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ELECTRONIC COMMERCE: EMERGENCE AND GROWTH, CHALLENGES
AND OPPORTUNITIES

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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 its 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 the recent year was mercilessly wretched for Internet commerce. Many leading online businesses like eToys have collapsed.ⁱ Even giant e-retailer Amazon.com was not spared, crippling from losses despite its massive \$2.8 billion in sales revenue from the past year, and to top it up are pessimistic forecasts of the likelihood of bankruptcy for the behemoth.ⁱⁱ All these may not have been much of a surprise had it not been for earlier convictions that online retail will 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 superstar of dot-coms, Yahoo! reported a net loss from its first quarter of operations in 2001; by comparison, it had made first quarter profits just a year earlier.ⁱⁱⁱ This meltdown is not confined to the dot-com sector; the downward trend also extended to computer makers like Sun Microsystems and networking giants like Cisco.

The disillusionment with online business need not mean that the string of new possibilities that e-commerce can provide has prematurely reached its end. After all, other online businesses like E-Bay and I-won.com are still in good shape.^{iv}

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 taken aside narrow views that online commerce is only about the Web. Every successful business survived only because their business models can well integrate important business factors, including logistics, technological investments, cash-flow management and of course the needs of the end-consumer. To recover from its present shakeout, the industry needs to re-look into 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 preeminent e-commerce area within the next four years.^v According to this study, Australia, New Zealand, Singapore and Korea is 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 electronic commerce throughout the region. In addition, other noteworthy Asian entrants to the burgeoning field of electronic commerce include India, an emerging powerhouse that recently announced a target of US\$50 billion export software sales by 2008,^{vi} and China, which is leapfrogging over the PC era to launch straight into mobile Internet access.

The determinants for the development and growth of e-commerce can be distilled into three underlying core industries: first, the telecommunication (“the telecom”) industry; second, the Internet; and third, the PC industry. With the so-called 3G mobile technology in the pipeline, one may eventually do away with the personal computer altogether. As it is,

Japan's NTT DoCoMo's i-mode service has broken traditional barriers and brought the Internet to 13 million mobile subscribers.

With this skeletal framework in mind, this paper will first provide an overview of the development and growth of these three determinants in the ASEAN countries. The second part of the paper will look specifically at the e-ASEAN Framework Agreement- an initiative by the ASEAN governments to capture opportunities in trade and investment created by the new revolution in the information and communication technology markets. Within this framework is a specific endeavor 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 agreement further liberalizes trade and investment in "information and communication technology" ("ICT") products and services. The third and final part of the paper will look into the challenges and initiatives to e-commerce in ASEAN with an emphasis on the legal issues and impediments.

OVERVIEW: ICT SECTOR IN ASIA-PACIFIC

Telecom investments in the developing countries

The liberalization of telecom started in a few countries in the 1980s has become a worldwide trend in the 1990s. Countries all over the world including even former communist enclaves like China and Vietnam have opened up their telecom industry to foreign participation in a bid to bring economic development and prosperity to their country as well as to benefit from the new revolution in the information and communication scene.

More than 90 developing economies opened their telecom sector to private participation between 1990 and 1998. Total investment 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.

Table 1: the distribution of telecom projects with private participation in developing countries by region, 1990-1998

Region	Countries	Projects	Total investment (1998 US\$ millions)
East Asia and the Pacific	14	64	42,269
Europe and Central Asia	24	254	32,382
Latin America and the Caribbean	22	99	110,919
Middle East and North Africa	6	13	2,979
South Asia	4	41	19,073
Sub-Saharan Africa	24	50	6,420
Total	94	521	214,043

Source: PPI Project Database

From the table, it can be seen that the East Asia and South Asia blocs (which would house the ASEAN countries) are the second and third largest recipients of investment in this sector after Latin America and the Caribbean. This amounted to 28.6 per cent of total investments.

Most governments in the developing countries have introduced competition in the telecom sector by inviting private participation-ranging from unrestricted entry (Chile, Mexico) to managed competition (South Korea, Malaysia) to duopoly (Brazil, Ghana). Thailand and Indonesia have introduced private investment to complement the incumbent's. Despite governmental efforts at liberalizing the telecom sector in the ASEAN countries, it is still dominated by state-owned enterprises with controlled involvement from private investors.

Of the US\$214 billion investment, about US\$79 billion had gone into 350 greenfield projects^{vii} and US\$126 billion to 161 divestitures.^{viii} Fifty per cent of divestiture revenues went to state coffers while the rest were deployed to network expansion and modernization. East and South Asia countries have opted primarily for greenfield projects, aimed at complementing the incumbent's investments. Most have introduced some competition in basic services but have fully opened their mobile phone market to competition.

Between 1990 and 1999, telecom market revenues from services have grown from US\$396 billion to US\$792 billion, representing a 100 per cent increase. The projected figure for 2002 is US\$925 billion. The number of main telephone lines has also grown from 520 million in 1990 to 906 million in 1999 and is forecasted to grow to 1,115 million in 2002. Similarly, the number of mobile cellular subscribers has increased from 11 million in 1990 to 472 million in 1999.^{ix}

CHANGING REGIONAL BALANCE OF POWER

With all that investments being rolled into the telecom sector in the developing countries, the Asia-Pacific is poised to become the leading player (see Table 2).

Table 2: The changing regional balance of power: Fixed-line networks

Region	1 January 1990	1 January 2000	1 January 2010
Europe	40%	34%	27%
Americas	35%	31%	25%
Asia-Pacific	23%	33%	46%
Africa	2%	2%	2%

Source: ITU "Asia-Pacific" Telecommunication Indicators, 2000

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 half. It is expected that the region will have 700 million fixed-lines users and around one billion mobilephone users.^x The impact this will have on e-commerce is simply mind-boggling. The growth of e-commerce can only be exponential.

INTERNET USAGE AND E-COMMERCE: HOW DO ASEAN ECONOMIES FARE?

The e-commerce market is expanding rapidly. Below is a table setting out the forecasted values of the business-to-business^{xi} market for selected Asian markets. The B2B market makes up the bulk of e-commerce. The other is the business-to-customer market, which is projected to range between US\$25 billion and US\$90 billion in 2001/2002.^{xii} Researchers like Forrester have forecasted that Asia-Pacific e-commerce will result in US\$1.6 trillion of revenues by 2004.

