal 519, 1999.
Courts also face similar difficulties in meeting the challenges of the information era. As one group of commentators so aptly notes, “[t]raditional rule-based, categorical reasoning, one of the hallmarks of the judicial decision-making process, is ill-suited to address areas of dynamic change” and “[jurisprudence in an era of dynamic change may well proceed on an increasingly case-by-case basis.”

Earlier, it was pointed out that courts will increasingly face tricky issues in relation to the reach of their authority. With the proliferation of electronic commerce, courts will increasingly be asked to deal with disputes involving international dimensions or, in some cases, involving no clear geographical dimensions at all. At the same time, the effectiveness of orders given by a judge may be circumscribed by enterprising defaulters or their supporters through postings via servers hosted or the use of internet service providers located in other countries.

The transnational and inherently anonymous nature of the Internet present serious challenges to law enforcement agencies as well.

4. Privacy Concerns

The advent of the Internet has paved the way for the development of a new era of mass media communications, such as electronic mail access, the World Wide Web, virtual communities and instant messaging systems. Correspondences meant to be private are often not conducted in private, which unintentionally allows for unwanted public access. The sophistication of information technology has, on the one hand, brought tremendous convenience yet, on the other hand, it has facilitated privacy invasions that were not feasible or possible in the past. Apart from commercial organizations, government bodies are also known to take advantage of these technological advances to intrude into the privacy of their citizenry. Turning to an example that has generated considerable controversy, the U.S. Federal Bureau of Investigations has developed a system, known as Carnivore, that is capable of monitoring all online traffic details, such as e-mail and browsing, generated by any targeted user.

Early in the technological evolution of the Internet, online privacy mainly concerned itself with issues related to “information privacy”—i.e. privacy of personal communication and personal data. Usually, this involved the use of “cookies”.

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79 Heinrich et al., supra, footnote 75, at 1045.
80 Id.
81 In the DVD DECSS case, for example, the Court issued a preliminary injunction prohibiting the posting of the DeCSS code anywhere on the Internet, even as it recognized the likelihood that its order would be disobeyed. In fact, the DeCSS code has recently been embedded within a domain names system record and continues to spread across the Internet, despite the Court's injunction. See also William Sloan Coats, Vickie L. Feeman, John G. Given and Heather D. Rafter, Legal and Business Issues in the Digital Distribution of Music: Streaming into the Future: Music and Video Online, 20 Loyola of Los Angeles Entertainment Law Journal 285, 2000.
However, since 1999, many new techniques, such as online personal data profiling, have been developed by online companies, infringing upon the realm of privacy pertaining to personal behavioural traits. These techniques allow online companies to amass large amounts of actionable psycho-graphic and behavioural information about their online visitors. The stunning aspect of these technologies is their ability to automatically update databases almost instantaneously to reflect their consumers’ latest browsing habits and behaviours, thereby enhancing the predictive features of their software on the sly. Recent events have also indicated the ease in combining sets of databases with different bits of information about a consumer to generate a complete list of his personal information, behavioural habits and personal preferences.

Possession of such information—even if it is anonymous—is extremely valuable. Many online businesses use the size of their member databases as a means to attract business and, on occasion, as an asset that can be freely sold to interested third parties. Today, it is no longer surprising to receive an e-mail with offers from another site after registering on a certain Website.

Online privacy concerns are moving away from information privacy to issues of online profiling and other advancements. Consumer profiles are usually treated by online businesses as assets which can be sold, rented, loaned or transferred to other unaffiliated parties. Amazon.com had formerly firmly declared that all personal information submitted by customers would not be disclosed to third parties. It, however, subsequently not only revised its privacy policy in a manner which seems to put the privacy of its customers at risk but it has also introduced ambiguity into its policy that provides leeway for it to offer this collected information for auction in certain circumstances. Amazon.com had to publicly clarify its new policy to evade questioning by the U.S. Federal Trade Commission.

In another case involving the bankruptcy proceedings of Toysmart.com, a U.S. federal judge had to set aside conditions on the proposed sale of the failed online retailer to safeguard the company’s prized database of more than 250,000 consumer profiles.

These incidents have been used to illustrate the threat that technological sophistication has on privacy. Fortunately, there exist many pro-privacy protection organizations, such as the World Wide Web Consortium (W3C), Junkbusters.com,

Electronic Privacy Information Centre, and some governments are actively updating privacy-enhancing technologies, policies and laws to protect privacy. Countries in Asia would do well to monitor these developments and, where necessary, implement appropriate legislation.

