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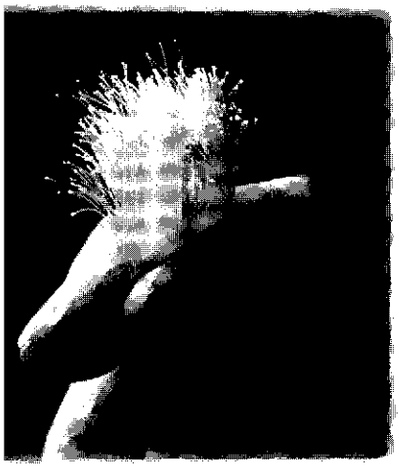
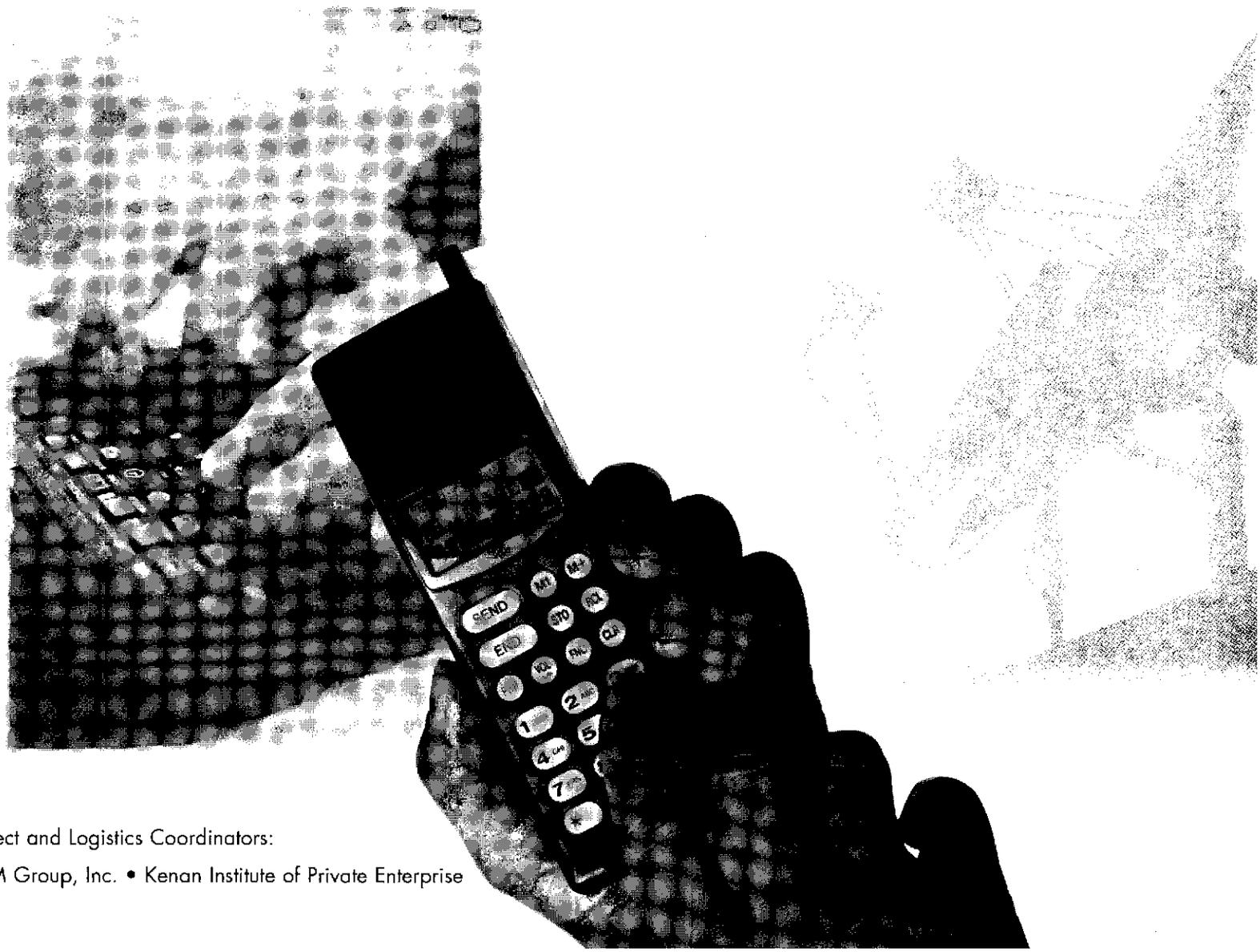
The U.S.-Southeast Asia Telecommunications Project Briefing Book





Project and Logistics Coordinators:

MFM Group, Inc. • Kenan Institute of Private Enterprise

TELECOMMUNICATIONS PROJECT OPPORTUNITIES IN BRUNEI, INDONESIA, LAOS, MALAYSIA, PHILIPPINES, SINGAPORE, THAILAND, AND VIETNAM

Researched and Prepared By:

MFM GROUP, INC.
2251 Distribution Circle
Silver Spring, MD 20910 USA
***Phone* +1.301.587.5282 ♦ *Fax* +1.301.587.8392**
Email: mfm-washington@worldnet.att.net

With Assistance From:

KENAN INSTITUTE OF PRIVATE ENTERPRISE; 1828 L Street, N.W., Suite 402, Washington, DC 20036 USA; *Phone* +1.202.289.6282, *Fax* +1.202.331.4119; *Internet* http://www.unc.edu/depts/cem/

COMMUNICATIONS GENERAL INTERNATIONAL, INC.; 8509 Dunwoody Place, Bldg. 12, Atlanta, GA 30350-3332 USA; *Phone* +1.770.645.8168; *Fax* +1.770.645.8162; *E-mail* cgii@mindspring.com

SEVERANCE INTERNATIONAL INC.; 1120 C Street, S.E, Washington, D.C 20003-1402 USA; *Phone* (202) 675-4585; *Fax* (202) 675-4586; *E-mail* sevintlinc@aol.com

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Mailing and Delivery Address: 1621 North Kent Street, Suite 300, Arlington, VA 22209-2131 USA
Phone: 703-875-4357 ● **Fax**: 703-875-4009 ● **Web Site**: www.tda.gov ● **email**: info@tda.gov

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THE OVERALL ENVIRONMENT FOR TELECOMMUNICATIONS DEVELOPMENT IN SOUTHEAST ASIA

REGIONAL OVERVIEW

The telecommunications sector in Southeast Asia is among the world's most promising markets for U.S. technology, investment, and services. Although each country's market has its own unique characteristics and differs greatly from its neighbors in size, degree of liberalization, and level of development, the marketplace as a whole is shaped by the twin processes of an ongoing liberalization process and rapid economic growth. Together these factors have created a fast-paced market characterized by exceptionally rapid change and a highly competitive environment.

Over the past five years, these markets have undergone tremendous change and development. The most important shift in fundamental conditions has been the virtual abandonment of statist strategies. These strategies, which dominated telecom development into the 1980s, are characterized by the government-directed growth implemented by government-owned "PTTs" (so-called from their historic roles as the governments' agencies for post, telegram, and telecommunications). In country after country, the decision has been taken to abandon this approach in favor of extensive reliance on the private sector to both finance and implement expansion.

The mechanisms for private sector participation are diverse, and vary from country to country and subsector to subsector. The newer technologies — notably cellular, paging, and other value-added services — have been more completely liberalized in most markets, while provision of fixed line services (often referred to as "POTS" for "plain old telephone service") has been more likely to remain under the substantial control of a government-owned entity.

The shift to private sector modes of operation has affected the government-owned operators, as well. Even where the state-owned operator remains the dominant service provider, as they do in most countries, the companies have become increasingly private in both orientation and ownership. As detailed below, local and international investors now own at least a share of previously state-owned monopolies in Indonesia, Malaysia, and Singapore. Privatization is in the planning stages in Thailand, as well, and will in all likelihood be accelerated by the current economic difficulties. These wholly or partially privatized operators join those of the Philippines, which never shifted to state ownership. Although no definite movements have been made towards privatization in Vietnam or

Laos, it is reasonable to expect that these nations will make the transition in the coming decade, as well, given their huge need for telecom services.

In addition to the shift toward private ownership, the new competitive environment has encouraged the core state-owned providers to become more aggressive and growth oriented. All of the main operating companies have introduced new services, expanded investment, tightened up their staff, improved customer service, and made other fundamental changes in their operations. Nearly all of the companies have also used concessions and other types of licenses to enhance their ability to expand their networks. These changes, both managerial and strategic, provide major opportunities for U.S. equipment and service suppliers, particularly those able to make an investment in building networks to serve their regional giants.

Many of the new operators permitted to enter the markets in the past decade have also emerged as major sponsors of new investment. Of the 42 telecommunications identified by the International Telecommunications Union (ITU) as having revenues above $100 million in 1996, 13 are in the eight Southeast Asian nations covered in this conference. Seven of the 13 are private companies, nearly all new entrants to the telecom market within the past ten years.

All of these developments have created tremendous demand for imported technology and services, growth that has been further spurred by technological change in the telecommunications industry, the growth of a vibrant middle class offering a mass market for telecommunications, emergence of the Internet and electronic data interchange (EDI). Other factors promoting rapid growth include the emergence of new uses and new users for telecommunications services, and, perhaps most important, the development of international and domestic capital markets capable of mobilizing the billions of dollars required to finance this growth.

U.S. companies wishing to sell in these markets must develop the skills to partner with and sell to the new private companies that have arisen to serve these markets. These companies, like private companies anywhere, are often less transparent in their decision-making but more flexible and quicker-acting in making procurement and teaming choices. All of these companies have already established supply and/or investment alliances with one or more of the major international players, and new entrants to the region are well advised to do their homework before approaching them with new proposals. At the same time, most of these companies are very much still in the market for additional alliances with companies that offer the best technology, can assist in financing, and/or provide new opportunities to expand their mix of services.

The central importance of forming strategic and supply relationships with local partners, whether state-owned or private, is shaped as well by the declining role of the multilateral donors in the SE Asia marketplace for telecommunications. The World Bank and the

Asian Development Bank will increasingly confine their telecommunications lending to projects that cannot be privately financed, which means only those projects with a heavy component in rural or other low-income areas. Only a few projects fall into this category, such as the two $100-million projects in rural telephony currently under early implementation in Thailand and projects in the lower income countries (Laos/Vietnam/Cambodia). Lending for telecommunications development to the latter is only now beginning, however. No projects have yet moved forward to the board from these countries, although one regional project (profiled in the project section for Laos) is set to emerge in the coming months.

In sum, this is a marketplace where alliances with local private sector investors, skill in project finance and regulatory issues, and an aggressive customer-oriented pricing and service strategy will each play a large role in the future success of U.S. exporters. Whether the customer is a new Internet service provider or a large state-owned operating company, traditional development projects, relying on government-to-government or donor finance, will be of minor and diminishing importance.

COUNTRY PROFILES

Each of the eight countries selected for the Southeast Asian conference is profiled in detail in a separate section of this book. This section provides a brief overview of each as a guide to participants unfamiliar with the region.

BRUNEI DARUSSALAM

Brunei has not liberalized its telecom sector, and is considered unlikely to do so in the near future. The state-owned Jabatan Telekom Brunei (JTB) remains the dominant player. Although Brunei is a small nation geographically, its high income level and determination to become a regional leader in IT make it an attractive market for U.S. technology. The market is strongly dominated by British suppliers, led by Cable and Wireless, but has no shortage of capital to invest in telecommunications products and services. Niche suppliers may find Brunei particularly attractive.

INDONESIA

The state directly operates services through the partially privatized domestic and international carriers, PT Telkom and PT Indosat. Indonesia has increasingly encouraged private companies to come in as partners to these giants, while retaining strategic control over the sector. Joint operation schemes have now been set up to bring private operators into partnership with PT Telkom for line build-out and services in five regions of the country. Six companies have developed cellular systems, the earliest beginning in 1985,

all joint ventures with PT Telkom. In 1995, PT Indosat lost its monopoly over international telecommunications when a privately controlled company, PT Satelit Palapa Indonesia (Satelindo) began offering international services. Satelindo, however, is owned in part by the two state companies, PT Telkom and PT Indosat. A majority share is held by the private sector, with DeTeMobil, a subsidiary of the German Deutsche Telekom, serving as the partner for local company PT Bima Graha Telekomindo. The latter is a subsidiary of the private Bimantara Citra Group controlled by President Suharto's second son, Bambamg Trihatmodjo. The granting of PCS licenses is currently in the works, with operating licenses expected to be granted in 1998. This will create another channel for U.S. equipment sales and service support.

LAOS

Laos offers a smaller market for U.S. companies, both because the country has a relatively small population (just under 5 million in 1996) with one of the lowest incomes per capita in the region and because liberalization of the telecom or other markets has been slow to materialize. The Laos market has been successfully penetrated by large and aggressive Thai firms (IEC, Shinawatra, etc.) whose geographic advantage and lower operating costs for new business development have given them an advantage vis-a-vis U.S. firms. French and Japanese suppliers have also established a strong foothold in this market as suppliers to the state-owned firm, Entreprise des Telecommunications Lao.

MALAYSIA

Malaysia has six mobile operators and five operators with fixed national and international gateway licenses. Foreign companies are allowed to own up to 30 percent of Malaysian telecommunications companies. Further liberalization will occur in 1999 when consumers will be allowed equal access to all the fixed-line operators in the country. Although it is unlikely that large foreign operators will be allowed to provide services in direct competition with local players, rapid growth for telecommunications equipment sales and the Malaysian government's ambitious information technology (IT) plans are likely to increase sales opportunities to the magnitude of billions of USD/year. Specific project opportunities such as the Multimedia Super Corridor and the new electronic city, Putrajaya, also offer significant opportunities to U.S. companies.

THE PHILIPPINES

Until 1993, Philippine Long Distance Telecommunications Company (PLDT), a private company established in 1928, dominated the market. The Philippines government embarked on it liberalization efforts in 1993 by passing new laws and adopting executive orders that divided the country into 11 service areas and enforced interconnection among local players assigned to these areas. There are now 11 international gateway facility

operators, 12 paging operators, five cellular phone companies and 11 local exchange operators, each of which has the capability to launch major expansion projects offering procurement opportunities (though not all of these companies are proving to have the financial or management expertise necessary for this expansion). The sector is overcrowded and consolidation and mergers are expected to help rationalize economies of scale in this sector, leading to the emergence of a handful of major players.

SINGAPORE

One of the largest operators in Asia, Singapore Telecommunications Ltd (Singtel) was privatized in 1992 but has until recently retained a monopoly on the telecommunications services sector. This monopoly ended in April of this year when MobileOne received permission to operate in the mobile phone market. Three other companies are launching rival pager services. Singapore is seen as one of the most progressive voices in the region, having *accelerated* the time line under which Singtel lost its monopoly. The Singaporean government has announced its commitment to making Singapore the showpiece for information technology in the region, and is already well on its way to accomplishing this goal. While Singapore is regarded as a mature market for basic telephone services, it is one of the strongest markets for integrated value-added network services, including advanced data services to serve its growing financial sector. As the region's center for trade and distribution, Singaporean firms also serve a critical gateway function for smaller U.S. firms eager to participate in major procurements.

THAILAND

Thailand's stop-and-go development of the telecommunications network has been a result of political uncertainty and frequent shifts in political power, which show little sign of stabilizing. The telecommunications master plan, which is expected to set forth the overall plan and timetable for liberalizing the sector, has been repeatedly delayed. Additional concessions for new mobile operator and six million fixed lines are also perennially rescheduled, indicating the degree to which the telecom and government authorities are struggling with the liberalization challenge. With new pressures to privatize flowing from the current economic crisis and commitments to both the WTO and APEC, Thailand is expected to make bolder moves in the coming months to move ahead, despite the need to balance the competing interests of strong public sector constituents and local companies. To date, the public sector interests have been effective in shaping the reform process, leading to uncertainty in the granting of new concessions to meet the strong demand growth. The two main state-owned entities, TOT (Telecommunications Organization of Thailand) and CAT (Communications Authority of Thailand) continue to dominate services in fixed line, and also play an important role in many procurement decisions by other agencies. Two additional private companies have been allowed to enter the cellular market as partners to the state entities. The government

is currently scaling back investment plans in the wake of the deterioration in financial market conditions. Despite these difficulties, the government clearly recognizes that telecommunications services remain key to development and is expected to forge ahead in this sector.

VIETNAM

Although further behind in the liberalization process than the other large and established ASEAN economies, Vietnam has experienced double-digit growth in its telecom market and its overall economy. Vietnam's leaders express a strong willingness and interest in working with U.S. firms to upgrade technology, making Vietnam an increasingly attractive market for U.S. equipment suppliers. Under the office of the Prime Minister, telecommunications regulation has been conducted by DGPT (Department General of Post and Telecommunications) while operations are primarily the responsibility of VNPT (Vietnam Post and Telecommunications). Fixed line licenses have been given to the Military Electronic and Telecommunications Company and Saigon Post and Telecommunication Service Corporation (SAIGON PTS. CORP) and provide additional channels for U.S. sales. Three cellular companies, including two private companies, have been licenses to operate. New leadership at both VNPT and DGPT may signal renewed commitment to investment in the sector. Vietnam's goal is to increase teledensity from 1 percent in 1995 to 5 percent in the year 2000. Because private operators are tightly restricted, the best opportunities lie in the area of equipment sales. To a much greater degree than the other ASEAN markets, the Vietnamese market will be influenced by the availability of donor-funded projects. This puts U.S. firms at a disadvantage, because they can compete only for project procurements funded by the World Bank and Asian Development Bank, with bilateral aid programs generally tied (officially or otherwise) to home-country suppliers.

THE EMERGING TELECOMMUNICATIONS POLICY AND REGULATORY ENVIRONMENT

The telecommunications sector has achieved recognition as a major driver of economic growth as well as a major beneficiary of such growth. Nowhere is this more evident than in Southeast Asia, where the rapid expansion of telecommunication systems has begun to lead overall economic growth. Southeast Asian nations increasingly meet and in some cases exceed the international norms for service levels to be expected for countries at their respective income levels (ITU, 1997).

A critical determinant of telecommunications growth is the presence of a regulatory environment that favors an open, competitive marketplace for equipment and services.

Over the past decade, the region has made substantial strides toward achieving such an environment, although there still remains a long way to go.

THE MACROECONOMIC PERSPECTIVE

Despite the setbacks experienced in recent months in Thailand and, to a lesser extent, in Indonesia, Malaysia, and the Philippines, the Southeast Asian miracle continues to set the pace for economic development around the world. The following table summarizes recent growth experience and current income levels in the eight countries targeted by the conference. In this table and throughout the report, levels in China, Japan, and Korea will be presented for comparison, wherever possible.

POPULATION, INCOME LEVELS, AND GROWTH RATES IN SOUTHEAST ASIA

COUNTRY	GDP/CAPITA (1995,US$)	GDP/CAPITA (1992,US$)	POPULATION (1995,MILLION)	1995 GDP/CAPITA AS MULTIPLE OF 1992 (CURRENT$)
Brunei	17,155	15,046	0.284	1.14
Indonesia	1,033	695	194.755	1.49
Laos	329	275	4.603	1.20
Malaysia	4,239	3,120	20.126	1.36
Philippines	1,098	835	67.540	1.31
Singapore	24,181	15,953	2.930	1.52
Thailand	2,770	1,953	59.401	1.42
Vietnam	276	275	73.476	1.00
China	575	415	1214.210	1.39
Japan	36,792	27,035	124.782	1.36
Korea	10,174	7,046	44.853	1.44

Over the past several months, several of the countries of the region have begun to experience serious financial problems. The problems have been particularly serious in Thailand, where the combination of a failure to address shortcomings in the financial and trade sectors, a growing trade deficit, and continuing political uncertainty forced the government to devalue the currency, setting off a chain reaction in other sectors and in the region as a whole. Several other currencies, notably the Indonesian rupiah, the Malaysian ringgit, and the Philippine peso, were forced to devalue as well. Growth prospects have been scaled back to 2-3 percent

in Thailand, far below its typical performance in the 6-8 percent range for Thailand, but other countries have been much less affected.