Table 3: B2B Forecasts for Selected Asian markets-2003

Country	B2B forecast for 2003 (US\$ million)
Australia	\$89,800
People's Republic of China	\$12,940
Hong Kong, SAR	\$2,690
India	\$3,710
Indonesia	\$470
Korea	\$93,400
Malaysia	\$2,800
Philippines	\$620
Singapore	\$19,900
Taiwan	\$4,450
Thailand	\$4,300
Total (without Japan)	\$235,080
Japan	\$591,300
Total (with Japan)	\$826,380
USA	\$1,438,000

Source: Workshop on Strategic Electronic Commerce and Management, Electronic Commerce Resource Centre, 23-25 May 2001.

Where does ASEAN stand in this region? With the exception of Singapore, ASEAN's share of this burgeoning market is very small. The crucial question to answer is "Can ASEAN capture a bigger slice of this market; if so, how?"

To decide if ASEAN can participate actively in this new burgeoning electronic market, the authors propose to look briefly at some socio-economic indicators such as the GDP per capita, telephone density and the digital divide between the countries. First, a cursory glance at the ASEAN 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 ahead with GDP per capita of US\$21,816 and US\$11,824 respectively (1999 figures). In fact, economists have usually grouped Singapore with the other Newly Industrializing Economies ("NIE") of Hong Kong, Taiwan and South Korea. Malaysia, Thailand, Indonesia and Philippines have often been classified as the ASEAN4 as they share more or less the same characteristics and growth rates. The newer members of ASEAN, namely Vietnam, Myanmar, Cambodia and Laos can be conveniently grouped together as they are the poorer countries in the ASEAN family with GDP per capita in the range of US\$267 to US\$1,325 (1999 figures). Clearly the costs of owning a computer or a mobile

phone is outside the reach of most of the populace in the newer members as well as in Indonesia and Philippines.

Second, we look at the number of fixed-lines telephone, mobile cellular subscribers and telephone density of the ASEAN countries respectively in 1999 (Table 4).

Table 4: Number of telephone lines (fixed), telephone density and number of cellular subscribers, 1999.

Economy	Nos. of telephone lines (fixed)	Telephone density (per 100 persons)	Nos. of mobile cellular subscribers
Brunei	79,086	24.8	43,524 (1996)
Cambodia	27,704	0.24	89,117
Indonesia	6,080,193	2.9	2,506,354
Laos	29,748	0.6	8,134
Malaysia	4,430,000	19.35	2,720,000
Myanmar	249,083	0.51	11,389
Philippines	6,811,616	9.12	2,849,880
Singapore	1,951,000 (May 2001)*	57.5	2,900,300 (May 2001)*
Thailand	5,215,636	8.42	1,154,784
Vietnam	Not available	2.58 (1998)	Not available

Source: ASEAN secretariat, 2000

*Info-Communications Development Authority (IDA) Website

The figures show that Singapore has the highest telephone density of 57.5, which is comparable to the telephone density rates of the OECD countries. Most OECD countries have a telephone density rate of between 47 and 69.^{xiii} The ASEAN4 have a telephone density of between 2.9 and 19.35, with Malaysia leading the pack followed by Philippines, Thailand and Indonesia. The newer members with the exception of Vietnam have a rate that is below one.

Third, the gaping digital divide in the ASEAN economies. An Asiaweek article on June 29, 2001 gives an insight into the digital divide in Asia. Three tables will be reproduced here to indicate where the ASEAN economies stand in the region in terms of ICT spending, the level of Internet penetration and ownership of personal computers.

Table 5.1: ICT spending

Country	% of GDP	US\$ billion
New Zealand	10.5%	6.5
United States	8.9%	761.9
Australia	8.9%	36.8
Hong Kong	8.35	12.8
Singapore	7.7%	8.0
Vietnam	7.4%	1.7
Japan	7.1%	362.0
Malaysia	5.2%	5.3
China	4.9%	47.9
Taiwan	4.8%	16.0
South Korea	4.4%	24.4
India	3.5%	15.5
Philippines	2.7%	2.5
Thailand	2.1%	3.9
Indonesia	1.4%	2.9

Source: Asiaweek, June 29, 2001

Table 5.2: Internet Usage in selected Asian countries

Country	Internet users as % of population
Singapore	49.1
South Korea	40.3
Hong Kong	40.0
New Zealand	39.2
Australia	34.9
Japan	34.1
Taiwan	28.2
Malaysia	15.0
Philippines	2.6
Thailand	1.9
China	1.8
Indonesia	0.7
India	0.5
Vietnam	0.1

Source: Asiaweek, June 29, 2001

Table 5.3: Number of personal computers per 1,000 people

Country	Personal computers per 1,000 people
Singapore	485.3
Hong Kong	346.1
Malaysia	104.7
Thailand	23.5
Philippines	19.6
China	16.1
India	4.6

Source: AsiaWeek June 29, 2001

The above tables show that Singapore and Malaysia are the only ASEAN countries that are most well positioned to capture a slice of the e-commerce market. They have a relatively higher level of Internet usage among its population, ownership of computers and ICT spending compared to the rest. On the other hand, Table 3 seems to indicate that the size of e-commerce market in Thailand will be higher than that in Malaysia. The authors, however, contend that the forecast for Thailand is over-generous and fail to appreciate that the lack of content in the local Thai language can be an impediment. Indonesia is too embroiled in civil unrest to make much headway in this sector whereas Philippines is facing its own political problems caused by the change in leadership. Lastly, Vietnam is the only country amongst the new members that may possibly benefit from e-commerce. Thus, most of the discussion in this paper will concentrate on the more advanced ASEAN countries.

Despite the above facts and figures, the authors contend that ASEAN will not be a significant player in e-commerce for a while to come. None of the ASEAN telcom companies are within the top 20 operators in the world, and neither are their Internet service providers. The significant players in this new revolution in the Asia Pacific region are likely to come from Japan, Hong Kong, China and Korea. Despite having the highest Internet usage rate and ownership of PCs (which exceeds even Hong Kong), Singapore's flagship telecom operator Singtel will not be a dominant player in the region in the near term. This is evidenced by its botched takeover bids in Hong Kong and Malaysia recently. Singtel's stocks also declined sharply in the wake of its acquisition of Australia's Optus mobile phone operator as its shareholders fear that it had overpaid for Optus. It all boils down to the fact that Singtel, which was privatized only recently, is a young and untested company.