The advent of mobile commerce creates new business opportunities such as wireless advertising where a discount advertisement may pop up on a mobile phone carried by a user who is within walking distance from a retailer or restaurant. But this business model would throw open issues of privacy and “wam”, the wireless equivalent of spam.\textsuperscript{90}

\textsuperscript{90} Christian Science Monitor, Boston, 14 May 2002, p. 3.
It should be noted that even parties from countries with lax privacy laws have to be mindful of the requirements imposed by the privacy laws of the countries of persons they engage in business with and ensure that they comply with them.91

It is also perhaps timely for the A SEAN Member countries to give serious thought to developing a common charter on privacy and, where necessary, to implement appropriate privacy legislation. This would serve the dual purposes of providing a sense of comfort to potential investors as well as ensuring that the privacy laws of the A SEAN Member countries are in line with international norms in the area. It is useful to note that some countries in Asia are already starting to conduct bilateral discussions for the purposes of streamlining their privacy laws.92

VI. THE ROAD AHEAD

Clearly, the e-ASEAN initiative cannot be static. It must move along with the rapid advances in technology to remain relevant. The more advanced Members of ASEAN must make a concerted effort to promote “open regionalism” in ICT trade and investments and actively forge strategic alliances with the “bigwigs” in the ICT sector. They must also prepare their own domestic players through mergers or strategic partnering to face competition when these “bigwigs” enter their domestic markets. To grant national treatment only to ASEAN investors is wrong, as mentioned earlier. With the slowing down of the U.S. market, Asia will once again surface as an attractive destination for the global players. Within Asia, the ASEAN countries will face intense competition from China and, possibly, India. Nevertheless, ASEAN, with a combined population of half a billion, will always remain attractive to foreign investors. First, however, the ASEAN countries have to upgrade their infrastructure, train and educate their labour force, nurture innovative capabilities in their populace and put in place an agglomeration of efficient suppliers, competitors, support institutions and services. Finally, ASEAN countries should speak in one voice in international negotiations to leverage themselves better against their competitors.

91 In the European Union, for instance, governments have moved aggressively to regulate the use of personal data. In the United States, on the other hand, the government has largely refrained from such regulation, instead allowing companies and associations to regulate themselves, save for a small number of narrowly drawn regulations targeting specific industries. These divergent responses can best be explained by different cultural mores and the different legal approaches to privacy in general. The EU's aggressive regulation of the use of personal data originating in its fifteen Member countries is embodied in its Directive on the Privacy of Personal Data 95/46/EC, which took effect on 25 October 1998. The Directive embodies the principle that privacy is a fundamental human right. It also serves the purpose of equalizing the level of data privacy protection guaranteed in each EU Member country so as to decrease transaction costs for entities that operate across national borders. The Directive provides a high level of protection for the privacy of personal data, and it extends that protection beyond the EU by prohibiting the transfer of data to third countries unless those countries can guarantee a vaguely defined "adequate" level of data protection. See also Julia M. Fromholz, The European Union Data Privacy Directive, 15 Berkeley Technology Law Journal 461, 2000.
92 See, for example, initiatives such as the Japan–Singapore Privacy Working Group.
REFERENCES

Information and research materials have also been obtained from the following Websites which were active as of 10 April 2003:

2. International Telecommunication Union: 
   <<http://www.itu.int/ti/casestudies/singapore/material/Singapore.pdf>>
3. InterAsia: <<http://www.interasia.org/background/asean.htm>>
4. InterAsia: <<http://www.interasia.org/malaysia/hashim-yusof.html>>
5. Internet Society: 
   <<http://www.isoc.org/isoc/what_is/conferences/inet/97/proceedings/E6/E6_1.HTM>>
7. InterAsia: <<http://www.interasia.org/malaysia/ramanathan.html>>
8. Centre of Asian Studies University of Hong Kong: 
9. International Telecommunication Union: 
   <<http://www.itu.int/ITU-D/ict/statistics/at_glance/Top20ISP.htm>>
10. International Telecommunication Union: 
11. International Telecommunication Union: 
    <<http://www.itu.int/i/papers/ecom/18Marweb.pdf>>
12. International Telecommunication Union: 
    <<http://www.itu.int/itunews/issue/2002/10/indicators.html>>
13. International Telecommunication Union: 
    <<http://www.itu.int/itunews/issue/2002/03/policy.html>>
14. International Telecommunication Union: 
    <<http://www.itu.int/itunews/issue/2002/08/mobile.html>>
15. Info-Communications Development Authority: 
    <<http://www.ida.gov.sg/Website/IDAContent.nsf/dd15215e79ecf3be825682f0045a340/15>>
16. 2d393fa3f37245c8c82568390001f755?OpenDocument>>
17. PulseOnline: <<http://pulse.tianonline.org/article.cfm?id=269>>
18. Pulse Online: <<http://pulse.tianonline.org/1099/text/indone.htm>>
19. United States Department of Commerce, International Trade Administration: 
    <<http://infoserv2.ita.doc.gov/ticwebsite/apweb.nsf/e0557129ba86fcb9852566d4006a454a/11e461a430d2c9b1852569e00069797b!OpenDocument>>
20. University of Hong Kong, Centre of Asian Studies: 
21. The World Bank, 2002 World Development Indicators: 
22. The World Bank, 2002 World Development Indicators: 