It remains to be seen whether the impact will be short-lived and confined to Thailand, or whether this crisis signals an overall worsening of the economic performance in the region. While each country is different, many of the middle-income countries in the region (that is, excluding Singapore and Brunei) are wrestling with the combination of stagnant export levels, continuing high imports, and government deficits. Combined with inadequate financial controls, particularly a failure to address overinvestment in speculative property, these macroeconomic conditions may force the governments to rein in growth.

Across the region, however, countries remain committed to achieving high levels of growth in the long term. Growth strategies in each country are based on developing new high-value exports and moving from assembly manufacturing to a more sophisticated mix of high-technology goods and services. This transition both supports and requires a strong telecommunications sector, which has therefore become a focus of the government's growth strategy in every country in the region.

POLICY AND REGULATORY DEVELOPMENTS

The regulatory environment for telecommunications is continuing to evolve in Southeast Asia, as each country finds its own path from state-owned monopoly to a competitive marketplace. In this evolution, some countries have moved aggressively to create the institutional infrastructure for a modern telecommunications sector, while others lag behind.

The following table summarizes the state of this evolution in the eight countries Featured in the conference.

REGULATORY DEVELOPMENT AND MARKET LIBERALIZATION IN SOUTHEAST ASIA

COUNTRY	REGULATOR		FIXED LINE SERVICES	CELLULAR SERVICES	VALUE-ADDED SERVICES
	Independent from operator?	Independent from policy body (telecom ministry)?			
Brunei	No	No	State monopoly	Competition (state dominant)	Competition
Indonesia	Yes	No	State monopoly, joint ventures licenses for specific areas	Controlled competition, in partnership with state monopoly	Competition
Laos	No	No	State monopoly	Competition	Competition (not developed)
Malaysia	Yes	No	State monopoly	Competition	Competition
Philippines	Yes	Yes	Competition, no state companies	Competition, no state companies	Competition, no state companies
Singapore	Yes	No	State monopoly	State monopoly (one private licensed)	Competition
Thailand	Yes	No	State monopoly with competing licenses for line build-out	Competition	Competition
Vietnam	No	No	Monopoly	Monopoly	Limited competition (not developed)

As a broad generalization, the net effect of recent reforms to the regulatory structure is to permit private firms to come into the market as service providers, investors, and suppliers, but only in close cooperation with, and under the strict control of, the state telecom apparatus. In virtually every market, the state-owned company remains the dominant provider, at least for fixed line service, even where competition is allowed. The only real exception to this statement is the Philippines, where a longstanding private monopoly has been transformed into a highly competitive marketplace.

In general, the regulatory environment for cellular, paging, and other value-added services is much more open than the market for fixed line. The state-owned (or state-majority-owned) companies that continue to dominate the telecom market initially viewed cellular as a luxury product that would not compete with their overwhelming market control.

For this reason, cellular, paging, and other value-added services led the way in liberalization. In many countries, including Malaysia and Indonesia, the first licenses for private operators (or quasi-private operators) were granted for cellular services rather than for fixed line. Although the state operators also entered the market, they did so less aggressively and with lower investment than in fixed lines. The result has been that cellular in Southeast Asia was initially and remains a much more privatized and competitive market.

Cellular has also become a much larger share of the total market for basic services, as further discussed in the section below. As cellular technology has evolved, it has become a real alternative to fixed line services, and is even becoming a low-cost solution in unserved rural areas or other low-density areas, where cellular may be the only service offered (so-called wireless local loop). Paging technologies and other low-cost alternatives such as trunked radio, initially dismissed as add-on services, have also emerged as more important elements in the services mix, again with a comparative advantage where services are now unavailable.

An important feature of the regulatory environment in Southeast Asia is that none of the countries allow 100% foreign ownership. The following commitments incorporated into the WTO telecommunications agreement demonstrate the region's unanimity on this issue:

Brunei:	no commitment
Indonesia:	maximum 35 percent
Laos:	no commitment
Malaysia:	maximum 30 percent in existing licenses, no new licenses
Philippines:	maximum 40 percent
Singapore:	maximum 49 percent
Thailand:	maximum 20 percent
Vietnam:	no commitment

This pattern is very different from that in Latin America, where international "strategic investors" have taken a majority share in many of the systems being privatized as well as in new licenses granted. The stronger financial position of companies in Southeast Asia and the greater sophistication of local capital markets has generally made it possible for these local companies to finance the necessary construction and operation of their systems. Whether this will prove to be the case in countries such as Laos and Vietnam, which lack a well-developed private sector, remains to be seen.

System Development in Southeast Asia
A Region-wide Profile of Rapid Network Expansion

The following table summarizes the truly phenomenal growth of the telecommunications systems in Southeast Asia. This growth is expected to fuel investments in the 1996-2000 period of nearly $40 billion, for the basic equipment and construction services alone. Additional investments will be required in a number of areas, most notably in the full range of value-added services, particularly data and Internet-related services, and in satellite/cabling and other international linkages.

The investment requirements shown below come from two sources. The fixed line investment levels indicated represent the most recent estimates prepared by the ITU. The cellular estimates were developed based on projected growth in cellular lines and an estimated investment figure per line of $1200.

Current Levels and Projected Growth of Fixed Line and Cellular Systems in Southeast Asia

	Fixed Lines			Cellular				Total
Country	1996 ('000)	CAGR*	Investment required (1996-2000,$mill)	1996 ('000)	CAGR*	Investment required (1996-2000,$mill)**	1996 ('000)	Investment required (1996-2000,$mill)**
Brunei	77	13.9	40	34	64.4	55	111	95
Indonesia	4,186	31.5	4,000	563	77.3	5,324	4,749	9,324
Laos	26	24.9	15	4	na	31	30	46
Malaysia	3,770	15.5	6,000	1,520	61.2	2,976	5,290	8,976
Philippines	1,787	19.6	7,000	959	115	2,449	2,746	9,449
Singapore	1,429	6.2	410	306	50.5	833	1,735	1,243
Thailand	4,500	21.3	5,000	1,800	74.7	3,840	6,300	8,840
Vietnam	1,186	51.4	1,200	69	na	217	1,255	1,417
Total, S.E. Asia	16,961	184.3	23,665	5,255	na	15,726	22,216	39,391
China	54,940	41.5	105,000	6,850	168.4		61,790	
Japan	61,106	2.7	13,300	11,712	69.7		72,818	
Korea	19,601	6.7	9,500	3,181	84.7		22,782	

Source, ITU
*CAGR = Cumulative annual growth rate, 1990-1996
**Estimated at $1200/line (cellular only; fixed lines source ITU)

The following table demonstrates that, despite this growth, Southeast Asia still has tremendous room for expansion in its telecommunications networks, particularly in the lower income countries. Telephone densities in the middle income countries are moving into the range of upper-income countries. For example, 1996 cellular density in both Brunei and Singapore already exceeds the level in Japan, and the fixed line density in Singapore also approaches Japan's level (47 per hundred compared to 49 per hundred).

The lower income countries have a long way to go, however. Levels in Vietnam and Laos are below those in China, and are far below the APEC target of 10 per hundred for Asian Rim low-income countries. Levels in the middle-income countries are much higher, but only Malaysia has reached the APEC target of 20 per hundred.

SOUTHEAST ASIA'S TELEPHONE DENSITY, 1996 AND PROJECTED 2000

Country	Fixed lines		Cellular		Total		Percent cellular	
	1996	2000	1996	2000	1996	2000	1996	2000
Brunei	26.44	31.86	11.80	25.49	38.24	57.35	30.9	44.4
Indonesia	2.11	3.31	0.28	2.36	2.39	5.67	11.7	41.6
Laos	0.52	0.66	0.80	0.53	1.32	1.19	60.6	44.5
Malaysia	18.25	34.12	7.36	17.06	25.61	51.18	28.7	33.3
Philippines	2.59	8.29	1.39	4.01	3.98	12.30	34.9	32.6
Singapore	46.91	51.72	10.05	30.42	56.96	82.14	17.6	37.0
Thailand	7.57	13.44	3.03	8.40	10.60	21.84	28.6	38.5
Vietnam	1.58	2.53	0.90	0.32	2.48	2.85	36.3	11.2
Average, Asian low income	2.88	5.94	0.35	1.61	3.23	7.55	10.8	21.3
Average, Asian middle income	38.81	50.93	6.90	25.71	45.71	76.64	15.1	33.5
China	4.46	10.00	0.56	2.39	5.02	12.39	11.2	19.3
Japan	48.67	54.99	9.33	31.42	58.00	86.41	16.1	36.4
Korea	43.31	55.08	7.03	31.96	50.34	87.04	14.0	36.7

The density figures above also underscore another important trend discussed elsewhere in this review: the increasing importance of cellular compared to fixed line development.

Cellular is projected to increase as a share of total lines in five of the eight countries, and is expected to exceed thirty percent of all lines in all but two countries.

THE CORPORATE ENVIRONMENT: EMERGENCE OF NEW REGIONAL LEADERS

TRENDS IN THE CORPORATE ENVIRONMENT

The most important single factor in the changing competitive environment in Southeast Asia is the emergence of a group of public and private firms as multinationals. The leading firms include both privatized or partially privatized national companies such as Singapore Telecommunications and Telekom Malaysia but also established private operators from the Philippines and new entrants from Thailand. Thailand remains the only hold-out to privatization, but this situation more accurately represents the political difficulties faced by successive Thai governments in achieving this change rather than a commitment to state ownership as such. On the contrary, successive governments have reaffirmed their commitment to privatizing CAT and TOT, at least in part, but action has been repeatedly delayed. It is expected that the current financial difficulties in Thailand will accelerate this transition, as international players insist on a restructuring to generate government revenues.

The most important of these companies are investment leaders not only in their own countries but also internationally, both in the region and outside it. Regional leaders such as Shinawatra, Samart, Jasmine, Hong Kong Telecommunications and others are making investments outside of their home countries, often in partnership with state-owned firms or other local companies. This is a new trend that is changing the face of telecommunications investment, forcing a move away from the familiar pattern of U.S.-to-Asia or Europe-to-Asia investment toward a much more complex and multidirectional flow.

An innovative feature of this development is the emergence of state-owned companies as multinational investors. Companies such as Singtel and Telekom Malaysia are investing as strategic partners in the telecommunications on a regional and even global basis. Although their success in this experience has been mixed financially, they have nonetheless made a commitment to becoming global players. Telekom Malaysia, for example, has invested in at least two telecom companies in Africa (in South Africa and Ghana), signaling their determination to broaden their base and become leaders on the global landscape as well as the regional and domestic ones.

SOUTHEAST ASIAN COMPANIES WITH MORE THAN $100 MILLION IN ANNUAL REVENUES

PTO	COUNTRY	TELECOM REVENUE, 1996 ($MILL)	EMPLOYEES	SALES/EMPL ($'000)	DEGREE OF PRIVATE OWNERSHIP
Singapore Telecom	Singapore	2,557	6,574	389.0	17%, traded
Telekom Malaysia	Malaysia	2,540	28,846	88.1	23%, traded
PT Telkom	Indonesia	2,130	37,644	56.6	24%, traded
Telecommunications Org'n of Thailand	Thailand	1,370	26,248	52.2	no private holding
PLDT	Philippines	1,088	18,273	59.5	100%
Communications Authority of Thailand	Thailand	773	8,805	87.8	no private holding
AIS	Thailand	520	1,069	486.4	100%
PT Indosat	Indonesia	513	2,365	216.9	35%, traded
TelecomAsia	Thailand	472	2,664	177.2	100%
TRI	Malaysia	426	3,100	137.4	100%
TAC	Thailand	275	1,500	183.3	100%
TT&T	Thailand	189	2,445	77.3	100%
Piltel	Philippines	147	1,033	142.3	100%
Subtotal, area leaders		13,000	140,566	92.5	
Total, all Asian leaders (42)		165,113	1,694,075	97.5	
SE Asia as % of all Asian leaders		7.9	8.3		

Source, ITU

*Figures in italics are estimates or latest year available

ASIA'S NEW TELECOM GIANTS

The fifteen companies listed in the foregoing section are only the "largest of the large."

The table on the following pages brings together information on the most important of Southeast Asia's emerging telecom giants. The table profiles more than 40 companies, both public and private, all of which are service providers in the fixed line, cellular, and/or long distance business. The table shows available information on their ownership structure and known technology/supply relationships. It must be emphasized that this information is incomplete, not least because companies do not always make their strategic relationships public, but we believe that the information offered gives a strong indication of the diversity and

complexity of the emerging marketplace, as well as pointing equipment suppliers and others in the direction of possible partners.

FINANCING THE GROWTH OF ASIA'S TELECOM NETWORKS

The increasing sophistication of Asia's capital markets for telecommunications projects has been a key factor behind the transformation of the marketplace for telecoms investment. The growth of local and regional service providers is made possible by their ability to raise debt and equity capital both locally and internationally.

Most of the funds raised have been through standard corporate instruments (stocks and bonds) that rely on the balance sheet of the corporations for their acceptability in the marketplace. Increasingly, the raising of funds for telecom development will require both project and non-project funding, if the billions of dollars needed are to be forthcoming.

Project finance is gradually replacing sovereign lending as the source of infrastructure finance in developing countries. Although at present only an estimated 10% of infrastructure in Asia is financed on a project basis, this share is growing and, at the same time, project finance is extending from areas where it is well-established, such as power, into new areas such as telecommunications.

Project finance offers both attractive features and drawbacks for the telecom user. On the positive side, project finance by definition is non-recourse or limited recourse funding: the project itself serves as the collateral, so the borrower is not required to pledge shares or, in the case of limited recourse, is not required to make as large or binding a commitment in order to obtain the financing. This offers clear benefits, in the form of reduced risk for the borrower and increase ability to finance projects, even if the project sponsor's own balance sheet cannot bear the weight of the project. The drawback is that project finance can be more expensive than traditional finance, reflecting the increased risk to the borrower. In some cases, project finance can also be more difficult and time-consuming to arrange, due to the more complex requirements for risk management, as further discussed below.

The primary reason that project finance has to date been utilized to a lesser extent than traditional finance is that the project sponsors are generally large, well-

capitalized firms that have been able to raise the funds from their own balance sheets or from such standard practices as issuing bonds on local and international markets. Telecom projects do not suffer from the cash-flow difficulty that restricts the availability of project finance in some other sectors, such as wastewater; on the contrary, telecom projects have proven to be highly profitable, once built. The final phrase is key: many of the firms initially awarded concessions have not been able to meet their build-out obligations. Finance has often been a contributing factor to this problem, but they have also experienced delays due to regulatory problems or, in the case of the Philippines, for example, because new operators have not been able to mobilize the organizational resources needed to build out their networks as quickly as they had committed to doing.

U.S. Competitive Position

U.S. companies are well positioned to participate in all aspects of telecom sector growth in Southeast Asia, but at the same time it is vital that new entrants recognize the highly competitive and sophisticated nature of Southeast Asia's telecom markets. Local companies, both public and private, are in the driver's seat on procurement and strategic alliances both, with the strongest companies courted and pursued by telecom suppliers and service providers from around the globe. These companies expect and receive the highest level of responsiveness and customer service from their suppliers and partners.

Southeast Asia is on the cutting edge of technology development for the telecom sector. Although the emergence of local R&D capability has lagged, most of the world's major telecom equipment firms have a strong presence in the region. New models and new technologies are continually developed and tested in the Southeast Asian market, and then rolled out worldwide.

In this environment, it is clear that only the most up-to-date technologies will find ready acceptance. Suppliers must also show a willingness to respond to customer needs and to develop systems that meet the specific conditions of each market. Simply selling low-end, standard equipment is not a winning strategy for Southeast Asia.

U.S. firms face both advantages and disadvantages in this market, but the balance is overwhelmingly positive. On the plus side, U.S. technology is seen as superior.

Southeast Asian firms recognize that the U.S. is the world's most dynamic and well developed telecom market and they look to the U.S. for new technologies.

On the negative side, many of the European firms, and their governments, have been more aggressive in pursuing opportunities in Southeast Asia. The widespread adoption and use of the European cellular standard, GSM, and the presence of GSM-based suppliers is just one piece of evidence in this regard. European governments have for some time been actively supporting the standards development process to ensure that their firms have a leg up in these markets, often with good results. U.S. firms are not as adept in forming partnerships with their own government in this regard, nor is the U.S. government structured to provide the support needed in this area.

No discussion of the marketplace in Southeast Asia would be complete without mentioning the issue of transparency. In the past, the awarding of licenses, procurement of goods and services, and other aspects of doing business in the sector have often been plagued by charges of corruption, by delay, and by other irregularities. The degree of the problem has varied greatly, and continues to vary, not only from country to country but also from government to government and agency to agency. Singapore lies at one extreme, with the lowest level of corruption in the region. In general, the higher the level of state involvement in the decision-making process, the greater the problems in this area.

U.S. companies are handicapped by their ability to compete head-to-head with European and Asian firms under these conditions. The usual response has been to look to alliances with other companies to avoid running afoul of the Foreign Corrupt Practices Act. Whether the partner is a local firm or an international one, this puts pressure on the U.S. firm to take a smaller role in the alliance in order to minimize its role in decisions that would be questionable under the FCPA.

Despite these difficulties, U.S. telecom firms have been highly successful in penetrating the Southeast Asian market. Virtually all of the major U.S. companies have a strong presence in the region, with investment and manufacturing operations complementing direct sales of goods and services.

Opportunities for small and midsize firms are growing as the marketplace develops the sophistication and depth to support a wide range of value-added services. Internet, data services, private computer networks, and systems management

software are among the areas most likely to offer high-growth opportunities in the near future.

As with the majors, small and midsize companies will need to work closely with a reliable local partner to be successful in Southeast Asia. Selection of a partner must be made carefully, with an eye to the partner's reputation, financial soundness, and commitment to the U.S. partner as well as its ability to grow with the market. The partner's reputation on such key issues as intellectual property protection and after-sales service must also be examined carefully before a final decision is made.

The strong supply chain linkages that characterize telecom technology offer a valuable and underutilized way for U.S. companies to move into this marketplace. Whether the would-be entrant markets primarily to service providers, equipment manufacturers, or consumers, it is likely that the firm's major strategic partners from the United States market already have a strong place in the Southeast Asian market. Their experience and teaming relationships provide a ready point of entry for the small or midsize U.S. firm and their in-country representatives should be among the first stops on any marketing trip to the region.

SPECIAL TECHNICAL NOTE

PROJECT FINANCE: WHAT WILL BE NECESSARY TO EXPAND ITS USE IN THE TELECOM SECTOR?

Project finance has not been used very extensively to date to meet the financing needs of the telecom sector, as noted above. This section reviews some of the issues related to project financing for infrastructure in Asia, with a view to helping U.S. companies unfamiliar with this concept to assess whether this type of support could be of use to them in their Southeast Asian projects.

The mobilization of private funds for telecom development involves a fundamental calculation of risk and return on the part of the many parties involved: the project sponsor, strategic partners both domestic and international, the dominant operator to which the system will connect (if different from the project sponsor), and the government itself. The fundamental task of the project finance community is to identify projects offering an attractive return, and then to mobilize capital to meet the investment requirements in such a way that each party receives a return commensurate with its risk, and that all risks are allocated in such a way that the holders of capital are willing to make their funds available.

This basic task, the allocation of risk and return, is by no means an easy one, given the many areas of uncertainty, constantly shifting market conditions, and the many parties that must all be satisfied at once to close a major project finance deal. As many as twenty or thirty firms may well be party to a single deal, including the following:

- ***Project sponsor:*** the local public or private sector unit that will be the primary client for the project, such as the national power company

- ***Host government:*** the national government, which sets the regulatory environment and may also participate directly as a lender, owner, or guarantor

- ***Project developer/lead partner:*** the private firm or firms that takes the lead in defining the project, seeking finance, and, usually, will take a role in implementation (these roles may be separate, but often are combined in one firm or consortium)

- ***Equity investors:*** investment banks, insurance companies, investment funds, multilateral investment funds (such as the IFC), and others (together with their diverse cadre of advisors) that will hold a share of the investment but not take a direct role in operations

- ***Lenders:*** investors that will loan funds to the project and may include any or all of the capital market players serving as equity investors

- ***Equipment suppliers***: firms that take a role as equity investors, lenders, and/or guarantors and also have a direct role in the project as suppliers

- ***Insurers:*** insurance firms and public agencies (OPIC, MIGA) that provide insurance or guarantees to any of the above as part of the risk-and-return allocation process

Arrangements among these parties are a critically important aspect of the deal's structure. For example, there are numerous ways that loan funds can be structured both among the lenders and between the lender and the project sponsor/developer to trade off return and risk, including pledges of shares in the venture or in the parent company against the loan, senior and subordinated debt to apportion risk among the lenders, etc.