E-COMMERCE IN ASEAN

Legislative Initiatives

Frenetic activity in the past few years have ensured that lawyers and policy makers specializing in information technology law are kept busy monitoring developments that are taking place in many parts of Asia as well as in other parts of the world. Examples of legislation passed or sought to be passed in Asia include Australia's Electronic Transactions Act 1999, Broadcasting Services Amendment (On-Line Services) Act 1999, Privacy (Private Sector) Bill and the Copyright Amendment (Digital Agenda) Bill 1999; South Korea's Electronic Transaction Basic Act; Singapore's Electronic Transaction Act 1998; Hong Kong Electronic Transactions Ordinance 2000; Japan's Draft Bill Concerning Electronic Signatures

and Certification Authorities and the Law Partially Amending the Trade Mark Law; Malaysia's Malaysian Communications and Multimedia Commission Act 1998, Communications and Multimedia Act 1998, Digital Signature Act 1997, Computer Crimes Act 1997 and Telemedicine Act 1997; the Philippines' Electronic Commerce Act; and India's Information Technology Act 2000.

Many governments and regulatory bodies in Asia are starting, or have started to, recognize the economic potential of e-commerce and are considering a number of policy initiatives designed to encourage the development of e-commerce. These initiatives include attempts to overhaul or effect amendments to existing laws to deal with the emerging legal issues that e-commerce raised. The following paragraphs outlined the legislative efforts taken by some of the ASEAN countries.

In Singapore, various amendments to existing legislation and subsidiary legislation have been put in place rationalizing the existing law to cope with moves in various industries towards the electronic framework.^{xiv} The amendments have collectively dealt with computer and electronic evidence, copyright, income tax concessions for cyber-trading, electronic dealings in securities and futures, electronic prospectuses and deregulation of the telecommunications industry.

In Malaysia, the Multimedia Development Corporation has been working on a National Electronic Commerce Masterplan, which is designed to facilitate the creation of a conducive environment for the development of e-commerce in Malaysia.^{xv} The four key elements in this Masterplan are to boost confidence in on-line trading, prepare a regulatory framework, build a critical mass of Internet users and introduce an electronic payment system.

In the Philippines, the passage of the Electronic Commerce Act underpins the Philippine government's resolve to create an environment of trust, predictability and certainty in the Philippine system so as to enable electronic commerce to flourish.^{xvi}

Similar legislative efforts based on the UNCITRAL model law on electronic commerce have also been taken in Brunei (Electronic Transactions Order, 2000) and Thailand (Electronic Transaction Bill).

Unlike most countries in Asia, the ASEAN countries have banded together to pursue a more holistic vision called e-ASEAN.^{xvii}

E-ASEAN Initiatives

The e-ASEAN initiative is envisioned as a holistic electronic action plan, which will dovetail into existing work such as the AII, e-commerce, telecom and other relevant sectors like 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 Vision 2020. 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.

The seven conceptual pillars of e-ASEAN are:

Branding: e-ASEAN will capture the global ICT mind-share by creating a single, common and well-known brand name;

Connectivity: e-ASEAN proposes a next generation, highly resilient and high-speed AII backbone connecting ASEAN and key economies globally. In anticipation of increased intra-ASEAN data traffic resulting from e-commerce, the high-speed AII will support broadband and multimedia content delivery, and is designed to support next-generation Internet applications;

ICT Environment: e-ASEAN aims to develop ICT talent and an environment that is supportive of e-business activities;

Investment Attraction: e-ASEAN will be positioned to attract foreign investment into the ICT sectors in ASEAN and promote collective ASEAN ICT capabilities;

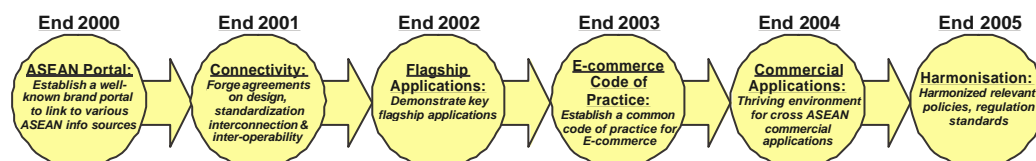
Flagship Electronic Projects: four areas have been earmarked for ICT development. They are the ASEAN Tourism Portal, ASEAN Trade Link, ASEAN Education Collaboration and ASEAN ICT Job Bank.

Harmonization of Policies, Regulations and Standards: e-ASEAN hopes to push for interoperable technical standards, policies and legislation in the development of ICT within ASEAN; and

Human Resource Capabilities and Development: the ASEAN countries pledged to assist each other in ICT talent development.

On the 25th of November 2000, the heads of the states of ASEAN signed the landmark “e-ASEAN Framework Agreement”^{xviii} at the informal summit meeting. The Agreement aims to promote co-operation and to develop, strengthen and enhance the competitiveness 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 that support the e-ASEAN initiative. The Agreement commits ASEAN members to an implementation schedule 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 information and communication technologies and foster the spirit of the ASEAN community.

Figure 1: Timeline of e-ASEAN development



Source: Summary Report by EAWG

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 (EAWG) comprising government and private sector representatives.

In essence, the vision of 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.

This vision is embodied by the following three mission statements:

- (a) To create a common marketplace of a half a billion people for ICT products and services,
- (b) To enhance the economic competitiveness of ASEAN through harnessing ICT in the private and government sectors,
- (c) To enhance the living standards of ASEAN nationals through ICT, by narrowing the digital divide.

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 six key elements. These six elements are:

(a) *Establishment of AII*. 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 AII and has initiated consultative dialogues with the private sector to explore short and long-term plans for the AII. As envisioned, members bind themselves to facilitate interconnectivity and technical interoperability among their ICT systems leveraging current national networks and evolving these into a regional information infrastructure. To begin with, a private sector led ASEAN Internet Service Providers (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.

(b) *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 on-line 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.

(c) *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. It is included in the e-ASEAN agreement for completeness.

(d) *Facilitation of ICT Trade in Common Marketplace.* Facilitate the flow of ICT goods and services in the region and 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 January 1, 2003. Cambodia, Laos, Myanmar, and Vietnam will undertake the same measures beginning on January 1, 2008. ASEAN will conclude mutual recognition arrangements covering ICT products.

(e) *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. 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 effort through sharing of training resources.

(f) *E-Government.* Deliver more government services using ICT to make it more efficient and more widely diffused. The application of ICT will reach more people than is the case with traditional means and also allow greater interaction between governments and their citizens.

Hopefully, the e-ASEAN initiatives discussed above will have the effect of ensuring that the electronic commerce laws of the various ASEAN member states develop in a unified manner and takes due account of developments taking place in other parts of the world. This common front and unified stance would also give the ASEAN grouping further leverage in situations where proposals for reforms are made at an international level.

E-COMMERCE: ISSUES AND CHALLENGES

U.S and European telecom meltdown

The current telecom sector is in the doldrums. Many telecom companies in Europe and the U.S are bleeding in debt. All told, telecom 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? The reasons are as follows: First, following the deregulation of the telecom sector in the U.S 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 per cent each year. With very upbeat estimates of demand, telecom companies followed in the footsteps of MFS Communications Co., which is to first raise money, put the telephone lines in the ground and you could make a bundle. And they issued junk bonds^{xix} to finance these gargantuan expansions. Secondly, many European telecom companies overpaid for new wireless licenses without really knowing what the usage will be like. For example, France Telecom rolled out \$7.5 billion for a high-speed wireless license in Germany- a figure that is three times the company's 2000 revenue. Sonera had to sell off phone businesses in the U.S 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 telecom companies have revised downwards their earnings, slashed spending and some telecom companies may even face bankruptcy.

What does all these spell out for Asia (and ASEAN)? The short answer to the question is that these dominant players who possess the cutting-edge technology in telecommunication will be staying put in their "home-ground" in the short term. Asia will have to look to its own indigenous telecom company to take the lead in the new ICT revolution.

Telecom companies in Asia are generally faring much better than their American and European counterparts. As far as 3G licenses are concerned, they are paying much less than their European counterparts. In South 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 per cent of the license fees over 10 years. Nevertheless, the industry has had its own share of hiccups- for example, China's biggest wireless provider, China Mobile warned that its profit margins will fall from 58 per cent to 50 per cent in the next five to 10 years as competitor China Unicom Ltd. enters the market. Hong Kong's PCCW reported an \$886 million loss for 2000 which includes a \$667 charge on its internet investments and a writedown of all the goodwill associated with the Hong Kong Telecom purchase.

Legal and political impediments to foreign participation

Until recently, most ASEAN countries jealously guard their telecom sector and promulgate laws that prohibit foreign participation in the sector. The State, often with politically well-connected parties, enjoys monopoly in providing basic telecom services to its people. But ASEAN governments are slowly changing this landscape. They have realized that to capture the benefits of the new ICT revolution, they had to open up their telecom sectors to foreign participation. Most have introduced competition by creating a duopoly for basic telecom services.

Brunei: the existing monopoly in the fixed line and cellular telephone services; and duopoly in the international public voice telephone services will be reviewed in 2010 in accordance with its WTO commitments.

Indonesia: a new Telecom law was signed into effect on 25 August 1999. The new Law phase out state monopoly and opened basic services to majority foreign ownership. It reduces the required Indonesian shareholding to five per cent and allows wholly foreign-owned telecom companies. However, the new Law will only take effect in 2004. PT Telecom, the incumbent state-owned telecom company will be allowed to retain its fixed-lined business until 2010 and domestic long distance service until 2005. PT Indosat, the primary provider of international telecom services will retain its monopoly until 2004. Foreign equity is limited

to 35 per cent for all services except personal communication services, which require joint venture with state-owned company. Secondly, the primary barrier to the growth of cellular mobile telecom is the cost of the handset, which is estimated to range from US\$225 to US\$1,000.

Philippines: despite the official stand to privatize the telecom sector, the picture, in reality is one of chaotic and ill-defined competition. The Philippines Long Distance Telephone Co. (PLDT), long regarded as a bastion of crony capitalism and dubious practices is mired in the midst of an acquisition tussle between First Pacific, the Hong Kong-based arm of Indonesia's Salim Group and SBC Communications, the second largest telephone operator in the U.S. Years of de facto monopoly and manipulation by powerful interests groups of this primary carrier had contributed to the underdevelopment of the telecom sector. In 1992, the waiting list was 800,000. Eighty-five per cent of the lines are concentrated in Metro Manila leaving hundreds of municipalities throughout the country with no telephone connection at all. Licenses have to be agreed by the Philippines Congress, where some senators like Juan Ponce Enrile feel firmly that the telecom sector like any other basic utility provider must stay in local hands.

Nevertheless, under its commitments to WTO, Philippines has offered competition in voice telephone, data transmission services and cellular mobile telephone services in all segments except cable television and satellite. Foreign equity is limited to 40 per cent.

Thailand: the telecom market is dominated by two bodies; namely the Communications Authority of Thailand (CAT) and Telephone Authority of Thailand (TOT). The former is responsible for international telecom whilst the latter's turf lies in the domestic PSTN services and traffic to Malaysia and Laos. Both are unregulated monopolies. Recently, the government has drawn up plans to privatize CAT and TOT.

Thailand is committed under the WTO agreement to open its fixed and wireless services to 20 per cent foreign equity ownership by 2006. In 1998, the state telecom monopoly granted concession licenses to private sector participants, and these have been converted into full licenses in the late 1998. Apparently, an independent body has been established to regulate the industry and strategic partners will be allowed to purchase a 20 per cent of the 25 per cent private sector equity allotment. The authors, however, opined that the 20 per cent equity restriction pose as a barrier to the liberalization of the telecom sector, which will in turn impede the growth of the telecom sector and e-commerce.

Vietnam: apart from the landmark bilateral agreement signed with the U.S in July 13, 2000 which allowed market access in the telecom sector to the Americans, Vietnam embraces a general policy of state monopoly in telecom services. Foreign investment in the telecom sector is prohibited.

Malaysia: although the Malaysia government firmly decided to privatize its state-owned telecom company and introduce competition in this sector, the sector is still controlled by parties who are allied with the ruling political elite. Foreign equity participation is limited to 30 per cent.

Singapore: the telecom sector has been characterized by progressive liberalization from a state-owned monopoly to full competition. Due to its small size, the Singapore telecom market is dominated by four companies; namely, Singapore Telecom, Mobile One, StarHub

and Singapore Cable Vision. Star Hub merged with Singapore Cable Vision in 2001. However, Singapore's info-communications industry is primarily owned by the Singapore government through its investment arm, Temasek Holding. IDA currently imposes a maximum direct foreign equity limit of 49 per cent on all major telecom services licenses. The maximum indirect foreign equity limit on the local partner is also 49 per cent. Therefore the effective foreign equity limit on these licensees is 74 per cent. The foreign equity limit on ISP and Internet Exchange Service Providers was lifted in September 1999.