The core group involved in the project financing is surrounded by additional supporting players that help to bring the core group into alignment so that a project can close. Other parties involved in the deal may include:

- ***Investment advisors***: law firms, investment houses, multilateral development banks (e.g., IFC), or consultants retained by the project sponsor, developer or others to advise in the deal

- ***Loan arrangers:*** private advisors retained to help attract private lenders to the deal

- ***Regulatory agencies:*** national and/or offshore bodies that must approve one or more aspects of the deal, or whose rules govern the project (offshore regulators, such as the U.S. SEC, may affect project structure by controlling the types of instruments, such as 144A bonds, that can be placed on international markets)

- ***Technical experts:*** retained by one or more of the parties to conduct engineering and other feasibility studies and/or judge the validity of previous studies

- ***Rating agencies:*** specialized national and international firms that provide professional risk assessment and, thereby, greatly influence the cost of capital to a particular deal

The project sponsor takes the lead in setting the project structure, either alone or, more frequently, in consultation with the project developer and investment advisors. Their decisions determine whether the project will be structured as a concession of existing facilities (usually with an investment requirement), a build-own-transfer project (BOT, or its variants such as BOOT, BOO) to develop new infrastructure, a new private or joint public/private company (such as an independent power producer established as a new joint stock company), or any of a number of variants on these models.

The project sponsor also generally determines how the lead partners will be selected. This process ranges from negotiated procurements, where a project developer approaches a sponsor and negotiates a project without formal competition, to complex prequalification and bidding structures. Both approaches have their risks

With this many players and a process that generally takes several years from start to finish, it is not surprising that many deals do not make it through to financial closure. Each project must survive a gauntlet composed of three types of risk:

- ***Development risk:*** The lead partners, supplier partners, and others seeking to develop a project or to bid on a project developed by others must invest hundreds of thousands of dollars, not infrequently millions of dollars in pursuit of an opportunity that may never materialize. Companies preparing to bid on Mexico City's privatization of its water system, for example, are reported to have spent $20 million in preliminary engineering studies, etc., for a project that was never bid, much less awarded. Lack of support to reduce risks and increase project survival during this critical period remains a serious structural gap in the private infrastructure finance market.

- ***Political risk:*** Twenty years ago, basic infrastructure was regarded as the exclusive domain of government in developing countries, a natural monopoly for which private markets were not appropriate. Although this view has now reversed in part, the host government retains a significant role in regulating infrastructure project operations, as well as the overall climate for investments of any kind. Infrastructure investors face such political risks as direct expropriation, so-called "creeping expropriation" (in which the equity value is eroded away over time by unfavorable tariff and regulatory decisions), currency or profit repatriation barriers, tariff inflexibility, etc. Because these factors depend heavily on government decisions, and governments change, assessment of this risk is a key part of the process.

- ***Commercial risk:*** Even in OECD markets where the two previous categories of risk are minimized, project developers face substantial risk in the form of uncertainties regarding construction timing and cost, operating costs, the price of key inputs (e.g., coal or gas for a power plant), and unforeseen competitive developments (e.g., new technologies lowering the market price unexpectedly). These risks tend to be greater in developing countries, particularly those associated with construction and operation in conditions where key factors such as permits, transport availability, and labor/union performance cannot be fully controlled.

The figure below summarizes risks in each area, and summarizes some of the strategies available to developers and sponsors to minimize or address these risks. The central point that emerges from this chart and the above discussion is that the main source of risk in project finance is the local government itself. The government has tremendous ability to reduce risk, and thereby reduce project financing and development cost, increase competition among developers and financiers, and increase the number of projects that come forward successfully. By contrast, if the government neglects to reform a complex, opaque, unresponsive regulatory regime or to secure the government payment and performance regime, the end result will be fewer projects, longer development times, and more expensive services to the population.

Within the project cycle, experience indicates that the two riskiest points for a project are the transition from development to bid and from award to financial closure. Many projects do not reach the point where formal bids are even called for, although the point at which this failure occurs is not always visible, even to participants in the project itself.

Many projects also stall in the transition from award to closing of the financing, for financial or structural reasons. The development of the project financing package proceeds in parallel with the project as a whole. It begins during the development phase, when the developer(s) may begin to assemble their financial package and seek partners, and must certainly determine overall profitability as the basis for going forward. It continues during the bidding process, when bidders must demonstrate their ability to bring the necessary financing to the table.

The award of the project does not signal a successful project financing, however, because the financing cannot be finalized until ***after*** contract award and, indeed, contract signature. The major effort required to finalize a deal involving as many as 20 to 30 parties is not worth undertaking unless the contract is actually in place. Moreover, the details of the deal are equally dependent on the final award conditions (e.g., price or service conditions negotiated during contract finalization) and changeable market conditions (e.g., shifting interest rates), which cannot be determined with certainty until the contract is signed and the financial placements go "live."

The parties to a major project financing must develop a deal that they expect to stand the test of time over the 15-30 year maturity of the debt and to provide a satisfactory return to investors during that period. The range of situations and possible problems that must be assessed to reach this level of assurance in a rapidly developing country such as Indonesia is very wide indeed, and many of the possible investors (e.g., U.S. pension funds such as TIAA, a partner in Paiton power) are only beginning to acquire expertise in assessing these risks.

The foregoing brief outline of the project finance challenge only skims the surface of this complex subject, and does not address such key issues as, for example, differences in financiability between different types of projects (power versus transport versus water, etc.) nor among different types of project sponsors or developers (local versus national or international, etc.).

This presentation highlights the complexity of the process and, by implication, the key role that local institutions and market conditions play in making the whole, complex venture feasible. It is a difficult and risky task to develop a commercially attractive project that meets the needs of all the parties to the deal, and, once a contract has been signed, to allocate the risks and returns adequately among these parties to reach a financial closing. These tasks are made much more difficult, or impossible, if the local project sponsor lacks even a rudimentary understanding of the options available and the needs of the different parties. An uncertain political climate and an unclear or unfavorable regulatory requirement can clearly block an otherwise attractive project from going forward.

Infrastructure project finance is currently a buyers' market. The project developers, investors, and lenders are the buyers and the project sponsors are the sellers who must convince the project finance nomads to set up camp in their town, rather than another town down the road or across the globe. There are many more projects seeking finance than could possibly be developed, given the high cost of this process at its current stage of development.

NON-COMMERCIAL SOURCES OF PROJECT FINANCE RISK AND STRATEGIES FOR MANAGEMENT

Note: the following list illustrates some of the principal sources of risk and strategies to allocate or reduce such risk, but is by no means all-inclusive in either category.

Source of Risk to Project Financial Viability	Potential Project Management Response
Development Risk	
Local project sponsor fails to pursue development of project	Strong support for private project finance from national government
Unclear regulatory environment	Strengthening of regulatory environment, removal of barriers to private finance
Local political opposition blocks private project	Outreach to community during design to educate opposition and local leaders on the process and its benefits
Country/Political Risk	
National Government	
Devaluation reduces value of local revenues relative to external finance	Currency risk allocated to national government or local source
Project expropriation, currency controls, etc.	Political insurance from private or public source
	Involvement of Export Credit Agencies from major OECD countries
	Strong local partner
Local Government or Authority	
Non-payment of fees by local authority	Payment guarantee from national government
	Large operating reserve, fed by automatic payment beyond control of local government
Inability to adjust tariffs to reflect cost increases	Strong regulatory regime with specific mechanism for tariff adjustment and transparent implementation
Failure to live up to obligations (e.g., rights of way)	Strong regulatory regime and reliable courts system

MAIN TELECOMMUNICATIONS SERVICE PROVIDERS IN SOUTHEAST ASIA

Note: the following information has been collected from a number of sources, all current to 1996/1997. While every effort has been made to make it complete and up-to-date, the rapidly changing nature of the telecom industry makes this difficult to achieve.

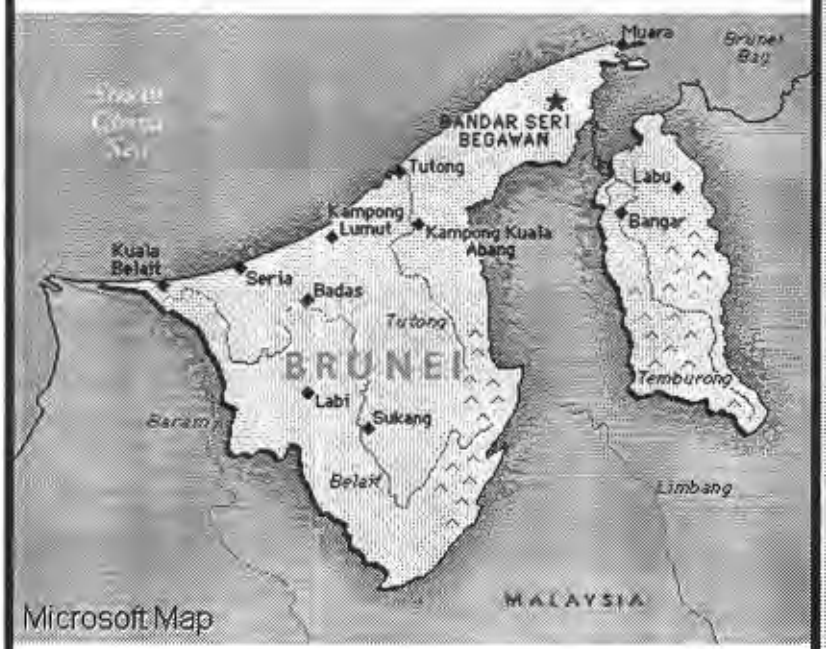
Company Name (including DBAs)	Country	Ownership	Other known alliances, technology, and procurement relationships
DST Communications (Data Stream Technologies)	Brunei	Private 100%	AT&T GSM
Jabatan Telkom Brunei	Brunei	State-owned 100%	Cable & Wireless, AT&T/GSM, AMPS/Motorola, NEC
Aria West International	Indonesia	PT Artimas Kencana Mumi 52.5%, Asian Infrastructure Fund 12.5%, US West 35%	fixed line
Bukaka Singtel International	Indonesia	Bukaka Telekomindo 60%, Singtel 40%, PT Telkom	fixed line
Daya Mitra Malindo	Indonesia	Intidaya Sistelindomitra 29.2%, Alatief Nusakarya 24.2%, Cable & Wireless/UK 225%	fixed line
Excelcomindo	Indonesia	Bell Atlantic/Nynex 20% (also reported as 23%)	GSM
Komselindo	Indonesia	PT Telkom, Elektrindo Nusantara	Successor to PT INTI, AMPS, Motorola supplier
Metrosel	Indonesia	First Pacific/HK 35%	AMPS
Mitra Global Telekomunikasi Indonesia	Indonesia	Indosat 30%, Telstra/Aus. 20%, NTT/Japan 15%, PT Telkom	fixed line
Mobisel, PT Mobile Selular Indonesia	Indonesia	PT Rajasa Hazanah Perkasa, International Wireless Communications/U.S. 20%, PT Telkom	NMT/Ericsson
Pramindo Ikat Nusantara	Indonesia	CP Group 22%, Nynex/Bell Atlantic 13.5%, France Telecom 35% (joint venture PT Astratel Nusantara has total 47.5% share), PT Telkom	fixed line
PT Indosat	Indonesia	65% state, 35% private, traded	long distance
PT Telkom	Indonesia	76% state, 24% private, traded	local loop, cellular, Ericsson a supplier
Satelindo	Indonesia	Bimagraha 45%, DeTeMobil 25%, PT Telkom 22.5%, PT Indonesia 7.5%	GSM

Telkomsel, PT Telekomunikasi Selular	Indonesia	KPN/Netherlands 17%, PT Telkom 42.7%	GSM
Lao Shinawatra	Laos	Shinawatra/Thailand, 30%	GSM
Binariang	Malaysia	Usaha Tegas 33% (Ananda Krishan group), US West 20%	Motorola/Siemens, operates MEASAT satellite
Celcom	Malaysia	TRI (Cataban Nominee) 13%, Deutsche Telekom 21%	Acquired MRCB, uses ETACS, Ericsson GSM, long distance, trunk radio
Mobicom	Malaysia		Ericsson AMPS
Mutiara	Malaysia	Swiss Telcom 30%, Berjaya group	Ericsson PCN, DCS1800
Syarikat Telefon Wireless (in other sources "Telecom")	Malaysia	Private 100%	wireless local loop, nationwide cellular
Telekom Malaysia	Malaysia	77% state, 23% private, traded	
Time Telekom	Malaysia	Time Engineering (Renong Group), Hatibudi 34%, traded	Acquired Sapura (Nokia technology), Alcatel supplying cellular
Capwire	Philippines	Santiagos group, Korea Telecom 20%	International long distance
CMCR	Philippines	Private	Handyphone
Digitel	Philippines	Gokongweis group (JG Summit Holdings), Telia/Sweden 10%, Jasmine/Thailand 2.5%	Operares new Luzon backbone
Extelcom (Express Telecom)	Philippines	Millicom/Luxembourg 40%	Motorola AMPS
Globe	Philippines	Ayala group, Singtel 40%	
ICC (BayanTel)	Philippines	Benpres group (Lopez) 75%, Nynex/Bell Atlantic 15%	Cellular, Scientific Atlanta
Islacom	Philippines	Delgados group (Asia Communications Company), Shinawatra/Thailand 30%, Deutsche Telekom 10% (also reported as Shinawatra 24%, DeTe 20%)	Siemens/Motorola GSM
Philcom	Philippines	Enrile group, Yuchengcos group	
Piltel (Pilipino Telephone)	Philippines	Private 100%	Cellular Mobiline: AT&T
PLDT	Philippines	Cojuangco group, traded	Cellular system CMTS
PT&T	Philippines	Telectronic, A2 Telecom, Korea Telecom 20%	
Smart	Philippines	Metro Pacific 35%, First Pacific/HK 28%, NTT/Japan 12%	
MobileOne	Singapore	Keppel Group, Cable and Wireless, Hong Kong Tel 15%, Sing Press Holdings	Cellular (GSM/CDMA) and paging

Singapore Telecom (Singtel)	Singapore	State-owned 83%, private 17%, traded	Fixed line: Alcatel/Fujitsu, SingtelMobileLink: AMPS, GSM, ETACS, DCS1800, PDC, PCN; paging: Singtel Pagelink/Motorola; mobile datta: DataRoam
AIS	Thailand	Shinawatra Computer and Comm., 58%, traded	Cellular, NMT/GSM
Communications Authority of Thailand, CAT	Thailand	State-owned, 100%	Long distance, cellular/AMPS
TAC	Thailand	100%	Cellular, AMPS
TelecomAsia	Thailand	CP Group 22%, Nynex 13.5%	25-yr. BTO to TOT
Telecommunications Org'n of Thailand, TOT	Thailand	State-owned, 100%	
TT&T	Thailand	Jasmsine 21%, Loxley 19%, NTT/Japan 18%	25-yr. BTO to TOT
Mobifone	Vietnam	Millicom/Luxembourg 45%	GSM
VNPT	Vietnam	State-owned, 100%	Fixed line, GSM
Viniphone	Vietnam	State-owned, 100%	GSM

BRUNEI

Country Profile
Telecommunications Sector Overview
Projects:
➢Service Hub for Trade and Tourism (SHuTT) ➢JTB Network Development



The boundaries shown do not imply, on the part of U.S. Government, any judgement on the legal status of any territory.

Negara Brunei Darussalam
Profile
As of 1996

Capital - Bandar Seri Begawan
Population - 296,000
60% urban population
GDP per Capita - US$17,071

Telephone Density - 26%

Waiting List for
Telephone Lines - 1,438
Cellular Subscribers - 35,885
Paging Subscribers - 9,980
Telex Subscribers - 352 (1995)
Public Pay Phones - 140 (1994)

International Outgoing
Traffic (million calls) - 30.68 (1995)

Network Digitization
Switching - 100% (1995)
Transmission - 100% (1994)

GEOGRAPHY:

Location: Southeastern Asia, bordering the South China Sea and Malaysia **Geographic coordinates**: 4 30 N, 114 40 E **Comparative area**: slightly larger than Delaware **Climate**: tropical, hot, humid, rainy **Terrain**: flat coastal plain rises to mountains in east; hilly lowland in west **Geographic note**: close to vital sea lanes through South China Sea linking Indian and Pacific **Oceans**; two parts physically separated by Malaysia; almost an enclave of Malaysia.

COUNTRY PROFILE

PEOPLE

Nationals in Brunei are known as Bruneian(s). The official language is Malay, and the population consists of 64 percent Malays and 20 percent Chinese. 63 percent of the people follow the official religion, Islam, while 14 percent are Buddhist. Malay is the official language, although English and Chinese are spoken by a wide spectrum of the population. The prevalent dialects among the Chinese are Hokkien, Hakka, Cantonese, and Mandarin.

POLITICAL OVERVIEW

Brunei declared independence from the United Kingdom on January 1, 1984 and formed a constitutional sultanate government that is still in place today. Up until its separation from the UK, Brunei was a British protectorate with British administration under the resident system. The Constitution was adopted on September 29, 1959. Some provisions have been suspended under a State of Emergency since December 1962, others since independence on January 1, 1984.

Sultan and Prime Minister His Majesty Paduka Seri Baginda Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah is the present ruler of the country, and is the 29th in the line of a Malay-Muslim dynasty that has ruled Brunei since the 14th century. Since the Sultan ascended the throne in October 5, 1967, he executed a modernization program that transformed Brunei into a nation ready for the 21st century.

Brunei is divided into 4 administrative districts, Belait, Brunei and Muara, Temburong, and Tutong. The 11-member Council of Ministers, or cabinet, comprised primarily of royal family members, assists in the administration of the government. The sultan presides over the cabinet as Prime Minister and also holds the position of minister of defense. Two of the sultan's brothers serve as ministers of foreign affairs and finance. The Religious Council advises His Excellency on all national religious matters. The Privy Council deals with constitutional issues. The Council of Succession determines the succession to the throne if the need arises.

The legislative branch is comprised of a unicameral Legislative Council (Majlis Masyuarat Megeri). Elections were last held in March 1962, and in 1970 the Council was changed to an appointive body by decree of the sultan. An elected Legislative Council is being considered as part of constitutional reform, but open elections are unlikely for several years.

Brunei's legal system is based on English common law and Sheria, the Islamic code of law. The system consists of an independent judiciary, a body of written common law judgments and statutes, and legislation enacted by the sultan. The local magistrate's courts try most cases. More serious cases go before the High Court, which sits for about two weeks every few months. Brunei has an arrangement with the Government of Hong Kong whereby Hong Kong judges are appointed as the judges for Brunei's High Court and Court of Appeal. Final appeal can be made to the Judicial Committee of the Privy Council in London in civil but not criminal cases. The chief justice and all other judges are appointed and sworn in by the sultan for three-year terms.

The Government of Brunei ensures continuing public support for the current form of government by providing a vast array of economic benefits such as subsidized food, fuel and housing, free education and medical care, and low-interest loans for government employees.

THE ECONOMY

Brunei's territory encompasses enormous oil and gas reserves, so the economy is overwhelmingly dependent on the production and export of crude oil and natural gas. Oil fields were first discovered at Seria in 1929, but production has now expanded to offshore fields. Crude-oil output in the early 1990s was about 63 million barrels a year. Revenues from the petroleum sector account for more than 40 percent of GDP, with financial reserves reportedly valued at more than US$30 billion.