Digital Divide

Table 6 sets out the number of ISPs and Internet service subscribers of the ASEAN countries in 1999.

Table 6: Number of ISP and Internet service subscribers, 1999

Country	Number of ISP	Number of internet service subscribers
Brunei	1	13,861
Cambodia	2	2,258
Indonesia	69	278,500
Laos	1	Nil
Malaysia	2	700,000
Myanmar	Not available	Not available
Philippines	31	350,000
Singapore	18*	1,913,100**
Thailand	18	830,000
Vietnam	5***	11,240***

Source: ASEAN Secretariat, 2000

*IDA, June 2000

** IDA, May 2001

***"Internet in Vietnam: From a Laborious Birth into an Uncertain Future

Table 6 together with Tables 5.1, 5.2 and 5.3 would show clearly the gaping digital divide amongst the ASEAN countries. Singapore, Malaysia and Thailand can be loosely grouped into the "haves" category while the newer members are clearly the "have-nots". The direction for growth in the ICT sector is unclear in Indonesia and Philippines largely because of their domestic social and political problems. The "haves" including even Indonesia and Philippines had opened their Internet access services market to full competition but have pursued a monopolistic or duopolistic policy for their basic telecom companies. On the other hand, the ICT spending in Thailand, Indonesia and Philippines is low (less than 3% of GDP) compared to Singapore, Malaysia and surprisingly Vietnam. Quite clearly, Singapore and Malaysia are the leading members of ASEAN in the new ICT revolution.

In terms of the number of Internet service subscribers, Singapore again leads the pack followed by Thailand, Malaysia, Philippines and Indonesia. Quite clearly these tables show the ICT capability of the respective ASEAN countries which would in turn indicate the readiness of these countries for e-commerce. Table 3 confirms that Singapore, Malaysia and

possibly Thailand are the only ASEAN countries that will have a viable e-commerce market in the coming decade. It will be a long way before the “have-nots” can bridge the gaping divide with the “haves”. In Myanmar a 1996 law provides that unauthorized ownership of a modem can result in a jail sentence of seven to 15 years. Availability of e-mail is restricted to a few hundred foreigners and a limited group of Myanmar officials and businessmen.

In 1999, a 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.^{xx}

Basic infrastructure and technology: most ASEAN countries have a 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 per cent of the total area with access to digital wireless, with only two member countries above 25 per cent and at least one member with no available service. The percentage of geographical area with cable access varies from no access to 75 per cent coverage. A low average connection speed (mostly 56 kbps or less) is found to be available to consumer and business users despite the fact that the infrastructure supports the highest connection speeds possible with current technology. The same goes for wireless Internet access. Most ASEAN members have ISDN subscribers per 1000 main lines in the 0-1 range. Internet access is generally expensive with leased lines connections to the Internet costing above US\$1,000. Half of the ASEAN members surveyed had less than five per cent of their population with easy access to PCs, while the other half enjoyed at least 20 per cent or more of their population having access to PCs through the home, school or place of work. Three ASEAN members still have monopolies for the basic telecom market, while three other ASEAN countries allow multiple licensed companies. Most ASEAN countries restrict or regulate foreign participation in telecom, but this is set to change as most ASEAN members are in the process of opening up their telecom market in line with WTO commitments.

Access to Necessary Services: Most ASEAN countries have up to 56 kbps capacity access services available, with two having up to 1 mbps or more available capacity. 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 license requirements for their ISP to operate. Most ASEAN members allow their citizens to freely choose their ISP with the exception of one country.

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 per cent of their businesses access the Internet directly, while in most ASEAN countries this number is less than 10 per cent. 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 on e-commerce, disseminate best e-commerce practices among small and medium-sized enterprises, with one ASEAN member having an integral program 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 per cent, while only one country has a growth rate of greater than 50 per cent. More importantly, the survey revealed that there is no congruence in policy on standards and interoperability among ASEAN members. Some countries want to develop and mandate national standards; others support the development of proprietary standards. Still others promote interoperability while others encourage their domestic players to co-operate with international global standards.

Skills and Human Resources: Only one ASEAN country has 90 to 100 per cent of its schools access the Internet. Most ASEAN countries have less than 30 per cent of its schools having Internet access. Most ASEAN members have, however, incorporated some form of IT education in its basic education curricula especially in tertiary institutions.

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 UNCITRAL model law.

The future of e-commerce in ASEAN can be sum up in one simple word called “critical mass.” Using the telephone as an example, “The value of the telephone line goes up exponentially the more you add users. So a system with one phone is useless, a system with two phones allows for one connection, a system with three phones allows for three connections, a system with four phones allows for six etc”^{xxi}. Thus there can only be a vibrant e-commerce market in ASEAN when Thailand, Philippines and Indonesia together with the newer members catch up with their more advanced brothers in ASEAN.

Infrastructural impediments and pricing

Interconnectivity: Philippines, Indonesia and Vietnam share common infrastructural problems such as lack of interconnectivity, bandwidth and know-how. These problems explained the low Internet penetration rate in these countries. In Philippines, for example, the lack of interconnection between the local ISPs mean that data traffic had to be routed to U.S and then back to Philippines. They have, however started a Philippines Internet Exchange or Metro Manila Media Access Point; only the larger ISPs have signed up for this facility.

Leased lines and local loops pricing: the data networks of most ISPs are constructed with leased lines that must be obtained from national telecom companies which often are monopolies or government entities. Due to the lack of competition in leased line supply, these telecom companies inflate line prices and usage restrictions that impede the provision of services by ISPs. In addition, ISPs often have no choice but to purchase local exchange services from national telecom companies, and these services are often priced at excessive rates, inflating the cost of data services to customers. In Vietnam, for example, there are five licensed ISPs but only one Internet access provider (Vietnam Data Communications), which is a subsidiary of the state monopoly Vietnam Post & Telecom. As a result, services costs are extremely high and few can afford the service.

Know-how: many ASEAN countries are still in the early stages of economic development. As such, they often carry a huge population lacking in skill and technical knowledge. Even

Malaysia and Thailand^{xxii} which have transformed themselves successfully from an agricultural and resource-based economy to an industrial economy still lack the necessary technology workers, not to mention ICT workers. Even Singapore is short of ICT talent.

Strategic alliances and partnering

ISPs all over the world are looking for strategic alliances and partnering to improve content and bring more value-added services to consumers. As such, we see American Online (AOL)'s acquisition of media giant Time Warner not too long ago. The latest news in strategic partnering is between Europe's largest electronics company, Royal Philips Electronic and AOL Time Warner. Through this alliance, Philips and AOL Time Warner will co-develop new online marketing destinations that will showcase products and services from Philips. More importantly the two companies will explore next-generation technologies for their set-top boxes and potential opportunities for online interactive services integrated with TV.

In Asia, we see Hong Kong's PCCW merger of Hong Kong Telecom and its proposed \$100 million venture with GigaMedia (Taiwan), supplier of broadband services to produce Chinese-language content in Taiwan. The deal was unfortunately scuttled because of differences over valuation of the partners' stakes.

In Singapore, StarHub merged with Singapore Cable Vision on 14 June 2001 to offer a wide range of services ranging from fixed-line, wireless, long-distance and broadband internet services to cable TV. On 21 June 2001, StarHub announced a strategic alliance with SAVVIS Communications Corp to deliver SAVVIS' Intelligent IP networking services to its customers.

Opportunities are rife in Asia. U.S investors are entering the Asian market armed with millions of venture capital. For instance, Internet incubator CMGI has sealed a \$380 million deal with Hong Kong's PCCW to create and run a network of Internet businesses in the Asia-Pacific region. "IgniteAsia" offers non-public Internet companies in Asia access to U.S investors including venture capitalists and private equity companies. The program also gives U.S investors access to Asia's prominent Internet technology providers. In June 2000, Microsoft announced an alliance with Hitachi to develop Microsoft 2000-based enterprise solutions and related consulting services. At the same time, Hewlett-Packard announced a partnership with Internet investment firm Softbank Corporation to create a new Asian-based e-commerce company to sell HP computers and printers to Japanese consumers.

The main obstacle to e-commerce growth in the Asia region is language. For example, there are coding problems with converting many U.S-based e-commerce applications to the Chinese or Japanese languages. But newer versions of operating systems with Asian-language support have been released. For instance, 7-Eleven has expanded its Asian e-commerce offerings with the launch of a Website called 7dream.com which will allow shoppers to browse through more than 100,000 items including music CDs, flowers etc, place their order online and then go to their local 7-eleven stores to pay and collect their purchases.

Due to broadband capabilities, we see the Internet converging with the TV and mobile phones. ASEAN has initiated the e-ASEAN agreement to capture trade and investment opportunities in this new revolution in ICT. It is a move in the right direction. But to capture

the benefits of this revolution in reality, ASEAN has to prepare itself in a way that will add value to the businesses of telecom and Internet companies. As UNCTAD has stated:

“A striking feature of the new environment is how transnational companies shift their portfolio of mobile assets across the globe to find the best match with the immobile assets of different locations.... The ability to provide the necessary immobile assets thus becomes a critical part of an FDI [foreign direct investment]–and competitiveness–strategy for developing countries. While a large domestic market remains a powerful magnet for investors, transnational companies serving global markets increasingly look for world-class infrastructure, skilled and productive labor, innovative capabilities, and an agglomeration of efficient suppliers, competitors, support institutions and services”.^{xxiii}

So what strategy can the ASEAN governments use to uplift their economy onto the new ICT revolution. Firstly, the more advanced countries such as Singapore and Malaysia needs to develop an indigenous group of ICT workers who can deliver value-added to these transnational ICT companies when they come looking for investment opportunities. In particular ASEAN countries can train ICT workers to produce local content in local language 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 telecom or Internet company can be said to be a dominant player in the region, not even Singapore’s Singtel. The telecom 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 need to attract these global players by offering them strategic alliances that can help them capture the domestic markets. 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 has 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.

REGULATING E-COMMERCE

Followers and Not Leaders?

One discernible trend in the development of electronic commerce laws of Asia (although there are some notable exceptions)^{xxiv} 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 Certification Authorities was passed only on 14 April 2000 and will come 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,^{xxv} 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 access similar initiatives undertaken by other countries in the past and 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.

Regulating Electronic Commerce^{xxvi}

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.^{xxvii} 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.^{xxviii}

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 in dealing 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 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.^{xxix} This would include “Netiquette”, which has the potential to constitute the foundation pillars of a workable uniform cyberspace law^{xxx} (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 various different communities^{xxxi} that exist in cyberspace).^{xxxii} There would, doubtless, be specialized fields of activity^{xxxiii} where complete uniformity of laws will 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^{xxxiv} for its evolution, the information technology era presents us with the opportunity of observing the customs and practices 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^{xxxv} that have developed in cyberspace and 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 ramming clearly inapplicable rules and principles developed for a physical world into a setting that is alien and vastly different.^{xxxvi}

This approach also has the added benefit of allowing a 'universal' Internet law to eventually develop free from the shackles of domestic laws.^{xxxvii} 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^{xxxviii} 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 of a decision, given in one jurisdiction, being unenforceable in another jurisdiction on the grounds that the decision fails to adhere to minimum standards of law.

Regulation of Electronic Transactions

The sheer size of the number of electronic transactions taking place worldwide has inspired a plethora of proposals for its 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.

Essentially, there are two key approaches that could be adopted to 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 extending 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 would be 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 starting with the identification and application of first principles.^{xxxix} 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. This approach 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 takes into account the unique features and potential of computer-based communications systems.

Whilst both approaches have been used in developing regulatory regimes for cyberbased transactions, it is noteworthy that the functional equivalency approach has dominated proposals for regulating electronic commerce. One familiar example is the model

law prepared by the United Nations Commission on International Trade Law (UNCITRAL), adopted by a United Nations resolution in 1996.^{x1} Another example is the draft Electronic Commerce Directive published by the Council of the European Union.^{x1i} 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^{x1ii} 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.

The Model Law on Electronic Commerce

The UNCITRAL Model Law on Electronic Commerce ('Model Law') is a generic law, which can be extended and enhanced by individual countries should they so wish. In devising the Model Law, UNCITRAL had set out to develop rules that could be used in all countries regardless of their technological proficiency or the legal framework under which these countries 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^{x1iii} 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.^{x1iv} The Model Law has received a mixed reception in Asia. As of 30 August 2000, the countries in Asia that have adopted the Model Law are Australia, Hong Kong, Republic of Korea, Singapore and the Philippines.^{x1v} The e-ASEAN task force also recently announced that there has been agreement among the various ASEAN member states to base their respective national electronic commerce laws on UNCITRAL's Model Law by 2003.^{x1vi}

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 it 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, adopt the arduous process of analyzing 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^{x1vii} is better suited in dealing with the difficulties highlighted above. The Draft Revision of the Uniform Commercial Code stipulates that messages take effect when they are received, even if no individual is aware of its receipt.^{x1viii} It then goes on

to state that contracts may be formed by electronic transactions,^{xlix} or by the use of electronic agents.¹

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^{li} 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.