Production of rubber, pepper, and animal hides accounts for a minor portion of the economy. Domestic cultivation of the chief food crop, rice, does not meet national needs. Local industries include cloth weaving and metalwork. Exploitation of the country's forest reserves is on the rise. The country has about 2248 km (about 1348 mi) of roads and 19 km (12 mi) of railroad. The chief ports are Bandar Seri Begawan, Kuala Belait, and Muara.

The country's wealth, coupled with its membership in the Association of Southeast Asian Nations, give it influence in the world disproportionate to its size. Substantial income from overseas investment supplements domestic production. Per capita GDP is among the highest in the World, and the sultan of Brunei is the world's wealthiest individual.

BRUNEI'S TRADE PROFILE			
Description	1993	1994	1995 (e)
Total Exports ($ Million)	2,280	2,215	2,746
Total Imports ($ Million)	1,181	1,562	2,042
Merchandise Trade Balance ($ Million)	1,099	653	704
Exports to U.S. ($ Million)	30	46	38
Imports from U.S. ($ Million)	478	376	189
U.S. Trade Surplus ($ Million)	448	330	151

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN BRUNEI

Brunei Darussalam celebrates its National Day on February 23. Government offices are closed on Friday but open on Saturdays. Most private offices are open Monday through Friday. Visitors should avoid visiting Brunei during the Ramadhan fasting month, which varies from year to year. Islam, the state religion, is scrupulously observed in Brunei. Drinking of alcohol by Muslims is strictly forbidden. A more reserved approach to business contacts may be advisable; negotiations must be handled delicately and discreetly; an overly proactive stance may backfire.

Deals are seldom if ever signed on the spot, so be prepared to follow local customs in establishing an ongoing relationship with those with whom one is negotiating before expecting a final closing. Business visitors should be prepared to make more than one visit in order to create a business relationship. Return visits by representatives of firms interested in establishing commercial relationships in Brunei are seen by national officials as a signal that a company or individual is serious about doing business in Brunei Darussalam.

TELECOMMUNICATIONS SECTOR OVERVIEW

Telecommunications services in Brunei Darussalam are largely provided by Jabatan Telekom Brunei (JTB). JTB was established in 1952 and is fully owned by the Government of Brunei. JTB operates as a department within the jurisdiction of the Ministry of Communications. Although there have been discussions, there are no concrete plans for privatization of the sector at present.

Brunei Darussalam has over the last decade enjoyed a healthy development in telecommunications services. In telephone line density for instance, it has increased to 26 telephone lines per 100 population in 1996, from 9 telephone lines per 100 population in 1984. It is forecasted that it will reach a penetration factor of 35 per 100 by the year 2000. Meanwhile, the mobile telephone service industry has registered a very rapid growth since its introduction in 1989. There are now over 40,000 subscribers with a density of 16 telephones per 100 population – one of the region's highest. A recent development in the cellular system was the installation of GSM mobile system.

In the first quarter of 1996, JTB formed an alliance with five other ASEAN partners to create the ASEAN Telecom Holdings Sdn Bhd (ATH). The six partners, which will each have an equal share, include the following in addition to JBT: the Communications Authority of Thailand (CAT), Philippines Long Distance Telephone Company (PLDT), PT Indosat (INDOSAT), Singapore Telecom (SingTel) and Telekom Malaysia Berhad. This alliance is expected to enable each member to provide better customer service. ATH's business and marketing arm is called ACASIA Communication Sdn Bhd.

KEY PLAYERS (GOVERNMENT AND PRIVATE)

In addition to Jabatan Telekom Brunei (JTB), DST Communications Sdn Bhd (DSTCom), a private cellular company, has been operating cellular services since April 1995.

REGULATORY REGIME AND MARKET ACCESS

Under the Ministry of Communications, JTB currently serves as Brunei's regulator. In preparation for the eventual privatization of JTB, the Ministry of Communications has recently set up a new regulatory unit and taking over from JTB the responsibility of addressing all regulatory issues in Brunei Darussalam in particular licensing, frequency allocation and policy development.

Brunei Darussalam has over the last few years adopted progressive liberalization and deregulation in its telecommunications services provision as well as telecommunications equipment supply. In early 1990 , the government liberalized the sale of Customer Premises Equipment such as telephone sets and PABXs and telephone cable internal wiring.

The year 1995 marked yet another important restructuring when effective 1 April that year the operations and maintenance of AMPS Cellular Mobile System was transferred to a local private company (DST Communications Pvt. Ltd) This was the first major privatization exercise ever undertaken by the government in the telecommunications sector. The government is now considering transforming he whole of JTB into a private company.

Brunei Darussalam recently made another significant move by submitting its final offer in GBT. The final offer from Brunei Darussalam covers basic telecommunications services like Public Switched Voice Telephone Services both local and international and Public Cellular Mobile Telephone Services.

In Brunei Darussalam, privatization and the liberalization of the telecommunications services are selectively considered and implemented due to the fact that it is a small country with a small market and limited resources in a high cost infrastructure and in an environment of rapid technological changes.

Competition will be introduced gradually and selectively managed with clear regulatory measures. The structure of each service industry will be reviewed and changed to improve the quality of service, and efficiency.

EXISTING NETWORKS

Brunei has one of the most technically developed networks in the region, although it remains a relatively small system reflecting the nation's small population. During the Sixth National Plan from 1991 to 1995, JTB completed the digitalization of its network and increased the number of working main lines to approximately 62,000.

For the Seventh National Plan from 1996 to 2000 the telecommunications sector budget is $394.5 million (Brunei $). This will be applied to continue network expansion and increase the teledensity to 35 percent at the end of the plan period. At the end of 1996 the total number of main lines was approximately 83,000 and a teledensity of 26 percent. The recorded waiting list was less than 1,500. Wireless local loop and other new technologies may shorten the waiting list and increase teledensity more rapidly.

The network consists of 20 host exchanges (No. 5ESS and EWSD) plus two No. 5ESS tandems and two No. 5ESS international gateway exchanges. JTB's transmission network is also 100 percent digital, using both optical fiber and digital microwave systems to allow higher traffic and diverse routing options between exchanges. JTB has 950 kilometers of optical fiber.

The digitalization of the network has enabled JTB to introduce new services and products including:

- ISDN Services at basic rate access of 64 KB/s capable of supporting high quality and reliable videophones, low speed video conferencing, direct inward dialing and data access.

- VSAT services to serve corporate customers for intra-regional communications.

- One-stop shopping through the ASEAN Telecom Holding Alliance (Acasia).

- JTB offers "Phone Extra' services to subscribers. These services include abbreviated dialing, call waiting, transfer, three-party conferencing and electronic lock. About 24 percent of all working lines are for the provision of enhanced services.

- JTB provides INTERNET services through BruNet, launched in October 1995. Roaming with SingNet of Singapore complements the service for BruNet subscribers.

- Nationwide paging service provides numeric and alphanumeric display and the interface to dual-tone multi frequency telephone sets, telex machines and personal computers. JTB provides a Message Center that complements the paging service.

In 1988, JTB introduced magnetic card phones to complement the existing coin-operated telephones that have existed for some time. There are at present more than 1100 installed public phones, approximately 3.5 phones per 1,000 inhabitants compared to the 1.29 world average.

CELLULAR SERVICES

In answer to the Government's call for privatization of designated Government departments, DSTCom was formed in April 1995, and was granted a license to operate mobile communications in Brunei Darussalam. At that time there were 1800 mobile subscribers. After one year of operation, DSTCom increased its market share to 34,000 -- a 90 percent increase in subscriber base, with 11 percent of the population using mobile phones. At the end of March 1997, DSTCom had approximately 45,000 subscribers using both AMPS and GSM technologies.

DSTCom participates in the goal of making Brunei Darussalam a Service Hub for Trade and Tourism (the ShuTT project) by the year 2003 and is preparing for the anticipated increase in demand for mobile telephones and increased traffic brought about by the burgeoning business in the Brunei-Indonesia-Malaysia-Philippines East Asia Growth Area (BIMP-EAGA).

International Roaming services were introduced in 1995 with Mobikom Malaysia and with Mobile Link of Singapore. DSTCom has also signed international agreements with AT&T, Singapore Telecom and the Marubeni Corporation for supplies and technical assistance.

DSTCom has also introduced the SIM card, the device without which a mobile phone is inoperable. A personal SIM card can be inserted into another compatible phone and the calls then made will be charged to the customer whose account is on the SIM card. The SIM card is operated with a PIN number.

DSTCom's GSM phones have additional special features including call forwarding, call waiting, call barring, three party conferences, reminder calls and, later, short message service and voice mail service will be available.

INTERNATIONAL SERVICES

JTB provides international direct dialing to more than 187 countries through two international gateways, two satellite systems and a network of optical fiber submarine cables. JTB has slashed its international tariffs by up to 66 percent in response to competition.

SATELLITE SYSTEMS

One of Brunei Darussalam's main transport vehicles for international traffic is the two fully digital standard "A" satellite earth stations. One points towards Intelsat's Indian Ocean Region (IOR) and the other towards the Pacific Ocean Region (POR) satellites. These stations are currently providing 24 direct routes to 19 destinations with a total of 155 high quality IDR circuits. With that Brunei Darussalam has also allowed the installation of TVRO since April 1995.

SUBMARINE CABLE SYSTEM

Brunei Darussalam has two submarine cable connections: one with Singapore (B-5 cable) and another one with Malaysia and the Philippines (8-M-P Cable). Through these cables Brunei Darussalam is directly connected to ASEAN countries, Australia, Europe, America, China and other economies of APEC. In addition, as of 14 January 1997, Brunei Darussalam signed an agreement for an integrated digital cable system within 36 countries of South East Asia, the Middle East and Western Europe (integrated SEA-MF-WE3). This cable system is expected to be fully implemented by 30 March 1999 so that Brunei Darussalam will have direct fiber connectivity to the Far East, South East Asia, Indian Sub-Continent, the Middle East, North Africa and Western Europe at competitive circuit prices on an ownership basis.

TRENDS AND OPPORTUNITIES

As part of the effort to realize the national vision of making Brunei Darussalam as a "Service Hub for Trade and Tourism" the Ministry of Communications has recently called for the construction of Brunei Information Infrastructure or BII. The realization of a true BII will hopefully be achieved during the government's seventh five-year development plan 1996-2000. The government through JTB will construct the physical infrastructure through the introduction of ATM and ISDN services, an Intelligent Network system, a new (7-digit) numbering plan, the upgrading and expansion of digital exchanges, packet switched data system, international gateways, transmission network, trunk radio systems and others. In this regard, the private sector is encouraged to participate as a source of innovations, developing applications and delivering the multimedia services to the customers. The plans for ShuTT are outlined in the project section of this briefing book.

COMPETITIVE ENVIRONMENT

Brunei's remote location and small population has not made it a priority for many U.S. firms. With extensive natural resources and great wealth, capital has not been a problem in developing the telecommunications network. The British are known to have been influential in the development of the country's telecommunications network to date yet U.S. firms are well positioned to provide the type of products and services needed for the future development of Brunei's IT and telecommunications networks.

CONTACTS

BRUNEI MINISTRY OF COMMUNICATIONS

H.E. Pehin Orang Kaya Amar Pahlawan Dato Seri Setia Awang Haji Zakaria bin Datu Mahawangsa Awang Haji Sulaiman, ***Minister***
Bandar Seri Begawan 1150
Telephone: 673 2 38 38 38
Facsimile: 673 2 38 01 27

Dato Paduka Malai Haji Ali bin Malai Haji Othman, ***Permanent Secretary***
Telephone: 673 2 38338
Facsimile: 673 2 20127, 673 2 39966

Dato Awang Haji Abdullah bin B.M.D.P. H. Abu Bakar, ***Special Duties Officer***

Mr. Awang Buntar bin Osman, ***Director of Telecommunications***
Jabatan Telekom Brunei (Telecommunications Department of Brunei)
Old Airport Berekas
Bandar Seri Begawan 2051
Telephone: 673 2 382382
Facsimile: 673 2 382445
email: dirJTB@brunei.bn.

Pengiran Haji Shahminan bin PSI Pengiran Haji Ismail, ***Managing Director***
DST Communications Sdn. Bhd.
No. 400, Kg. Anggerek Desa
Km. 8, Jalan Berakas
Brunei Darussalam 3786
Post office Box 2, Gadong Post Office
Gadong 3100
Brunei Darussalam
Telephone: 673 2 338888
Facsimile: 673 2 338358

U.S. EMBASSY

Mr. William Moore
Deputy Chief of Mission
Teck Guan Plaza, 3rd Floor,
Jalan Sultan
Bandar Seri Begawan
Brunei Darussalam
Telephone 673 2 229670
Facsimile 673 2 225293

BRUNEI DARUSSALAM

SERVICE HUB FOR TRADE AND TOURISM (SHUTT)

PROJECT DESCRIPTION

Project Summary

Project Cost: $40+ million

Project Sponsor: Jabatan Telekom Brunei (JTB)

Required Technology: Video, data transfer, multimedia, intelligent network services, ATM services, fiber optic access network.

JTB has set a vision to become a world-class telecommunications services provider by the year 2000 and is preparing plans and strategies to support the national vision of becoming a Service Hub for Trade and Tourism (ShuTT) by 2003. A substantial amount in the budget of the seventh 5-year National Development Plan has been allocated for the development of telecommunications and will provide the platform for JTB to bring "Infocommunication" technology to Brunei Darussalam by developing the Brunei Information Infrastructure (BII). The BII will, first, transform the JTB toward a business orientation (e.g., the administration has adopted a customer charter and will focus on increasing employees' skill and competency level, marketing and business development). JTB has also committed itself to providing a full range of telecommunications services, including multimedia, through network and infrastructure development.

The improved network of the future will enable JTB to introduce: video on demand (VOD), data transfer and other multimedia services, intelligent network (IN) services for personal communications and global access; and ATM services through a fiber optic access network to provide greater bandwidth at varying speeds, for broadband ISDN, high volume data transfer and multimedia services.

The ShuTT project will require the deployment of fiber optic cable rings using Synchronous Digital Hierarchy (SDH) technology to international digital SDH standards. The future of SDH lies in its ability to allow direct access to tributory signals without demuxiplexing the composite signal. This results in less costly network nodes because direct muxiplexing is cheaper than step by step multiplexing.

Once the SDH transmission facility is deployed, ATM switches will be installed at strategic locations and will provide an efficient service platform for mixed voice, data, and video traffic. This will then enable the following applications to be used:

- Paperless multimedia information storage and applications for electronic government administration and commercial entities.
- Direct application of Internet Service Providers (ISP) by connecting at least two ISPs.
- ATM switching platform instead of routers for routing messages, files, and browsing activities at ISP's Point-of- Presence (POP) .
- Direct transiting of Basic Rate ISDN services over the trial link. Trial service of Primary Rate ISDN (2.048 Mb/s) and larger B-ISDN services.
- Telemedicine information center database for electromagnetic imaging, real time centralized health monitoring for remote sensing of vital signs, live video surgery for remote support and educational purposes, and a multitude of other such medical innovations.
- Distance learning using clusters of learning centers to produce world class graduates using interactive video syllabuses.
- Remote manufacturing coordination and engineering support from centralized production management centers.
- Electronic publishing of multi-lingual tourism information.
- Financial and investment information and data center applications.
- Multi-purpose smart card implementation for use with superior security features.
- Video on demand. Dial-up video services for downloading feature films, games, etc.
- Multimedia interactive video telephone service.
- Capturing non-ATM native protocol services by using Frame Relay network transiting the ATM network.

The SDH transmission loops will be connected to two international gateways. JTB acknowledges the need to cooperate with other government agencies, businesses, health authorities, educational institutions, and content providers to help realize the BII.

PROJECT FINANCING

Estimates for total project costs are in excess of $40 million. Most equipment procurements by JTB are financed from the JTB internal budget and concessionary financing packages are not listed as a priority to by JTB.

STATUS OF PROJECT DEVELOPMENT

The target date for completion is the year 2000. The final planning stages of the system architecture and technologies to be deployed are being undertaken by JTB. Final recommendations will then be submitted to the JTB Board of Directors for approval. At this time no decisions have been taken or contracts awarded.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

U.S. firms offer leading technology related to data transfer, multimedia, intelligent network services, ATM services, and fiber optic access networks. All of this equipment will need to be imported into Brunei.

DECISION MAKING PROCESS

JTB will issue request for proposals for all their equipment procurements which will be subject to a competitive bidding process.

CONTACTS

Mr. Awang Buntar bin Osman
Director of Telecommunications
Jabatan Telekom Brunei (Telecommunications Department of Brunei)
Ministry of Communications
Old Airport Berekas
Bandar Seri Begawan 2051
Tel: 673 2 382382
Fax: 673 2 382445
email: dirJTB@brunei.bn

BRUNEI DARUSSALAM

JTB NETWORK DEVELOPMENT

PROJECT DESCRIPTION

Jabatan Telekom Brunei (JTB) has several projects planned to develop its network.

ATM Deployment: Under the seventh 5 year National Development Plan that covers from 1996 to the year 2000, new ATM switches will be installed at strategic locations and linked to each other to form a number of closed loops using the latest SDH fiber-optic cable systems. Each loop will be connected to two international gateways. JTB acknowledges the need to cooperate with other government agencies, businesses, health authorities, educational institutions, and content providers to help realize the BII. The target date is 2000.

Project Summary

Project Cost:
ATM: US$3 million
VSAT: US$ 3 million
WLL: US$3.6 million

Project Sponsor: Jabatan Telekom Brunei

Required Technology:
ATM switches
Fiber optic cable systems
VSAT equipment

VSAT: As part of its vision and plan for 2000, JTB plans to introduce Demand assigned Multiple Access Very Small Aperture Terminal technology to Brunei Darussalam. The plan calls for a number of VSAT sites throughout Brunei with high traffic routes to Intelsat satellites at 60 degrees east and 174 degrees east and low traffic routes to the ASIASAT satellite at 100.5 degrees east.

The U.S. company ViaSat and Hutchison Telecommunications are working together on a Carrier Access (CA) network for intra-national and international telephony service in Asia. CA will provide per-minute services to terrestrial carriers throughout the region. Connections will be among new international gateways, while at the same time bypassing "traditional" transit points. Initial SS-5 International Traffic Stations are planned for Brunei, Kuala Lumpur, Pakistan, and Shanghai with future expansion across the region.

The NCS for this network is providing "quadruple redundancy" with backup systems both at the primary Hong Kong location and at the secondary location in Singapore. In addition, various subscribing carriers will have geographic remote access to the NCS. Using 3.7 m VSATs for gateways, the system supports 1800. 16 Kbps voice circuits per 72 MHz of transponder bandwidth, at a rate of 500 calls per minute per DAMA controller.

Wireless Local Loop (WLL): JTB introduced the first digital access network based on CDMA in 1996. The goal of this commercial pilot project is to supply service to 9000 customers with telephone service that includes both POTS and ISDN. JTB is particularly interested in the flexibility and the speed with which the wireless local loop service can be deployed. Planning for additional deployment of WLL is underway.

PROJECT FINANCING

Most equipment procurements by JTB are financed from the JTB internal budget and concessionary financing packages are not listed as a priority to by JTB.

STATUS OF PROJECT DEVELOPMENT

Each technology identified by JTB is under consideration and plans for procurement are in various stages. With regard to the VSAT project, little is known on the status of this project at this time, but a conference and workshop to discuss these plans was jointly conducted by JTB and Hutchison Corporate Access (Hong Kong) in Bandar Seri Begawan on July 29 – 31, 1997. In Brunei, one traffic terminal has been installed and successfully demonstrated by communicating with the network control terminal in Hong Kong.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

With the rapid privatization and deregulation of international communications, there will continue to be unique opportunities to develop and expand the telecommunications infrastructure by both incumbent PTT; and new service providers. DAMA VSAT systems support this trend by offering an infrastructure

that is rapidly deployable, independent of geographic constraints, and cost effective. The U.S. is the world leader in DAMA VSAT technology.

DECISION MAKING PROCESS

JTB may issue request for proposals for all their equipment procurement which will be subject to a competitive bidding process.