Some Tough Questions Ahead

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 lie, in part, on whether we accept the Internet as a community and self-regulating body and on our understanding of and perception towards the scientific traditions and philosophies that govern such technology.

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 will businesses have to resort to self-help to adequately protect their rights.^{lii} Some commentators argue that property in cyberspace is no different from that which exists 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 provides a good illustration. The controversy over the domain name system^{liii} has resulted in unique laws being developed, such as the Anticybersquatting 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.^{liv}

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.^{lv}

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 all along. One such question would be the position the law should take in relation to applications for patents for online business methods.^{lvi} The recent furore in the United States over the issuance of patents for some online business methods^{lvii} 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.

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 strident steps in ensuring that the judicial system and problems such 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, recently launched [e@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.^{lviii}

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 would 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 enact technology-neutral legislation.^{lix}

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.^{lx} 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.

Courts also face similar difficulties in meeting up to the challenges of the information era. As one commentator 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”^{lxvi} and that “[j]urisprudence in an era of dynamic change may well proceed on an increasingly case-by-case basis.”^{lxvii} Earlier, we have already observed 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.^{lxviii}

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

Privacy Concerns

The advent of the Internet has paved the way for the development of a new era of mass media communication 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 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 technical advancements to intrude into the privacy of its citizenry. Turning to an example that has generated considerable controversy, the U.S. Federal Bureau of Investigations (FBI) has developed a system known as Carnivore that is capable of monitoring all online traffic details, like email and browsing, generated by any targeted user.^{lxx}

Early in the technological timeline 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 was performed with the use of cookies. However since 1999, many new techniques like online personal data profiling were developed by online companies, which stepped into the realm of privacy pertaining to personal behavioral traits.^{lxxi} These techniques allowed online companies to amass large amounts of actionable psycho-graphic and behavioral profiles of their online visitors.^{lxxii} The stunning aspect of these technologies is their ability to automatically update databases almost instantaneously to reflect their consumers’ latest browsing habits and behaviors,^{lxxiii} thereby enhancing the predictive features of their software on the sly. Recent events^{lxxiv} 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, behavioral habits and personal preferences.

Possession of such information—even if 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 email 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 as assets by online businesses, which can be sold, rented, loaned or transferred to other unaffiliated parties. For example, a revised clause in the privacy policies of online retailer Amazon.com, with more than 23 million registered users, now states:

Business Transfers: As we continue to develop our business, we might sell or buy stores assets. In such transactions, customer information generally is one of the transferred business assets. Also, in the unlikely event that Amazon.com Inc., or substantially all of its assets are acquired, customer information will of course be one of the transferred assets.^{lxx}

Prior to this revision, Amazon firmly declared that all personal information submitted by customers would not be disclosed to third parties. The revised clause not only puts privacy at risk but its ambiguity provides leeway for Amazon.com to offer this collected information for auction in certain circumstances. Amazon had to publicly clarify its new policy to evade questioning by the U.S. Federal Trade Commission (FTC).^{lxxi}

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.^{lxxii}

These incidents have been used to illustrate the threat that technological sophistication has on privacy. Fortunately, there exist many pro-privacy protection organizations like the World Wide Web Consortium (W3C), Junkbusters.com, Electronic Privacy Information Centre and some governments that 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.

It should be noted that even parties from countries with lax privacy laws have to be mindful of the requirements imposed by privacy laws of the countries of persons they engage in business with and ensure that they comply with them.^{lxxiii}

It is also perhaps timely for the ASEAN member countries to give serious thought to developing a common charter on privacy and, where necessary, 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 ASEAN 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.

THE ROAD AHEAD

Just as the authors were musing over writing an appropriate conclusion to this paper, the Business Times dated July 31, 2001 reported that the three cellphone rivals in Singapore are teaming up to develop a nationwide payment system that allows people to buy everything from jeans to electricity using their mobile phone. From e-commerce we now move into m-

commerce or mobile commerce, brought about by technological advances in broadband capabilities. The news article captions the following:

“CONSIDER this scenario: You buy something and agree to pay via your handphone. You key in a secure PIN that authenticates you against the unique ID already embedded in the SIM card in your phone. Your message goes into your telco, which confirmed your identity and your purchase details. Your bank debits your account and credits your telco. Your merchant is alerted about your purchase and the amount is paid by your telco. The telco takes a small cut of the transaction for ‘facilitating’ it, and bills you”.

This new business model throws up a host of legal issues. Are telcom companies going to act like credit card companies and other payment intermediaries and participate in the payment clearing and settlement cycle? Would they need a banking licence to do so? The telcom companies are stepping into a grey area. Apart of the general business risks that all companies face in participating as a payment intermediary, there are unique credit risks for telcom companies. What if the payment goes missing when a server at the telcom company goes down in mid-transaction? Who is responsible: the bank, the merchant, the telcom company, or the customer? Finally, what sort of threat does this new business model present to credit card companies?

Clearly, the e-ASEAN initiatives cannot be static. It must move along with the rapid advances in technology to remain relevant. The more advanced members of ASEAN must take a concerted effort to promote “open regionalism” in ICT trade and investments and actively forge strategic alliances with the “big wigs” in the ICT sector. They must also prepare their own domestic players through mergers or strategic partnering to face competition when these “big wigs” enter their domestic markets. To grant national treatment only to ASEAN investors is wrong as mentioned earlier. With the slowing down of the American market, Asia will once again surfaced 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. But first, the ASEAN countries have to upgrade their infrastructure, train and educate their labor force, nurture innovative capabilities in their populace and put in place an agglomeration of efficient suppliers, competitors, support institutions and services. Lastly, ASEAN should speak in one voice in international negotiations to leverage themselves better against their competitors.

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- vii Greenfield projects refer to a private entity or a public-private joint venture builds and operates a new facility. This category includes build-own-transfer and build-own-operate contracts.
- viii 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.
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- x Yoshio Utsumi, "One Billion New Telecommunication Consumers" ITU Telecom Asia 2000.
- xi 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 ("EDI"). With the rise of the Internet, these companies are embracing *extranets* as the dominant strategy, see Laura Mannisto, "Electronic Commerce in Asia".
- xii *Ibid* note 11.
- xiii Laura Mannisto, "Regulating the Internet" CTO Event M128 The Development of National and International Regulation, Cyprus 18 November 1999.
- xiv See Electronic Commerce Law country report at (2000) 29 *Asia Business Law Review* 37.
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- xvi See Electronic Commerce Law country report (in the October 2000 issue of the *Asia Business Law Review*).
- xvii See the discussion below on the e-ASEAN Task Force.
- xviii A copy of this agreement can be accessed at http://www.easeantf.org/docs/eframework_agreement.doc.
- xix 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.
- xx "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.
- xxi Mr. Charles Kenny, The World Bank, "Telecommunications and Development Cause or Effect?" in "Telecoms in the Internet Age: Asia-Pacific into the Twenty First century", Telecoms InfoTechnology Forum, 22 June 2000.
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- xxiii UNCTAD World Investment Report, 1999, pp xxiv-xxv.
- xxiv One example would be Singapore's early embrace of UNCITRAL's Model Law via its Electronic Transactions Act 1998.
- xxv 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?", (1999) 22 *Fordham International Law Journal* 1002.
- xxvi The discussion in this section of the article summarizes the points presented in this author's earlier article: see Samtani Anil, "Heralding a New Jurisprudence of Cyberspace", Vol 1, No 3 (November 1999) *Digital Technology Law Journal* which can be viewed at <http://www.law.murdoch.edu.au/dtlj/index.html>.
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- xxviii Raymond T Nimmer, "International Information Transactions: An Essay on Law in An Information Society", 26 *Brooklyn Journal of International Law* 5.

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xxix See note 16.

xxx 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.

xxxi As can be easily appreciated, there are various different 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 noncommercial 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 various different roles depending on the context and circumstances and one could be a member of different communities in cyberspace. See, generally, Shapiro, A “The Disappearance of Cyberspace and the Rise of Code” (1998) 8 *Seton Hall Constitutional Law Journal* 703 and Lessig, L “The Zones of Cyberspace” (1996) 48 *Stanford Law Review* 1403.

xxxii Some commentators have rightly suggested that it is not apt to apply the traditional, territorial and geographical conception of community in the physical world to cyberspace, where an alternative ‘experiential’ conception of community seems to exist: see Falk, J “The Meaning of the Web” (1998) *Information Society* 285 and Giordano, P “Invoking Law as a Basis for Identity in Cyberspace” (1998) *Stanford Law Review* 1.

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

xxxiv 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.

xxxv These include norms such as open participation, consensus-building, a prioritization of freedom of speech and grassroots organization that have become identifiable with the Internet.

xxxvi 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 Karnow, C E A, *Future Codes: Essays in Advanced Computer Technology and the Law* (United States, Artech House, 1997).

xxxvii 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

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- of the law such as formality requirements, joint liability of intermediaries and the law of conflicts: see Reed, C “Internet Contracting” (1999) February/March *Computers and Law* 36. It is suggested that these problems are not insurmountable and, 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.
- xxxviii 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.
- xxxix For a detailed analysis of this approach and a comparative analysis of the two approaches, see Andrew D Murray, Douglas W Vick and Scott Wortley, “Back to Basics: First Principles in the Law of Electronic Transactions”, Vol 5, Issue 3, June 2000 *Intellectual Property & Information Technology Law* 2.
- xl The full text of the Model Law is available at <http://www.un.or.at/uncitral/english/texts/electcom/ml-ec.htm>.
- xli Council of the European Union, Draft Directive on Electronic Commerce 98/0325 (COD), 28/02/2000.
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- xliv See, in particular, Arts 6, 7, 11, 12, 13, 14 and 15.
- xlv Information obtained from UNCITRAL’s Website at <http://www.uncitral.org/en-index.htm>.
- xlvi “Asean countries agree on e-commerce laws”, Vol 6 Issue No 43 (August 25-31, 2000) *Computer World* 11.
- xlvii The American Law Institute (ALI) 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 (UCC), 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 UCC. The UCC has achieved substantial uniformity of commercial law throughout the United States through enactment in whole or in part in all 50 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 ALI and NCCUSL to modernize the UCC, originally promulgated in 1952, and keep it responsive to contemporary commercial realities: see ALI and NCCUSL’s joint press release dated 18 August 1999 which can be viewed at <http://www.nccusl.org/pressrel/ucc2a2.htm>.
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- xliv See s 2B-102(18).
- l See s 2B-102(16).
- li Judith Y Gliniecki and Ceda G Ogada, “The Legal Acceptance of Electronic Documents, Writings, Signatures, and Notices in International Transportation Conventions: A Challenge in the Age of Global Electronic Commerce”, (1992) 13 *Journal of International Law & Business* 117.
- lii See generally Lawrence Lessig, *Code and Other Laws of Cyberspace* (1999).
- liiii See generally Jessica Litman, “The DNS Wars: Trademarks and the Internet Domain Name System”, 4 *The Journal of Small and Emerging Business Law* 149.

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- lv See generally Alan Heinrich, Karl Manheim and David J Steele, “At the Crossroads of Law and Technology”, 33 *Loyola of Los Angeles Law Review* 1035.
- lvi See generally William D Wiese, “Death of a Myth: The Patenting of Internet Business Models After State Street Bank”, 4 *Marquette Intellectual Property Law Review* 17.
- lvii See Michael North, “The US Expansion of Patentable Subject Matter: Creating a Competitive Advantage for Foreign Multinational Companies?”, (2000) 18 *Boston University International Law Journal* 111; and Christopher S Cantzler, “State Street: Leading the Way to Consistency for Patentability of Computer Software”, (2000) 71 *Colorado Law Review* 423.
- lviii According to Chief Justice Yong Pung How, [e@dr](#) is “[a] first of its kind in the region and the world for a judiciary” and that “[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 accessible at <http://www.channelnewsasia.com/articles/2000/09/16/singaporenews16926.htm>. The [e@dr](#) service may be accessed at <http://www.e-adr.gov.sg>.
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- lxi Alan Heinrich, Karl Manheim and David J Steele, “At the Crossroads of Law and Technology”, 33 *Loyola of Los Angeles Law Review* 1035 at 1045.
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- lxiii 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 (DNS) 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”, (2000) 20 *Loyola of Los Angeles Entertainment Law Journal* 285.
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- lxxiii 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 ("the Directive"), 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", (2000) 15 *Berkeley Technology Law Journal* 461.

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