CONTACTS

Mr. Awang Buntar bin Osman
Director of Telecommunications
Jabatan Telekom Brunei (Telecommunications Department of Brunei)
Ministry of Communications
Old Airport Berekas
Bandar Seri Begawan 2051
Tel: 673 2 382382
Fax: 673 2 382445
email: dirJTB@brunei.bn

Mr. John Puetz
Director of Marketing
Viasat
2290 Cosmos Court
Carlsbad, CA 92009-1585
Tel: 760 438-8099
Fax: 760 438-7310

INDONESIA

Country Profile
Telecommunications Sector Overview
Projects:
➢Cellular Build-Out ➢Nusantara 21

Indonesia Profile

As of 1996

Capital - Jakarta
Population - 195.3 million
33% urban population
GDP per Capita - US$970

Telephone Density
Overall - 1.59%
Rural - 0.2%

Waiting List for
Telephone Lines - 2.9 million
Cellular Subscribers - 100,000
Paging Subscribers - 80,000 (1993)
Telex Subscribers - 16,480 (1993)

International Outgoing
Traffic (million calls) - 206.5 (1995)

Network Digitization
Switching - 100% (1995)
Transmission - 100% (1995) (Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, archipelago between the Indian Ocean and the Pacific Ocean **Geographic coordinates**: 5 00 S, 120 00 E **Comparative area**: slightly less than three times the size of Texas **Climate**: tropical; hot, humid; more moderate in highlands **Terrain**: mostly coastal lowlands; larger islands have interior mountains **Geographic note**: archipelago of 13,500 islands (6,000 inhabited); straddles Equator; strategic location astride or along major sea lanes from Indian Ocean to Pacific Ocean.

COUNTRY PROFILE

PEOPLE

With a population of over 200 million, Indonesia is home to nearly as many people as the United States, and like the United States it has become a melting pot of people from widely divergent cultures and backgrounds. One of the earliest foreign contributions to the archipelago's population was the Arab community, now made up of the descendants of Muslim traders who have plied the routes between Indonesia and all the countries of the Indian Ocean from the 7th century onwards.

Indonesia is also the home to a large and successful Chinese community, which forms the backbone of the country's commercial infrastructure. In the last generation the Chinese minority has undergone a compulsory integration into the mainstream of Indonesian society, with Chinese schools and language banned and Chinese families required to choose Indonesian names. The aim of this has been to reduce potentially disastrous intercommunal tensions between the Chinese and Indonesian populations.

RELIGION

Indonesia is the world's most populous Muslim country, with well over 170 million practicing Muslims, concentrated mainly in Java and the populous islands of the west but present in large communities throughout the country. Yet Indonesia is also one of the oldest centers of both Hinduism and Buddhism, which each boast significant minority populations - particularly the large Balinese Hindu community, the only traditionally Hindu culture surviving outside the Indian subcontinent.

Islam and Hinduism/Buddhism are not the only Western imports; while Islam was gaining ground in Indonesia's west, the first proselytizing Christians were arriving in the northern and eastern parts of the archipelago. Large populations of Catholics exist in East Nusa Tenggara, converted to the religion by early Portuguese missionary activity; in northern Sulawesi, the Protestant faith brought by the Dutch

has replaced earlier Catholic conversions, and the Minahasan inhabitants of the area are among the most staunchly Christian of all Indonesia's minorities.

Elsewhere in the archipelago, followers of Animist beliefs continue to practice their traditional religions. Areas with a strong Animist tradition include the remote interior regions of both Kalimantan and Irian Jaya; in addition, the Islam, Christianity or Hinduism practiced by many Indonesians contains a strong element of traditional belief, making for a uniquely Indonesian variant of each of these religions.

The interaction between these communities results in a population whose religious diversity is as wide as its range of racial and ethic groups. As is fitting in a society woven from such a variety of spiritual threads, most Indonesians are exceptionally tolerant in religious matters, choosing to honor their chosen faith in a personal way and leaving others to follow their beliefs in peace.

THE ECONOMY

KEY ECONOMIC INDICATORS			
Indicator	**1994**	**1995**	**1996 (e)**
Constant GDP ($ Billion)	175.5	198.1	221.7
GDP Growth (%)	7.5	8.1	7.6
GDP per Capita ($)	913	1,014	1,116
Gov. Spending	15.7	14.8	15.2
Inflation (%)	9.6	9.0	8.0
Unemployment (%)	3.7	4.4	4.6
Foreign Reserves ($ Billion)	13.2	14.7	17.1
Total Exports ($ Billion)	40.2	45.5	50.4
Total Imports ($ Billion)	32.3	39.8	44.9

Indonesia is a mixed economy with many socialist institutions and central planning, but with an added emphasis on deregulation and private enterprise. Indonesia has extensive natural wealth, yet, with a large and rapidly increasing population, it remains a poor country.

Real GDP growth in 1985-95 averaged about 7 percent, but not sufficient to both slash underemployment and absorb the more than two million workers annually

entering the labor force. Agriculture, including forestry and fishing, is an important sector, accounting for almost 20 percent of GDP and over 50 percent of the labor force.

Once the world's largest rice importer, Indonesia is now nearly self-sufficient. Plantation crops - rubber and palm oil - and textiles and plywood are being encouraged for both export and job generation. Industrial output now accounts for almost 40 percent of GDP and is based on a supply of diverse natural resources, including crude oil, natural gas, timber, metals, and coal. Of these, the oil sector dominates the external economy, generating more than 20 percent of the government's revenues and 40 percent of export earnings in 1989. However, the economy's growth is highly dependent on the continuing expansion of non-oil exports. Japan remains Indonesia's most important customer and supplier of aid. Rapid growth in the money supply in 1989-90 prompted Jakarta to implement a tight monetary policy in 1991, forcing the private sector to go to foreign banks for investment financing. Real interest rates remained above 10 percent and offshore commercial debt grew. The growth in offshore debt prompted Jakarta to limit foreign borrowing beginning in late 1991. Despite the continued problems in moving toward a more open financial system and the persistence of a fairly tight credit situation, GDP growth in 1992 is estimated to have stayed at 6 percent.

The economic system is based on Pancasila philosophy therefore the peoples welfare features highly. Article 33 of the constitution stipulates that the economy is administrated as a collective endeavor based on the principle of Fraternity. All natural resources are controlled by the state and utilized for the people's maximum prosperity.

POLITICAL OVERVIEW

The country is officially known as the Republic of Indonesia, and became legally independent from the Netherlands on December 27, 1949. Indonesia is a republic based on the 1945 Constitution providing for limited separation of executive, legislative, and judicial power. The People's Consultative Assembly (Majelis Permusyawaratan Rakyat), The Presidency, The House of Representatives (Dewan Perwakilan Rakyat), The Supreme Advisory Council (Dewan Pertimbangan Agung), The State Audit Board (Badan Pemeriksa Keuangan) and The Supreme Court (Mahkamah Agung) represent the state branches of government.

The articles of the 1945 Constitution spell out the ideals and the goals for which independence was proclaimed on August 17, 1945, and defended thereafter. It was inspired by the urge for unity and for the common goals and democracy built upon the age-old Indonesian concepts of gotong royong (mutual assistance), deliberations of representatives (musyawarah) and consensus (mufakat).

The president, elected for a five-year term, is the overwhelmingly dominant government and political figure. The president appoints the cabinet, currently composed of four coordinating ministers in the fields of political and security affairs, economic and financial affairs, people's welfare, and industrial and trade affairs, 13 state ministers, 24 ministers, and three high officials with status of state ministers. Although the judiciary is a separate branch of government, judges are actually employees of the executive branch.

Legislative authority is divided between the House of Representatives (DPR) and the People's Consultative Assembly (MPR), both renewed every five years. The House, with 400 elected members and 75 members appointed from the armed forces, performs legislative functions, although not in the manner of similar bodies in Western democratic systems. The MPR, consisting of the House of Representatives plus an equal number of appointed members, meets only once in its five-year term, to formulate the overall principles and aims of the government and to elect the president and vice president. Representative bodies at all levels in Indonesia prefer to arrive at decision through "consultation and consensus."

The party system reflects the Soeharto government's determination to shift the political focus from Indonesia's deep ethnic, religious, and ideological differences, which contributed to the collapse of an earlier experiment in parliamentary democracy. Soeharto's preferred strategy is an authoritarian, program-based, development-oriented politics. Major parties are the United Development Party (PPP), composed of various Muslim groups, and the Indonesian Democratic party (PDI) composed of Christian, socialist, and nationalist elements. Parliamentary elections held in 1992 gave a 68 percent majority to Golkar, a federation of groups - civil servants, youth, labor, farmers, and women - which functions as an undeclared government party. Golkar and appointed members from the military dominate the House of Representatives and the MPR.

The armed forces have shaped and staffed Soeharto's New Order since it came to power in the wake of the abortive 1965 uprising. Military officers, especially from the army, have been key advisers to Soeharto. Under a dual function concept, military officers serve in the civilian bureaucracy at all government levels,

although there has been a recent tendency to reduce the military's direct involvement in the civilian bureaucracies.

Indonesia is divided into 27 provinces, including three special territories and subdivided into 241 districts and 56 municipalities. The president appoints the governors of provinces from nominees submitted by the provincial legislatures. The executive branch has substantial influence over who is nominated and also may reject a provincial legislature's nominees and ask for a new list of candidates.

Diplomatic representation in US:

Chief of Mission:
Ambassador Arifin Mohamad SIREGAR
Chancery: 2020 Massachusetts Avenue NW, Washington, DC 20036
Tel: [1] (202) 775-5200
Fax: [1] (202) 775-5365
Consulate(s) General: Chicago, Houston, Los Angeles, New York, and San Francisco

US diplomatic representation:

Chief of Mission: Ambassador J. Stapleton ROY
Embassy: Medan Merdeka Selatan 5, Jakarta
Mailing address: Box 1, APO AP 96520
Tel: [62] (21) 360360
Fax: [62] (21) 3862259
Consulate(s) General: Medan, Surabaya

FOREIGN INVESTMENT AND TRADE

Indonesia has made great strides in diversifying its economy and promoting a competitive private sector through sound macroeconomic management, increased deregulation, and deeper investment in infrastructure services. Growth has been propelled mainly by the strong performance of the manufacturing sector, which grew at a rate of 10 percent a year between 1985 and 1995 and produced one-quarter of the nation's GDP.

Both the public sector and the vibrant private sector played important and complementary roles in transforming the economy from high dependence on agricultural commodities and oil, to more diversified production of industrial goods and services. Indonesian exports now consist of a wide range of manufactures, including textiles and apparel, wood products, and petrochemicals.

Today, both foreign and domestic investment are booming, with a large share going into the export sector (especially pulp and paper and food). Indonesia's investment rates have steadily increased and are now among the highest in the large developing countries. Domestic savings have also grown and Indonesia continues to finance about 90 percent of its investments domestically.

In 1996, Indonesia's gross investment rate was 32 percent of GDP and its gross national savings rate was 28 percent of GDP. Much of this dynamism can be traced to the government's reform program—prompted by the collapse of oil prices in the early 1980s—which liberalized trade and finance, and encouraged foreign investment and deregulation.

FOREIGN DIRECT INVESTMENT STATISTICS

From 1967 through July 1996, BKPM approved foreign investment applications worth more than $164 billion; well over half were approved after 1992. Foreign investment approvals reached $40 billion in 1995, an almost 70 percent increase over 1994. Most approved investments in the past five years have been in manufacturing, especially in the chemical, textile, pulp and paper industries. Foreign investment in oil, gas, mining, banking and insurance all fall outside BKPM's purview; there are several billion dollars more annual foreign investment in these sectors. New planned foreign investment in the first half of 1996 was concentrated in three sectors: chemicals, including oil refineries (25 percent), electricity and water (17 percent), and pulp and paper (13 percent). Foreign investment approvals may reach $30 billion in 1996, roughly the same level as 1995, after discounting speculative oil refinery projects.

The United Kingdom replaced Hong Kong as the country's biggest foreign investor in 1995, with approvals worth $6.3 billion, although much of this investment came from other countries and was funneled through various British off-shore tax heavens. Other major foreign investors include Japan, Singapore, Taiwan, Hong Kong and South Korea.

The United States ranks fifth in cumulative BKPM-approved investment. However, the BKPM statistics do not include investment in the oil and gas sector, where most U.S. investment has been made.

In the oil and gas sector, the United States is by far the largest player. U.S. companies, including Caltex, Maxus, Arco, Mobil, Union Texas, and Unocal pump the lion's share of Indonesia's crude petroleum and natural gas. U.S. oil services companies have significant investments in Indonesia to serve the oil fields, including fabrication yards for offshore oil platform development. P.T. Freeport Indonesia, an affiliate of the U.S. mining firm Freeport McMoran, is the largest direct U.S. investment.

Recently, Freeport Indonesia implemented a $500 million mine and mill expansion and signed a new 30-year contract of work for its copper and gold concession in Irian Jaya.

Several U.S. companies produce consumer and other products and provide services for the domestic market. General Motors is building a $110 million vehicle assembly plant and the General Electric Capital Corporation has established a multimillion dollar automobile financing joint venture. AT&T (now Lucent Technologies) won a major government contract for a switch manufacturing and installation project. U.S. West leads a consortium installing 500,000 new telephone lines and operating local telephone service in West Java. Mission Energy has taken the lead in a consortium to build a multi-billion dollar coal-fired power plant in East Java. U.S. investors have been increasingly interested in producing in Indonesia for export, with Batam Island a newly favored investment site. Four U.S. banks have branches in Indonesia and there are six U.S. bank representative offices.

Japan is the biggest cumulative foreign investor in Indonesia. Between 1967 and July 1996, BKPM-approved Japanese investment applications totaled $32 billion. In 1995, approvals of Japanese investment totaled over $3.7 billion. Indonesia's second largest oil company, Indonesia Petroleum, is a Japanese joint venture, as is the largest automobile manufacturer, P.T. Astra.

Japanese partners also figure heavily in the pulp, paper and petrochemicals industries. Other Asian investors are particularly prominent in the labor-intensive textile, garment, and footwear industries.

MARKET ACCESSABILITY

The Indonesian government actively encourages foreign investment. Burgeoning infrastructure requirements and the desire to contain the increase of commercial indebtedness have reinforced the pro-foreign investment attitude. Foreign investment in industry, particularly in export-oriented and labor-intensive activities, is strongly encouraged.

The government is continuing to develop policies on the private provision of infrastructure through build-own-operate schemes, particularly for electric power, telecommunications, and roads. Although some sectors remain closed or restricted, the government periodically updates its negative investment list and list of sectors reserved for small business.

In June 1994 and May 1995 several previously restricted sectors were opened to foreign investment, including harbors, electricity generation, telecommunications, shipping, airlines, railways, and water supply. Foreign investment opportunities in many services remain restricted, however. The government's pragmatic attitude has led it to support a more extensive private sector role in the economy. Private entities may establish, acquire, and dispose of interests in business enterprises.

Foreign investors may purchase domestic firms except in sectors prohibited by the negative list. In a May 1995 decree the government listed six sectors as closed to any foreign investment: taxi/bus transportation, local shipping, retail trade, domestic trade support services, television and radio broadcasting services, and cinemas. An additional eight sectors are closed to 100 percent foreign ownership, while nine sectors are closed to investment except under certain conditions. Current copies of the negative list are available from the U.S. Commercial Center, Jakarta.

In February 1996, the government took several backward steps in trade and investment policy with the announcement of a "National Car" program. The "National Car" program provides special tariff treatment to one well- connected company, thereby severely disadvantaging foreign investors in the automobile sector and creating doubts about the country's investment climate.

The Foreign Capital Investment Law of 1967, with later amendments, provides the basic framework for foreign investment. The Capital Investment Coordinating Board (BKPM) plays a key role in promoting foreign investment and approving project applications. Investments in the oil and gas, mining, banking and insurance

industries are handled by the relevant technical government departments. All other foreign investment must be approved by BKPM, which also approves domestic investments when the owners seek investment incentives. BKPM aims to function as a one-stop investor service; however, investors should also work closely with relevant technical government departments and with regional and local authorities.

RESTRICTIONS AND INCENTIVES

In June 1994, requirements for minimum equity in most foreign investments were eliminated. Foreign investors who open with 100 percent equity must divest some percentage of their holdings after 15 years. This appears to be as little as one percent and may be accomplished through the stock market. In those sectors which require some Indonesian equity, joint venture investments must include a five percent minimum local equity, but need not be divested further.

Foreign investors may not hold ownership in retail operations, although franchise, licensing, and technical service agreements are common. With very few exceptions, foreign companies are also forbidden from providing domestic distribution services. Foreign companies manufacturing in Indonesia may distribute their locally produced goods at the wholesale level and may import and distribute limited amounts of complementary products in conjunction with their local production. Foreign companies may also post technical advisors to Indonesian companies which distribute their products at the retail level.

Various fiscal measures are available to both foreign and domestic investors. A company producing for the domestic market may apply for import duty exemptions on all required machinery and equipment as well as on raw and supporting materials needed during the first two years of commercial production. A company producing 65 percent for export has additional incentives. It may apply for restitution of import duties paid on inputs which are subsequently re-exported in finished form. If a firm is located in a bonded zone, it pays no duty until the portion of production destined for the domestic market is "exported" to Indonesia, in which case duty is owed on that portion.

In 1996 the government issued regulation 45/1996 under which the government may provide income tax exemptions to certain companies. This was reported in the press as a "tax holiday" but is actually a government tax bearing scheme. As of October 1996, the government team charged with implementing the regulation had yet to finalize the criteria for companies to qualify for the tax exemption. A company may apply to the customs authority to have its warehouse designated as

a private bonded zone. The duty regime for a company producing entirely for export depends on location.

If a company is in a bonded zone, then duty is not paid; if outside a bonded zone, it can apply for restitution of duties paid. Investors should also consult with BKPM about income tax, value-added tax, and luxury tax facilities. The government expects foreign investors to contribute to the training and development of Indonesian nationals, allowing the transfer of skills and technology required for their effective participation in the management of foreign companies. As a general rule, a company can hire foreigners only for positions which the government has deemed open to non-Indonesians. Employers must have manpower training programs aimed at replacing foreigners with Indonesians.

DISPUTE SETTLEMENT

The Indonesian government has agreed to submit any investment disputes to the International Center for the Settlement of Investment Disputes (ICSID) in Washington, D.C. An investment arbitration board, BANI, is available when both parties to a dispute agree to submit to its arbitration. A long-pending investment dispute involving a U.S. investor was resolved through the ICSID in 1993. We are not aware of other major investment disputes between the GOI and foreign investors in recent years. The court system does not provide effective recourse for solving commercial disputes. Mortgages and secured interests in chattels and real property are recognized but a dependable recording system is not in place. Enforcement of secured interests is problematic.

The GOI has recognized that the legal system must be modernized. The tax code was reformed in 1983 and amended in 1991 and 1995. New laws on banking, insurance, and pensions were passed in 1992 which codify regulation measures previously contained in ministerial decrees.

Comprehensive company and capital markets laws were recently enacted. Work has begun on a new commercial code. One of the government's priorities is the continuing rationalization and modernization of laws and regulations. Indonesia recognizes the right to private ownership and establishment and has relied heavily on the private sector as the principal engine of its economic growth. The role of parastatals in the Indonesian economy has been shrinking as private sector activity has grown and privileges awarded to state-owned enterprises have decreased.

The government has initiated programs to enhance the efficiency of state-owned enterprise and to expose them to greater competition. Options for parastatals include the sale of shares through Indonesian and overseas stock exchanges, private placement of shares, and management contracts.

TRADE AND PROJECT FINANCING

Indonesia has an open capital account and no foreign exchange controls. Its banking system has expanded rapidly since the financial sector was deregulated in 1988. The government imposes some restrictions on foreign borrowing, which could have an impact on certain types of trade financing. The rapid growth of foreign debt in 1989-1990 led the government to establish a Commercial Offshore Loan Team (PKLN), which imposes limits both on public sector foreign borrowing and foreign borrowing by commercial banks. Short-term letters of credit are not affected, but letters of credit with terms longer than one year are subject to limits set by PKLN.

GENERAL FINANCING AVAILABILITY

All forms of import and export financing are available in the Indonesian market and are frequently utilized, although most imports are financed with letters of credit. Short-term financing is readily available. Some larger banks will provide longer-term financing of up to 2-3 years.

Indonesian buyers generally prefer that the supplier provide the necessary financing for a commercial transaction, either normal commercial trade financing or export credits from the source country's export credit agency (in the case of the United States, the Export-Import Bank of the United States is located in Washington, D.C.). Local bank financing can be arranged, depending on the customer and/or the agent/distributor involved in the transaction. Several American banks have shown initiative in arranging trade financing packages for their customers, some with Ex-Im Bank guarantees.

TYPES OF AVAILABLE EXPORT AND PROJECT FINANCING

Indonesia secures a substantial portion of its development funding from the multilateral development banks, primarily the Asian Development Bank (ADB) and the World Bank. Almost $5 billion is made available from a variety of donors belonging to the Consultative Group on Indonesia (CGI), chaired by the World Bank.

American firms can participate in projects funded by the ADB and the World Bank. Information on projects and procedures is available through U.S. Commercial Service officers assigned to each multilateral development bank as well as commercial officers in individual countries.

U.S. Ex-Im Bank is committed to establishing a world-class program in limited recourse project finance. (The term "project finance" refers to the financing of projects that are dependent on the project cash flows for repayment.) Where appropriate, Ex-Im Bank will offer the maximum support allowed within OECD rules, including financing of interest accrued during construction, allowance of 15 percent local content, financing of host country costs up to 15 percent of U.S. contract value, and maximum repayment terms allowed under OECD guidelines.

Other forms of feasibility study and project financing may be available through the U.S. Trade Development Agency (TDA) and the U.S. Agency for International Development (USAID). Investment projects in Indonesia are eligible for Overseas Private Investment Corporation (OPIC) loans and insurance.

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN INDONESIA

INDONESIAN HOLIDAYS

Indonesia's National Holiday is February 9, and Saka New Year is April 9. Moslem New Year is May 8, Waisak is May 22. Independence day is August 17. Most moslem holidays are observed by the government.

BUSINESS CUSTOMS

The normal business attire is a business suit or white shirt, tie and slacks for men, and a business suit or dress for women. The traditional batik shirt is also commonly worn in the office and is now considered proper business attire. Indonesians like to avoid confrontation and disharmony. One should not lose one's temper or show emotion. One should also pay particular attention to certain gestures that Indonesians consider offensive and discourteous. First, do not use the left hand in receiving or eating. Although hand shaking is a common practice, physical contact is usually avoided, especially with Muslim women. Smiling, bowing, or nodding is considered more gracious. Second, under no circumstances should one touch or extend any part of the body over an Indonesian's head; the

head is considered the most sacred body part. Third, never allow the bottoms of your feet/shoes to be visible by others.

Indonesians do not conduct business transactions or make decisions in the same direct fashion Americans do, so U.S. business people should be prepared to spend a good deal of time with clients before getting down to the business transaction. Patience is the key. The word "no" is rarely used. Exchanging small gifts is common practice for business or social visits. During such occasions, tea or coffee is almost always served and should be accepted. It should not be drunk, however, until the host invites you to do so. If a guest, Indonesian or foreigner, arrives unexpectedly at your home while you are eating, it is courteous to invite that person to join you at the table.

Most importantly, Indonesians do business with "friends," people that they know, so developing a rapport is crucial. While quality and price are important, they are secondary to the personal interaction of the business partners.

Business Hours are from 8 a.m. to 4:30 p.m. Monday through Friday, though Moslems are released to prayers every Friday from 11:30 a.m. to 1 p.m, and 8 a.m. to 1 p.m. on Saturday.

BUSINESS INFRASTRUCTURE AND ENVIRONMENT

In Jakarta and other major cities, public transportation is not considered reliable or particularly safe. Taxis are available, but the condition of the vehicles and the knowledge of the drivers varies widely. In Jakarta, Blue Bird, Silver Bird, and Gold Bird, a recently started luxury taxi service, all belong to the same taxi group, (tel: 21-794-1234) are the most reliable. Kosti Jaya taxi company is also recommended (tel: 780-1333, 780-1331). Avoid the orange and yellow President Taxi line as they are notorious for ripping off foreigners. Because there are few comfortable, luxury taxis on the streets, the preferred method of transport among expatriates is by private car. The majority use the services of hired drivers. Wages plus benefits average $300 month for an experienced driver who speaks English.

For intercity and interisland travel, train and air services are cheap but not necessarily efficient or comfortable. One should expect delays with the local air carriers, especially on Merpati Air, a Garuda subsidiary. Sempati Airlines, which is privately-run, is more reliable. As for intercity train service, scheduled runs do not always have an air-conditioned first-class (Eksekutif) car. If you can tolerate the

heat and humidity, going Bisnis class is a good deal. There is ferry service for people and vehicles linking the major islands and many of the smaller islands.

TELECOMMUNICATONS SECTOR OVERVIEW

As the world's biggest archipelago and one of the world's most populous nations, Indonesia relies on its telecommunications infrastructure to link its people throughout the country. The sector has entered a stage of rapid growth with a nearly eight fold increase in the size of its network within a decade. Currently fixed line capacity exceeds 4 million lines while mobile cellular penetration has surpassed the half million mark.

The modern and mostly digital network of today is a result of a long history of state directed development which began in 1906, when the former Dutch colonial government created a department to assume control of all postal and telecommunications services in Indonesia. In 1961, most of these services were transferred to a newly-established state-owned company to provide postal and telecommunications services in Indonesia apart from services in Sumatera. In 1965, the government separated postal and telecommunications services into two state-owned companies, PN Pos dan Giro, and PN Telekomunikasi. PN Telekomunikasi was further divided in 1974 into two state-owned companies, Perusahaan Umum Telekomunikasi ("Perumtel") and P.T. Inti, to provide domestic and international telecommunications services and telecommunications equipment manufacturing. In 1980, the international telecommunications business was transferred from Perumtel to Indosat.

In 1991, the Government transformed Perumtel from a state-owned company with public service as its principal corporate purpose, into a "Persero," a state-owned limited liability corporation with a commercial corporate purpose, and renamed it Perusahaan Perseroan (Persero) P.T. Telekomunikasi Indonesia, also known as TELKOM.

Even today, telecommunications services are largely supplied through the public sector with TELKOM as the dominant state domestic carrier and PT Indosat as the state international carrier. Pressure to expand service provision has led to cautious partnerships with private companies in the fixed and wireless sectors. In 1995, five consortia were awarded 15 year contracts to build, operate, and manage networks in five regions and this will add two million fixed lines to the network through arrangements synonymously known as KSO's or JOS. Private companies are

expected to play an increasingly important role in the telecommunications sector as the government strives to keep pace with a growing middle class and a rapid increase in demand.

KEY PLAYERS (GOVERNMENT AND PRIVATE)

The Indonesian Industry is structured so that only two companies, state owned Indosat and Satelindo, may provide international services. They are not allowed to compete on price and can only compete on service and marketing. For domestic services (local and domestic long distance), PT TELKOM holds a monopoly but in some zones co-operates with joint operating partners. Two firms operate fixed wireless systems while seven cellular operators provide service with various coverage. A look at the major operators in the Indonsian market follows.

Pt Telekomunikasi Indonesia (PT TELKOM)

As the monopolistic operator for the domestic Indonesian market, PT TELKOM, or TELKOM as it is called, drives the development of the Indonesian telephony network. PT TELKOM is a state-owned listed company which provides local and domestic services, ISDN, satellite, VSAT data transition, packet switched data networks (PSDN), e-mail and credit card payphones. In 1996, PT TELKOM had a total of 4.1 million subscribers.

Prior to 1995, TELKOM's business was segregated into 12 regional operating units, known as "Witels," which were centrally controlled by TELKOM's headquarters in Bandung, West Java. The Witels each had a separate management structure responsible for all aspects of TELKOM's business in their respective regions, from the provision of telephone services to property management and security, although they were not separate profit centers.

As part of a restructuring, TELKOM's business activities were divided into three main areas: (i) primary businesses, (ii) related businesses and (iii) business support or corporate overhead services. TELKOM's primary business is to provide local and domestic long distance telephone services. Related businesses include mobile cellular services, leased lines, telex, satellite transponder leasing, VSAT and certain value-added services. These related businesses are operated by TELKOM either directly or through joint venture companies in which TELKOM has a direct or indirect interest. Certain analog cellular businesses are operated by TELKOM under revenue sharing arrangements with private investors.

TELKOM intends over time to transfer additional related businesses to joint venture companies. TELKOM is also planning to outsource certain of its corporate overhead services. As of July 1, 1995, TELKOM eliminated the Witel structure and created eight operating Divisions on July 1, 1995, consisting of seven Regional Divisions which provide telephone services within their regions and the Network Services Division which provides domestic long distance telephone services through the operation of the nationwide backbone transmission network.

Each Division functions under a separate, decentralized management team and as a separate cost or profit center, maintaining separate internal financial statements. The company also organized its business support services to provide information services, repair, training and property management to TELKOM's Regional Divisions. Each of Divisions I to VII represents a geographic region of Indonesia as follows:

- Division I, Sumatera;
- Division II, Jakarta and the surrounding area;
- Division III, West Java;
- Division IV, Central Java;
- Division V, East Java, including Surabaya;
- Division VI, Kalimantan; and
- Division VII, East Indonesia.

Divisions I, III, IV, VI and VII are operated by the KSO Units in the name of TELKOM and for and on behalf of TELKOM and the KSO Investors commencing January 1, 1996.

PT TELKOM has KSO arrangements with PT Pramindo Ikat Nusantara, Aria West, Mitra Global Telekomunikasi Indonesia (MGTI), Daya Mitra Malindo and Bukaka Singtel (more details on the KSO arrangements later in this document).

PT Indonesian Satellite Corporation (INDOSAT)

PT Indosat is a state-owned listed company and provides services such as international phone calls, international private circuits, international ISDN, international PSDN, international telecast, internet, and mobile communications through Inmarsat.

PT Satelit Palapa Indonesia (SATELINDO)

In 1993, PT Satelindo was entrusted by the government to operate the third generation of Indonesia's satellites, Palapa C-1 and Palapa C-2. Two years later, the company was granted exclusive rights to operate international telecommunications services and compete with Indosat.

Satelindo is a private company with various share holders including TELKOM (22.5 percent), Indosat (7.5 percent), Bimagraha Telekomindo (45 percent) and De Te Mobil (25 percent). Satelindo's main lines of business are international phone serrvice, GSM cellular phone and satellite. In 1996, Satelindo had 206,667 cellular phone subscribers and its Palapa-C users included the USA and Europe (8), Asia Pacific (9), Indonesia (11).

Satelindo has received approval from its shareholders to go public by the end of 1998 although the number of shares to be released remains to be determined.

PT Telekomunikasi Selular (TELKOMSEL)

Telkomsel provides GSM cellular phone service and is a private company owned by TELKOM (42.72 percent), Indosat (35 percent), PTT Telecom BV (17.28 percent) and Setdco Megaset Asia (5 percent).

PT Komunikasi Selular Indonesia (KOMSELINDO)

Komselindo is a private company owned by a combination of TELKOM (35 percent) and Elektrindo Nusantara (65 percent). Komselindo operates an AMPS cellular phone but has recently procured equipment from Lucent to upgrade the system to a CDMA based network. In 1996 the company had 100,521 subscribers.

Market share for these firms varied. For international service, Indosat held 91.2 percent of the market while Satelindo held the other 8.8 percent. There were 560,000 cellular subscribers and of these, the market shares held were Satelindo (46.3 percent), Telkomsel (33.5 percent), Komselindo (17.9 percent) other operators (2.3 percent).

REGULATORY REGIME AND MARKET ACCESS

Telecommunications regulation is the responsibility of the Directorate General of Posts and Telecommunications (DGPT), which is part of the Ministry of Tourism, Posts, and Telecommunications. DGPT's functions is to formulate technical strategies, provide guidance and supervision, issue permits and to pursue the successful implementation of all policies and directives issued by the Ministry in the telecommunications sector.

A second planning and coordinating body is the Telecommunications Advisory Board, which was established in 1989 with the task of framing and formulating government policy in the sector and resolving strategic problems in the telecommunications area.

Since passage of Law No. 3 (1989) and its implementing regulation (Government Regulation No. 8/93 of 1993), Indonesia has been pursuing a policy of deregulating and privatizing the telecommunications sector. Under this law, basic and non- basic services are defined and forms of private sector participation are outlined in terms of basic services. Tariffs for basic services are set by the Ministry of Tourism, Post, and Telecommunications (MTPT) but tariffs for "non-basic" services are determined by the service providers themselves.

In the cellular sector, MTPT regulates the provision of cellular services including:

1. Number of Operators
2. Number of Systems and Types of Systems
3. Tariffs
4. Interconnections
5. Standardizations

According to a previously presented policy paper titled "Regulation and Policy on Management of Cellular Mobile Communication" presented by the Director General of Post and Telecommunications, there are four factors to be considered in determining the number of operators in Indonesia, and these include (1) availability of frequency, (2) the scope of cellular mobile communication market, (3) the economic aspects, and (4) funding.

Issues regarding tariffs, interconnection, and standardization are all controlled or coordinated by the Directorate General of Post and Telecommunications of MTPT.

In line with the International Telecommunication Agreement (ITA), Indonesia will open the International Direct Dial service in 2005 and the domestic long-distance service in 2006 to foreign investors. Foreigners will be also allowed to play a role in other services, such as cellular phone, paging and internet, with a minimum ownership share of 35 percent starting January 1, 1998.

EXISTING NETWORKS

Indonesia's local network includes more than 360 exchanges serving 4.8 million telephone lines. This gives Indonesia a teledensity of 1.85 per 100 people in June 1996, an impressive improvement over the 0.8 per 100 registered in 1991 but still a long distance from the level of 20 per 100 set as the goal for the Asia region by APEC. Approximately half of the 4.2 million lines lines in service were managed by TELKOM directly, with the remainder operated through joint operation schemes between TELKOM and national and international partners. TELKOM holds a financial interest in every basic domestic telecommunications company in Indonesia. Basic services include cellular, satellite, leased lines, and local and domestic long distance telephone services. Non-basic services include e-mail, paging, and electronic data interchange.

Long Distance Services

As an archipelago of continental size, Indonesia is particularly concerned to develop long distance services linking its various population centers. Long distance services are also provided by TELKOM on a monopoly basis. The primary network elements include; the trans Sumatra digital microwave system that connects almost all of the big cities on Sumatra Island from Banda Aceh, Medan, Padang, Jambi, Bengkulu and Palembang up to Jakarta. The Jawa Bali digital microwave system that connects almost all the big cities on Java Island from Jakarta, Bandung, Cirebon, Semarang, Yogyakarta, Surabaya to Denpassar.

In 1994, a US$64 million contract was signed with Alcatel of France to provide the first long-distance synchronous digital hierarchy (SDH) network for Indonesia to link Jakarta with Denpassar on Bali.

Effective January 1, 1997 the government introduced changes to the interconnection regime such that cellular operators may operate their own long distance networks or lease lines from other operators, including TELKOM, to

provide such services. Prior to January 1, 1997, TELKOM faced direct competition only in certain business areas, including fixed cellular, data communication and mobile services. As a result of these changes, TELKOM now expects to face competition, which may include price competition, from cellular operators for the provision of long distance services.

International Services

PT INDOSAT is the primary provider of international services in Indonesia and directly links Indonesia to over 240 countries. Indosat owns and operates four international gateways that facilitate switched and non-switched telecommunications and other value added services via satellite, submarine cables and microwave links. At the end of 1996 Indosat operated 2,772 satellite telephone circuits and 115 satellite data circuits through five Intelsat antennas and on Inmarsat antenna at the Jatiluhur earth station complex, and one Intelsat antenna each at its Surabaya, Medan and Batam international gateways.

Indosat offers a pre-paid calling card called PreCard that can be used to call over 240 destination countries from Indonesia, and from 15 countries back to Indonesia.

Indosat strives to become a global telecommunications player through its "1-plus-3" business strategy. Number one refers to strengthening its core business and the other three to; domestic participation in cellular services, regional communications, and diversification.

The proposed Nusantara 21 multimedia project will also involve seven satellites. These include the older Palapa B4, B5 and B6 with the newer Palapa C1, C2 and D series satellites, as well as a satellite owned by PT Multimedia Asia, a joint venture between Pasfik Satelit Nusantara and Indosat. The Multimedia satellite will be operational by 2001. Indonesia will also have access to the Global Mobile Personal Communications (GMPS) by Satellite systems.

Cellular Service

There are seven cellular service providers in Indonesia. Three of these systems use the AMPS system, three GSM, and one Nordic. Konmselindo is a major provider of cellular service with approximately 120,000 subscribers. AMPS is the current technology used, but the company is in the process of installing a Lucent Technologies CDMA system with a capacity of 160,000 subscribers in the first phase. Internal testing of the system will start in September 1997 and service

offered to subscribers in 1998. The AMPS network will remain in service but upgrades can be made to the new system.

The most significant of TELKOM's financial interests are three joint venture cellular service providers. P.T. Telekomunikasi Selular in which TELKOM currently holds a 42.7 percent interest, Komselindo in which TELKOM holds 35 percent and Satelindo in which TELKOM holds 22.5 percent. TELKOM owns smaller minority equity interests in Metrosel, Telekomindo and Mobisel, also providers of cellular telecommunications services.

TRENDS AND OPPORTUNITIES

Indonesia places a heavy emphasis on formal planning and guidance from the central government. This process is managed through five-year plans, or Repelitas, which serve as the government's main vehicle for shaping the direction of both public and private investment. Planning is currently underway for Repelita VII, covering the 1999-2004 period. The telecommunications planning exercise is being conducted by PT TELKOM with support from the International Telecommunications Union (ITU), using its PLANITU software system.

The primary means chosen for expansion of the system is therefore the granting of concessions, particularly in areas considered to be basic services. In the latter areas, private companies were initially permitted to enter primarily through Build-Own-Transfer (BOT) projects in cooperation with state-owned or state-controlled entities, under which ultimate ownership will remain in the hands of the Indonesian government.

The BOT scheme for telecommunications was implemented through a program known in Indonesian as the Kerja Sama Operasi (KSO) or in English as the Joint Operation Scheme (JOS), under which PT TELKOM grants licenses with revenue sharing agreements to internationally backed operators.

In October 1995, TELKOM entered into KSO agreements with five joint venture companies to develop and manage five of TELKOM's seven Regional Divisions for and on behalf of TELKOM. Each of these five KSO investors consists of a consortium of Indonesian companies and at least one international telecommunications operator.

In 1996, TELKOM transferred responsibility for the management and operation of the KSO Divisions to the operating units managed by the KSO Investors through December 31, 2010. During the year, TELKOM continued to operate and manage the Jakarta and East Java Divisions, while separate KSO Units managed each of the Sumatera, West Java, Central Java, Kalimantan and East Indonesia regions. TELKOM received an upfront payment from KSO Investors of US $105 million in November 1995, which is being amortized over the 15 year KSO period. TELKOM also receives two types of payment from the KSO Units: Minimum TELKOM Revenue (MTR), which is a fixed monthly payment guaranteed by the KSO Investors; and Distributable KSO Revenue (DTR) a 30 percent share of the net income of each KSO Unit except Division VII where the share to TELKOM is 35 percent.

According to TELKOM, the unique KSO structure is designed to benefit all participants as well as the Indonesian public. The KSO Investors will benefit from the return on their investment and the people of Indonesia will receive continually improving quality and expanded services, as well as innovative new product offerings. TELKOM management continues to benefit from the strategic cooperation and technology sharing arrangements it has with each of the KSO investors. TELKOM hopes this structure will allow TELKOM greater financial flexibility and the opportunity to focus its resources on the development of the Regional Divisions (Jakarta and East Java) and the Network Services Division, which it will continue to manage and operate.

KSO investors are required to finance and provide an aggregate of a minimum of approximately two million new installed lines in their Regional Divisions by March 31, 1999 and TELKOM itself expects to provide an additional 477,956 new installed lines in the KSO Divisions between January 1, 1996 and December 31, 1998. During 1996, TELKOM provided 416,957 additional installed lines while the KSO Investors provided 114,365 installed lines. The five KSO Divisions accounted for approximately 45.0 percent of TELKOM's lines in service, 50.4 percent of TELKOM's employees at December 31, 1996 and represented approximately 29.5 percent of total operating revenues for 1996.

TELKOM'S JOINT OPERATION SCHEMES/ KSO (KERJA SAMA OPERASI) AS OF 1996				
DIVISION	**Location**	**Operator**	**Ownership Structure**	**Lines in Dec 1996**
I	Sumatera	Pramindo Ikat Nusantara	France Cable et Radio S.A, 35 % PT. Astratel Nusantara, 59.5 % Other local partners, 5.5 %	517,487
II	Jakarta and surrounding	TELKOM		
III	West Java	Aria West International	US West International BV, 35 % PT. Artimas Kencana, 52.5 % Asian Infrastructure, 12.5 %	500,000
IV	Central Java	Mitra Global Telekomunikasi International	Telstra Global Ltd, 20 % NTT, 15 % PT Indosat, 30 % PT Widya Duta Informindo, 15 % PT Krida Salindo Sentosa, 10 % Other local partners, 10 %	400,000
V	East Java	TELKOM		
VI	Kalimantan	Daya Mitra Malindo	Cable and Wireless, 25 % PT Intidaya Sistelindo, 29 % PT Alatief Nusakarya Corporation, 24.2 % TM Communications Ltd, 9.7 % American International Assurance, Co. Ltd, 9.8 % Other local partners, 2.4 %	237,000
VII	East Indonesia	Bukaka Singtel International	Singapore Telecom, 40 % PT Bukaka Telekomindo International, 60 %	403,000
KSO Term of Service: 15 years from January 1, 1996, except Regional Division VI Kalimantan, 15 years from April 1, 1996.				

FUTURE PLANS

The Indonesian government has set a target of five million additional telephone lines during Repelita VI (the 1994-1999 economic development plan). This would raise the telephone density to around 2.8 lines per 100 people.

Under the KSO arrangement, two million lines are due to be installed by the private sector by 1998. Part of the government initiative in encouraging private sector participation is to facilitate more telephone coverage of rural areas. In return for being granted the concession allowing them to install the line the private sector operators are required to direct 20 percent of their investment to rural areas.

An Indosat subsidiary, PT Mitra Global Telekomunikasi Indonesia (Mitra) plans to set up 400,000 telephone lines in central Java in the coming years. Its shareholders include Australia's Telstra Global Limited, Nippon Telegraph and Telephone (NTT) Corp and Japan's Itochu Corp.

The existing backbone transmission system (terrestrial, fiber optics and submarine cable) will be improved with the construction of a number of systems:

- A microwave system in northeast Sumatra;
- a Java northern-route fiber optic system;
- a cross-Kalimantan microwave system; and
- cross-Sulawesi microwave system.

Beyond upgrading its network, Indonesia hopes that deals with foreign operators, several of which have provided domestic public services, will also spread skills and technology. Most of the deals require spending at least 2.5 percent of revenues on training, education and research.

In 1997, Indonesia also plans to launch a direct broadcasting satellite (DBS) system, called Indostar, using a lightsat based system. These satellites will be positioned in orbit at 106.1, 115.1, 1.5.9 and 114.9 degrees East.

PT TELKOM and PT Satelindo are likely to jointly acquire and operate the new generation Palapa-D satellite. The new satellite is expected to replace the existing Palapa-B2R communications satellite and is scheduled to be launched in 1998.

In September 1996, it was announced that Japan's KDD Submarine Cable System Inc. had won a $68 million order for an undersea fibre optic cable link from

Indonesia's PT TELKOM. The 2,200 km cable will link three islands (Java, Kalimantan and Sulawesi) and have a total throughput of 10Gbit/s. Completion is scheduled for the autumn of 1998.

In order to strengthen and multiply the capacity of the network, the analogue-system will be gradually digitized and completed by 2004. This is important in order to lay down a basis for an integrated digital network (IDN) which will pave the way for the introduction of the integrated services digital network (ISDN). The ISDN project will first by introduced in Jakarta, Bandung and Surabaya.

TELKOM is actively exploring the possibility of providing potentially high-growth services such as PCN, and access to cable television and other multimedia services. The company believes that its planned deployment of optical fiber in the Network will enhance its competitive position vis-à-vis other providers of alternative systems for access to multimedia services.

In 1996 TELKOM finalized its T-2001 plan to achieve world-class status as a telecommunications operator by the year 2001, and advanced its plans for upgrading staff and service quality as well as plans for expansion of the Network.

DEVELOPMENT OF NEW VALUE-ADDED SERVICES.

Following the successful launch of ISDN in the fourth quarter of 1995, under the brand name PASOPATI, TELKOM has continued its commitment to delivering new value-added services to its subscribers in Indonesia.

In June 1996, TELKOM expanded the Network infrastructure to allow broadband capability and the company has been proceeding as planned to develop the Metropolitan Area Network (MAN) in Jakarta to address the increasing demand for high speed public data network services.

TELKOM has expressed a strong commitment to ensuring that its network can provide access to multimedia services. To this end, the company is engaged in discussions with multimedia service providers. For example, in October 1996 TELKOM entered into joint venture agreements with a number of Indonesian multimedia service providers to explore opportunities for providing such services as cable and pay television. In January 1997, the Company launched its Intelligent Network (IN) under the brand name JAPATI, with the assistance of Lucent Technology Inc.

During 1996, TELKOM established a development plan known as T-2001, based on the principal objective of positioning TELKOM's internal operating standards as equivalent to a world-class operator within the global telecommunications arena by the year 2001. This program consists of five strategic initiatives in the areas of human resource management, information systems, management style and corporate culture, accounting and finance management, and network technology and service.

OTHER DEVELOPMENT PROJECTS

Given Indonesia's large size, rapid growth, and ambitious plans for expansion of its role in the world economy, telecommunications development will be increasingly a private sector responsibility in Indonesia. Nonetheless, the government retains a role, particularly in providing social services via telecommunications networks and in ensuring the availability of telecommunications in remote areas.

The principal development projects approved for funding by the Government of Indonesia are listed each year in a publication called the "Blue Book." For example, in the transmission area, two projects are identified:

1) Luwuk Ambon Digital Microwave System to connect the Ambon TC to other TCs in a mesh network. Budgeted at $27.5 million of which $22.5 is projected to be foreign currency.

2) Ambon Jayapura Transmission System to meet increased demand and provide back-up for the satellite system. Budgeted at $87 million of which the imported equipment and services requirement is $48 million.

COMPETITIVE ENVIRONMENT

Through the state owned company, PT Inti, the government encourages the domestic production and development of the telecommunications equipment assembly and manufacture. PT Inti produces a range of equipment including digital switches, telephone sets, cellular telephones, receivers, transmitters, and antenna.

In switching, equipment is supplied by Siemens, NEC, Lucent. Suppliers of AMPS and GSM systems include Motorola, NEC, Ericsson, Nokia, Philips, Siemens, as well as Hughes Network Systems.

For the supply of cable, there are seven manufacturing companies in Indonesia. Two of them, Jembo and Kabelmetal can make fiber optic cables are are teamed with numerous foreign partners including Alcatel, Fujikura, Voksel, among others.

CONTACTS

GOVERNMENT OFFICIALS:

Mr. Joop Ave, Minister
Department of Tourism, Post and Telecommunications (MTPT) JI. Merdeka Barat No. 16-19,
Jakarta IO110
Tel. (62-21) 345 6705, 380 7822
Fax. (62-21) 384 8245

Mr. Jonathan L. Parapak
Secretary General
Ministry of Tourism, Post, and Telecommunications
Jl, Merdeka Barat 16-19
Jakarta 10110, Indonesia
Tel. (62-21) 384 9142
Fax. (62-21) 386 7600

Mr. Djakaria Purawidjaja
Director General for Telecommunications
Ministry of Tourism, Post, and Telecommunications
Jl, Merdeka Barat 16-19
Jakarta 10110, Indonesia
Tel. (62-21) 315 6000
Fax. (62-21) 386 0746

Mr. Eman Sachroni Sumantri
Director for Telecommunications Development
Ministry of Tourism, Post, and Telecommunications
Jl, Merdeka Barat 16-19
Jakarta 10110, Indonesia
Tel. (62-21) 383 8293
Fax. (62-21) 384 4036

STATE-OWNED COMPANIES

Mr. Asman Akhir Nasution
President Director
PT. TELKOM
Bandung office: JI. Japati No. 1
Bandung, Jawa Barat
Jakarta Office: Grha Cipta Caraka, Ji. Gatot Subroto 52,
Jakarta Selatan
Bandung tel: (62-22) 436 100, fax. (62-22) 440 313
Jakarta tel. (62-21) 520 3328, fax. (62-21) 520 9831

Ir. Tjahyono Soedodibroto
President Director
PT. INDOSAT
JI. Merdeka Barat No. 21
Jakarta 10110. Indonesia
Tel. (62-21) 380 2162
Fax. (62-21) 345 8155

Risa Bhinekawati
Executive Director
Indonesian Telecommunications Society (MASTEL)
Mulia Center, 12th. Floor
Jl. H. R. Rasuna Said Drive Kav. X-6/8
Jakarta 12940, Indonesia
Tel: (62-21) 522-2050
Fax: (62-21) 522-7037

Safwan Natanagara
Executive Vice President, Corporate Development
INDOSAT
21 Medan Merdeka Barat
Jakarta 10110, Indonesia
Tel: (62-21) 3806268
Fax: (62-21) 3440484
e-mail: safwan.n@indosat.net.id

Achmad Rivai
Executive Vice President, Operations & Engineering
INDOSAT
21 Medan Merdeka Barat
Jakarta 10110
Tel: (62-21) 3865742
Fax: (62-21) 3440484

Suria K. Lukiman
Managing Director, Network Systems Indonesia
Lucent Technologies
Wisma Danamon Aetna Life, 7th. Floor
Jl. Jendral Sudirman Kav. 45-46
Jakarta 12930
Tel: (62-21) 5771677
Fax: (62-21) 5771648

Mr. Y.B. Basuki
Public Relation Manager
P.T. INDOSAT
Jl. Medan Merdeka Barat No.21
Jakarta, Indonesia
Tel: (62-21) 345-0624
Fax: (62-21) 345-0592

CELLULAR OPERATORS

Mr. Julius S. Djohan
President Director
P.T. Excelcomindo
Wisma GKBI, 23rd floor
Jl. Jend. Sudirman Kav. 28
Jakarta, Indonesia
Tel: (62-21) 574-0922
Fax :(62-21) 574-1155

Mr. Saleh Gunawan
Cellular Director
P.T. Satelit Palapa Indonesia (Satelindo)
Jl. Daan Mogot KM 11
Jakarta 11710, Indonesia
Tel: (62-21) 545-1745
Fax : (62-21) 545-1746

Mrs. Koesmarihati Sugondo
President Director
P.T. Telkomsel
Landmark Center Tower A, 19th floor
Jl. Jend. Sudirman No. 1
Jakarta 12910, Indonesia
Tel: (62-21) 520-0811
Fax :(62-21) 571-2672

Mr. Soedjono Kramadibrata
President Director
Mr. Zen Smith
Commercial Director
PT. Komselindo
Gedung Elektrindo, 2nd and 4th Floor
Jl. Kuningan Barat No. 8
Jakarta 12710, Indonesia
Tel: (62-21) 526 9526
Fax: (62-21) 526 9517

Mr. Suprapto Pegeng
President Director
PT. Mobisel
Mashill Tower, 23rd floor
Jl. Jend. Sudirman Kav. 25
Jakarta 12920, Indonesia
Tel: (62-21) 526-7944
Fax: (62-21) 526-7945

Mr. Djoko N. Labbaika
Director
PT Cellnet Nusantara
Wisma GKBI Room 1602, 16th floor
Jl. Jend. Sudirman No. 28
Jakarta 10210, Indonesia
Tel: (62-21) 572-7125
Fax: (62-21) 572-7129

Mr. F.X. Suhartono
Director
Mr. Danny Dahlan, Public Relations Manager
PT Primasel
Gedung BRI, 9th. floor
Jl. Basuki Rahmat No. 122
Surabaya 60271, Indonesia
Tel: (62-31) 532-6980, 532-6984
Fax : (62-31) 532-6978

INDONESIA

CELLULAR BUILD-OUT

PROJECT DESCRIPTION

Project Summary

Project Cost: $670 million

Project Sponsor:
PT Escelcomindo Pratama
PT Satelindo

Required Technology:
Cellular base stations

Indonesia's cellular penetration remains one of the lowest in the region, and has tremendous potential for growth. This profile features two of the many private sector projects that are going forward among the current cellular licensees, focusing on plans announced by PT Excelcomindo Pratama and PT Satelindo.

As in all basic service areas, all of Indonesia's cellular providers are either joint ventures between PT Telkom and local private companies, several with minority foreign participation, or concessions from PT Telkom. The former pattern has become the dominant one since 1994, and is expected to continue.

These companies use a range of technologies, in which European technologies have generally been dominant, although Motorola and some other U.S. suppliers have made inroads. Tecnologies in use include NMT-450 (STB-C), AMPS (STB-N), and GSM. The main service providers at present include:

- Mobisel, a joint venture of PT Telkom and PT Rajasa using the STB-C technology, with expansion underway using the NMT-450 system
- Komselindo, in which the lead local company is PT Elektrindo Nusantara, using the AMPS (STB-N) system
- Metrosel, a joint venture with CPS, also using AMPS
- Telekomindo Prima Bhakti (serving Bali), which at last report was expected to shift to the joint venture mode before its concession expires in 1998

- Telkomsel, a joint venture among Telkom, Indosat, PTT Netherlands and local company PT Setdco Megasel Asia, serving Medan (Sumatra), Batam, Bintan, and parts of Java (east, west, and Bandung) and using Siemens and Ericsson GSM technology

Satelindo (described below)

Excelcomindo Pratama (described below)

PROJECT FINANCING

PT Excelcomindo Pratama is the most recently established of three license holders for GSM cellular services. The president of Excelcomindo has confirmed the company's plans to invest another $370 million to expand and upgrade its systems by the end of 1998.

This investment builds on previous investments of $350 million for 200 base stations in Jakarta and Bandung, already completed.

Excelcomindo is a joint venture in which the private partners include PT Rajawali Wira Bhakti, Nynex, and Mitsui. Ericsson is the primary supplier to Excelcomindo at present, although the company also uses Siemens technology (this decision was forced on the company by the Indonesian government, which mandates diversification of suppliers for policy reasons).

Satelindo relies on a digital GSM system using Alcatel technology. The company's formally announced expansion plans include installation of over 700 new cellular base stations at a cost of $300 million. This investment is also expected to be made in 1998.

Satelindo was formed in 1993 by PT Bima Graha with Telkom and Indosat holding 30 percent and 10 percent of the shares, respectively. Satelindo initially selected the GSM technology and awarded a contract to Alcatel. Its network was launched in Jakarta in November 1994. Deutsche Telekom's mobile subsidiary, DeTeMobil, now holds a 25 percent share in Satelindo as well. Siemens has been successful in joining Alcatel as a Satelindo supplier, serving a network that covers Jakarta, Surabaya, Bandung, Semarang and nine other cities, all on Java.

STATUS OF PROJECT DEVELOPMENT

Both of the procurements identified above are expected to be completed in the near future.

The two procurements featured in this profile are among a larger number of major opportunities offered by expansion of cellular in Indonesia. Eleven new cellular licenses will be awarded by the end of 1997 to install DCS 1800 and PHS systems for operation in the first quarter of 1998.

Indonesian companies are very keenly interested in installing updated technology to maintain their edge in an increasingly competitive marketplace. **PT Cellnet Nusantara and Motorola,** for example, have completed trials of the DCS 1800 system, which is expected to be installed in Indonesia at a cost of $134 million, assuming a license is granted. PT INTI has also installed a pilot PHS network in Surabaya in preparation for this competition.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

U.S. companies have been playing catch-up in Indonesia. The largest providers, notably Motorola and Lucent, have made some inroads in the market, but Indonesia continues to be dominated by European and Japanese suppliers. The opening of new concessions and cellular build out creates an opening for U.S. companies, although it can be anticipated that many of the new licenses will go to companies that already have established supply relationships with non-U.S. companies, particularly the current cellular suppliers.

The entry of major U.S. service providers such as Nynex and US West create avenues for market entry by U.S. technology suppliers. Companies that have established supplier relationships with these companies should seek to build on these relationships, recognizing that in Indonesia the U.S. companies are minority joint venture partners rather than the sole decision makers.

DECISION MAKING PROCESS

As a benchmark for U.S. firms, the case of a competitor may provide insight into how U.S. firms can best compete for large scale projects. In a recent procurement

of over US$100 million in Lucent CDMA equipment by Komselindo, the competition included Motorola, Lucent, Nortel, Qualcomm, Samsung, Lucky Goldstar, and NEC. The award to Lucent was based on three factors in descending order of importance and included 1) rapid product delivery and aid in system roll-out 2) price and 3) financing.

However, procurement decisions in Indonesia are complex and are not always based on commercial considerations. Political and quasi-political relationships are also extremely important, which often poses barriers to U.S. companies seeking to enter this market. Complicated interconnections between state-owned companies, regulators, trade agencies, and private Indonesian companies held by interests closely associated with family members of President Suharto make it imperative for new U.S. entrants to tread carefully as they enter this market.

CONTACTS

Mr. Julius S. Djohan
President Director
P.T. Excelcomindo
Wisma GKBI, 23rd floor
Jl. Jend. Sudirman Kav. 28
Jakarta, Indonesia
Tel: (62-21) 574-0922
Fax: (62-21) 574-1155

Mr. Saleh Gunawan
Cellular Director
P.T. Satelit Palapa Indonesia (Satelindo)
Jl. Daan Mogot KM 11
Jakarta 11710, Indonesia
Tel: (62-21) 545-1745
Fax: (62-21) 545-1746

INDONESIA

NUSANTARA 21

PROJECT DESCRIPTION

"Nusantara 21" is part of Indonesia's vision to make the country a fully-fledged member of the global information society by early in the next century by the introduction of a multimedia super highway.

The concept is similar to the Multimedia Super Corridor (MSC) in Malaysia, but its coverage is different because of the size of the Indonesian archipelago. The Nusantara 21 plan divides the nation into six geographic zones or SDH "rings" in which the major cities in each ring are linked to fiber optic lines of 155 Mbp/s capacity with each zone in turn linked by the "ring of rings" using a 2.5 Gbp/s capacity cable. The three South East Asian growth triangles centered on the Indonesian towns of Medan, Batam and Ujung Pandang will use fiber optic links for all their communications with neighboring countries, under the plan. The table below in the project status section provides additional details on the proposed timing for development of the backbone in each ring.

Project Summary

Project Cost: $10 billion (initial estimate)

Project Sponsor:
Ministry of Tourism, Post and Telecommunications (DEPARPOSTEL)
In cooperation with PT Telkom and other ministries, including Ministry of Industry and Trade

Required Technology:
Fiber optics cable and switches
SDH transmission systems
Software development tools
Premises equipment
Broadband technologies and applications

Nusantara 21 plans include electronic government, ten "intelligent universities" to form a network to exploit the new communications technology with joint lectures and research, distance learning, telemedicine, banking services, manufacturing and mining, tourism, and electronic commerce.

Nusantara 21 is an ambitious program that aims to achieve a number of the Indonesian government's core objectives:

- To reduce the gap between socio-economic levels in Indonesia
- To encourage growth of national industry, particularly in IT
- To assist the efficient and effective conduct of government
- To improve education and teaching
- To conserve the rich national culture
- To encourage growth of other sectors

As a part of Nusantara 21, the Industry and Trade Ministry is coordinating a proposal to build an Information Technology Park around Jakarta to bring together research and development with high technology and software manufacturing. More than one park is planned to make the most of the internal city "rings" of high capacity fiber optic cables planned for the 11 "multimedia cities" by 2001. Beyond Jakarta, Indonesia sees the cities of Surabaya, Bandung, Semarang and Yogyakarta on Java as well as the outer island centers of Medan, Batam, Kuala Kencana, Balikpapan, Ujung Pandang and Denpasar as acquiring the infrastructure on which a multimedia city can be founded.

The development of these additional facilities are particularly suited to midsize companies, which may prefer to compete in the less crowded environment of a city such as Surabaya (which has a population approaching 4 million), or the educational and research center of Bandung, rather than in Jakarta.

The proposed Nusantara 21 multimedia project will also involve seven satellites. These include the older Palapa B4, B5 and B6 with the newer Palapa C1, C2 and D series satellites, as well as a satellite owned by PT Multimedia Asia, a joint venture between Pasfik Satelit Nusantara and Indosat. The Multimedia satellite will be operational by 2001. Indonesia will also have access to the Global Mobile Personal Communications (GMPS) by Satellite systems.

PROJECT FINANCING

Nusantara 21 is planned as the showcase project for Indonesia's transition toward a more high technology economy. Actual estimates of project costs are not final and require completion of project scope and design specifications for the various components. A number of different financing options will be evaluated and, as in the case of the Malaysian MSC and Singapore ONE projects, it is likely that different components will receive different treatment in terms of financing. Projects that have the potential to go forward on a fee-recovery basis can be

expected to be implemented as KSO activities (similar to BOT) in cooperation with PT Telkom or another Indonesian entity. Social projects and those relating to the functioning of government can be expected to go forward as government procurements, depending on the priority of the project and its cost.

In both cases, companies that are able to form consortia that can offer turnkey implementation and financing packages will be in a preferential position.

Given the large magnitude of The Government of Indonesia is expected to approach the Asian Development Bank and/or the World Bank for funding of some program elements, particularly those involving social services or integration of the outlying islands into the national development system. The project development that this would require is still in the early stages, offering consulting opportunities for U.S. companies but delaying the likely start of bank-funded development for one-to-two years.

The World Bank has already been involved in the early design phases of the program, sponsoring a workshop to define the system architecture and core subprojects. The World Bank is currently considering a project that may be used to fund parts of the Nusantara 21 initiative, the Indonesia-Information Infrastructure and Applications Development Project (IIADP). With an estimated total cost of US$69.8 million and a Bank loan tentatively placed at US$56.7 million, the IIADP is designed to achieve the following objectives:

- **Extend and intensify communications and information networks to facilitate sustainable regional development and economic growth,** by (a) extending postal communication network to the rural regions to establish a basic communications medium for the first time; (b) extending Email, Internet and tourism information services selectively to promote wider usage for information access towards the promotion of knowledge acquisition and economic growth; and (c) introducing new value added services using existing postal and electronic networks to be able to respond effectively to rapidly changing global market needs to gain competitive advantage.
- **Develop appropriate legal and regulatory frameworks** that would effectively create the enabling environment for the provision of above services in a sustainable manner, and that would foster further development of information infrastructure in Indonesia beyond this project.
- **Strengthen institutional capability and capacity in the relevant agencies and administrations,** namely MTPT, PTPos, IPTEKNet, and BAPPENAS, to be able to efficiently manage the new information networks and to be able to

undertake further development. With respect to catalyzing broader development of the networks rapidly, the project promotes private sector partnerships in the provision and management of information networks and systems.

- **Establish a program to promote private sector development at the user end of the value chain of information services** in order to stimulate sustainable market development that would effectively utilize the new or enhanced supply of information services. The program is focused on alleviating the primary bottleneck that exists in developing the private sector in the information services industry

Specific project components will include: (a) technical assistance, training, and advisory services to improve the legal and regulatory framework and the public sector framework for IT; (b) technical assistance and equipment to strengthen capacity, capability and support systems within PT Pos and extend its postal network to cover remote areas, and to pilot the design of a tourist information service in the WARTELs; (c) technical assistance, training, and equipment to expand the science and technology network (IPTEKnet); and (d) a cost sharing scheme for advisory services to improve good technology practices targeted at small and medium enterprises.

STATUS OF PROJECT DEVELOPMENT

The following table provides details on the planned schedule for developing the system backbone, including the "ring of rings" linking individual rings on each main island or island grouping.

MILESTONE INDICATORS
Development of Physical Infrastructures – Archipelagic Super-Lane

No.	Indicator	Milestones		
		1997	1999	2001
1	Ring of rings	Fiber = 30 % GMD = 7 % GMA = 3 Satellite = 60%	Fiber = 60 % GMD = 10 % Satellite =30 %	Fiber = 80 % GMD = 10 % Satellite=10 %
2	Sumatera Ring	GMD = 80 % GMA = 10 % Fiber = 5 % Satellite = 5 %	GMD = 80 % Fiber = 15 % Satellite = 5 %	GMD = 80 % Fiber = 15 % Satellite = 5 %

3	Kalimantan Ring	GMD = 50 % Satellite = 50 %	GMD = 70 % Satellite = 30 %	GMD = 90 % Satellite = 10 %
4	Sulawesi Ring	GMD = 80 % Satellite = 20 %	GMD = 85 % Satellite = 15 %	GMD = 90 %, Satellite = 10 %
5	Archipelagic Ring	Satellite = 100 %	GMD = 50 % Satellite = 50 %	GMD = 50 % Fiber = 30 % Satellite = 20 %
6	Java Ring	Fiber = 50 % GMD = 50 %	Fiber = 70 % GMD = 30 %	Fiber = 80 % GMD = 20 %
7	Denpasar Ring & Nusatenggara Ring	GMD = 50 % Satellite = 50 %	GMD = 80 % Satellite = 20 %	GMD = 90 % Satellite = 10 %

As this table indicates, the core "ring of rings" is expected to rely primarily on fiber optic technology, with four of the other six local rings slated to evolve toward a 100 percent GMD architecture. The remaining two rings, the important Java Ring and the Archipelagic Ring serving the relatively remote eastern provinces, are expected to rely on a mix of fiber and GMD. Satellite will continue as an option on a contingency basis.

The Industry and Trade Ministry is coordinating a proposal to build an Information Technology Park around Jakarta to bring together research and development with high technology and software manufacturing.

As the system evolves, a network of parks are planned to make the most of the internal city "rings" of high capacity fiber optic cables slated for the 11 "multimedia cities" by 2001. Beyond Jakarta, Indonesia's planners envision the cities of Surabaya, Bandung, Semarang and Yogyakarta on Java as well as the outer island centers of Medan, Batam, Kuala Kencana, Balikpapan, Ujung Pandang and Denpasar as acquiring the infrastructure on which a multimedia city and its related information technology park can be founded.

The development of these additional facilities are particularly suited to midsize companies, which may prefer to compete in the less crowded environment of a city

such as Surabaya (which has a population approaching 4 million), or the educational and research center of Bandung, rather than in Jakarta.

RisTI Telkom (PT Telkom's internet arm) has been selected by the government to manage the Nusantara 21 program's roll-out. Other existing internet networks that will be integrated into the system include IPTEKNET, SISKOM DAGRI, DEPERINDAG ON-LINE, INFORIS, ITB-NET, INDONET, RADNET, SISTELINDO-IBM-NET, IDOLANET, CBNNET, MELSANET, and INDOSATNET.

U.S. Competitiveness and Export Potential

Many opportunities exist for manufacturers to participate in the Nusantara development growth by sales of switching, fiber optic SDH transmission systems, and other broadband facilities necessary to provide multimedia services that will use the Nusantara rings as a technology platform.

The demand for multimedia broadband interactive services in the U.S. has driven manufacturers to develop and deploy fiber-based and compression systems that will provide these services. This has placed the U.S. in a leading position to participate in projects such as Nusantara. A number of U.S. manufacturers and service providers are clearly able to demonstrate their ability and experience in implementing these systems, including those that are for the "public good" such as distance learning and telemedicine.

One example of the latter in the U.S. is the State of Georgia Statewide Academic and Medical System ("GSAMS"). This is the largest and most comprehensive distance learning and healthcare system in the world and serves approximately 350 schools and hospitals throughout the state. The network is used for:

- Classroom instruction
- Continuing education
- Cultural and artistic sharing
- Delivery of health care services
- Senior citizens enrichment programs
- Providing a gateway to the world

U.S. products are generally considered to be of high quality for all of the applications planned for Nusantara 21, but are also often priced higher than

competing products because of high overheads compared with Japan and other countries such as Korea. In the past, U.S companies have ranked at the bottom end of the list of bidders for outside plant projects. The U.S. competitive position versus Japan in the supply of transmission systems for the Nusantara rings, will depend a lot on the value of the U.S. dollar against the Yen. Financing will also play an important part of the ability to win any parts of these projects. A local businessperson familiar with this project interviewed as background for this description commented that Japan and European companies have established close ties in Indonesia, often beginning many years ago, and new entrants from the U.S. are therefore likely to find that "the competition is brutal".

DECISION MAKING PROCESS

PT Indosat, PT Telkom, together with the KSO (Kerjasama Operasi) companies will play a major part in the Nusantara development and are already taking steps to implement multimedia projects. For example, in June 1996, Telkom expanded the Network infrastructure to allow broadband capability and the company has been proceeding as planned to develop the Metropolitan Area Network (MAN) in Jakarta to address the increasing demand for high speed public data network services.

PT Telkom is committed to ensuring that its network can provide access to multimedia services and is engaged in discussions with multimedia service providers to achieve this goal. In January 1997, Telkom launched its Intelligent Network (IN) under the brand name JAPATI, with the assistance of Lucent Technology Inc. and in February 1997, signed a joint venture agreement with Pasifik Satelit Nusantara to provide telephone services using VSAT technology in rural and remote locations through a new product known as "Xpress Connection".

The decision-making process for Nusantara 21 remains somewhat uncertain, in large part because the applications are so new to Indonesia that it has been difficult for the government to move from generalizations toward implementation. The World Bank project discussed above is expected to help focus the process.

The key decision-making point at present is RisTI, PT Telkom's research arm, which is taking the lead in developing the network. As Indonesia moves to expand its network for the provision of advanced services through Nusantara 21, the development of relationships with foreign partners will be key to shaping the important technology decisions. As in other high technology projects, the project

managers will look to the partners to make a commitment to spreading skills and technology to Indonesia through the project. In this regard, an invitation to Indonesian professionals involved with Nusantara 21 development to visit the U.S. and tour would help to showcase U.S. company technology. Such a visit, providing opportunities for key officials to see U.S. technologies in applications similar to those they are planning, would be effective as the officials approach the design task ahead of them to help in focusing the project development process. A visit to North Carolina and Georgia, for example, would provide an opportunity to the developers of projects such as GSAMS and the North Carolina Information Highway to share their experiences. It would also allow hands-on demonstrations of the technology to be observed.

Many other applications at the state and national level provide opportunities for this type of targeted exchange. Whether funded by USTDA or the companies themselves, this type of targeted marketing would help to redress the imbalance created by the absence of U.S. concessional funding for high technology projects.

Given the loose and evolutionary nature of the likely decision-making process, measures such as this to develop relations and show commitment will be critical to positioning U.S. companies and technologies for success in Nusantara 21.

CONTACTS

Mr. Joop Ave, Minister
Department of Tourism, Post and Telecommunications (MTPT) Jl. Merdeka Barat No. 16-19,
Jakarta 1O110
Tel. (62-21) 345 6705, 380 7822
Fax. (62-21) 384 8245

Mr. Jonathan L. Parapak, Secretary General
Tel. (62-21) 384 9142
Fax. (62-21) 386 7600

Mr. Djakaria Purawidjaja
Director General for Telecommunications
Tel. (62-21) 315 6000
Fax. (62-21) 386 0746

Mr. Eman Sachroni Sumantri
Director for Telecommunications Development
Tel. (62-21) 383 8293
Fax. (62-21) 384 4036

Mr. Asman Akhir Nasution
President Director
PT. TELKOM

Bandung office: Jl. Japati No. 1
Bandung, Jawa Barat
Jakarta Office: Grha Cipta Caraka, Ji.
Gatot Subroto 52,
Jakarta Selatan
Bandung tel: (62-22) 436 100, fax.
(62-22) 440 313
Jakarta tel. (62-21) 520 3328, fax.
(62-21) 520 9831

Mr. Safwan Natanagara
Executive Vice President, Corporate Development
INDOSAT
21 Medan Merdeka Barat
Jakarta 10110
Tel: (62-21) 3806268
Fax: (62-21) 3440484
e-mail: safwan.n@indosat.net.id

Mr. Sukarno Abdulrachman
President of the Indonesian Telecommunications Society (MASTEL)
Mulia Center, 12th. Floor
Jl. H. R. Rasuna Said Drive Kav. X-6/8
Jakarta 12940

LAOS

Country Profile
Telecommunications Sector Overview
Projects:
- East Loop Project
- Telecommunications Expansion

The boundaries shown do not imply, on the part of U.S. Government, any judgement on the legal status of any territory.

Lao People's Democratic Republic Profile
As of 1996

Capital - Vientiane
Population - 4.7 million
26% urban population
GDP per Capita - US$335

Telephone Density
Overall: 0.33%
Urban - 0.25%
Rural - 0.08%

Waiting List for
Telephone Lines - 5,740
Cellular Subscribers - 1,850
Paging Subscribers -
Telex Subscribers - 60

International Outgoing
Traffic (calls) - 4,538,116

Network Digitization
Switching - 94%
Transmission - 90%
(Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, northeast of Thailand **Geographic coordinates**: 18 00 N, 105 00 E **Comparative area**: slightly larger than Utah **Border countries**: Burma, Cambodia, China, Thailand, Vietnam **Climate**: tropical monsoon; rainy season (May to November); dry season (December to April) **Terrain**: mostly rugged mountains; some plains and plateaus **Geographic note**: landlocked

COUNTRY PROFILE

PEOPLE

The population of Laos is estimated at about 4 million, the majority of which lives in the valleys of the Mekong and its tributaries. Nationals of Laos are known as Lao(s) or Laotian(s). The population of the Lao PDR is ethnically diverse. Up to 68 ethnic groups have been identified, which can be roughly categorized into 1) the Lao Loum, who occupy the lowland plains and the Mekong river valley, and constitute some two thirds of the total population, 2) the Lao Theung, who occupy the mountain slopes comprising about 22 percent of the population, and who are thought to have been the first inhabitants of Laos in the pre-historic era, and 3) the Lao Soung, who occupy the mountain over 1,000 meters constituting about 10 percent of the total population, and who carry indigenous linguistic traditions in the remote and highly mobile settlements. Particular emphasis is being placed on finding ways to more fully integrate the ethnic groups into the economic and social life of the country.

The predominant religion is Theravada Buddhism. Animism is common particularly among the mountain tribes. Buddhism and spirit worship coexist easily. Most Christians (primarily Roman Catholic) emigrated after 1975.

The official and dominant language is Lao, a tonal language of the Thai linguistic group. French, once common in government and commerce, has declined with the departure of many former government officials.

THE ECONOMY

The Government of the Lao Peoples' Democratic Republic has been decentralizing control and encouraging private enterprise since 1986. The results have been striking for this landlocked country that shares borders with the Peoples' Republic of China in the north, Cambodia in the south, Vietnam in the east and Thailand and Burma in the west.

One of the world's poorest nations, Laos has had a Communist centrally planned economy with government ownership and control of enterprises of any size. In recent years, however, the government has been decentralizing control and encouraging private enterprise. Laos is a landlocked country with a dated infrastructure; that is, it has no railroads, a rudimentary road system, limited external and internal telecommunications, and electricity available in only a limited area. Subsistence agriculture is the main occupation, accounting for over 60 percent of GDP and providing about 85-90 percent of total employment. The predominant crop is rice. For the foreseeable future the economy will continue to depend on foreign aid from the IMF and other international sources. Aid from the former USSR and Eastern Europe has been cut sharply.

THE ECONOMY, ECONOMIC LIBERALIZATION AND POLITICAL CHANGES

Laos followed its economic liberalization program by taking steps toward opening the country politically in 1991 when the government adopted a new constitution. In 1992 the government created a national assembly to which several non-party representatives have been elected.

In July 1997 Laos formally joined the Association of Southeast Asian Nations (ASEAN) and is preparing to join the Asian Free Trade Area (AFTA). The Government has laid out an economic strategy toward the year 2000, emphasizing three areas: transportation and communications, hydroelectricity and human resources.

The government has simplified the tariff structure and has established a foreign investment management committee. They have allowed the currency to float. A new implementing decree reduced import rates and inaugurated new consumer taxes. All these steps are directed toward the path to a free market economy.

Although half the population lives below the poverty line, the GDP growth rate remains at 7.5 percent. The industrial sector of the country is performing most strongly, expanding over 11 percent. Expansion is concentrated in garment manufacturing, light industry and handicrafts. The Lao economy has benefited from the migration for low-skill manufacturing jobs from Thailand and South Korea. Approximately 90 percent of the 600 state-owned enterprises in Laos have been privatized. Laos issued a law for the protection of international property rights (IPR) in 1995.

The level of Lao trade, although low in comparison to its neighbors, has increased steadily over the last few years. in 1995, the country's exports totaled $348 million -- with almost 80 percent of that amount comprised of electricity sales. During the same year, Laos imported $587 million.

RELATIONS BETWEEN THE UNITED STATES AND LAOS

The United States and Laos have cooperated well on POW/MIA issues and anti-drug trafficking exercising. Most recently, the government of Laos was forthcoming in the bilateral trade agreement negotiations with the United States which were concluded in August 1997.

Laos has taken steps to address concerns regarding alternatives to opium production and alleged human rights disputes with the Hmong minority. These steps and the ongoing economic liberalization have worked to help Laos become a more active player in the international community. The Lao PDR signed an agreement with the U.S. Overseas Private Investment Corporation (OPIC) in 1995 and has opened its economy to foreign trade and investment. Laos has also made the necessary economic changes for its recent admission to ASEAN.

With Laos-US trade amounting to less than $20 million in U.S. exports and imports in 1996, Laos seeks normal trading at a relatively low level. Laos also seeks Most Favored Nation (MFN) status to support trade expansion MFN status would enable Laos' neighbors to take a close look at their new fellow ASEAN member. As Laos becomes integrated with its regional neighbors, the country will provide a strong market for U.S. goods. Advocates say that MFN status for Laos would most likely also contribute to higher standards of living for the Lao people.

Given the current state of the Lao PDR's development, the country has made great strides in complying with international norms of trade and investment. Because of the concerted effort Laos has made to address U.S. concerns regarding POW/MIA accounting, combating drug trafficking, and the treatment of its ethnic minorities and because US companies could benefit, the argument is strengthened for the United States to grant Laos MFN status to promote further normalization of commercial relations between the two countries.

POLITICAL OVERVIEW

The country is known officially as Lao People's Democratic Republic and in short, Laos. Laos is a communist state with the capital in Vientiane. Independence was gained on 19 July 1949 from France.

POLITICAL HISTORY

The area has been populated for more than 10,000 years; the first modern Lao kingdom was founded in the 14th century. A 1694 succession dispute resulted in the division of the country into three kingdoms. After numerous invasions by the Burmese, Thais and Vietnamese, France took control, building very limited infrastructure.

Laos, which had come under the control of Japan in World War II, declared independence in September 1945. France, in protest, installed its own king and created a protectorate in 1946. Freedom fighters moved into Thailand and continued to fight for independence. with the help of the young Vietnamese Communist party. The Lao Peoples' Democratic Republic was proclaimed in December 1975, and the Lao PDR Party, strongly Leninist, is the only political party in Laos.

POLITICAL AND ADMINISTRATIVE STRUCTURE

The Constitution of the Lao PDR was adopted in August 1991. It provides for the separation of legislative, executive and judicial powers. The people, with whom the political power ultimately resides according to the Constitution, exercise such power through an elected National Assembly.

The members were directly elected by the people in December 1992, whose five-year term commenced in January 1993. Among the key functions of the National Assembly is the approval of annual state budget and plan. The National Assembly recently passed four important laws which are vital to the country's transition into a market economy revised foreign investment law, budget organic law, taxation law, and the law on business operations.

The Constitution further defines the authorities and structure of the state and the fundamental rights of the citizens. It also provides a legal frame for a market-based economic system.

The President is the Head of State, and the main organ of the government is the Prime Minister's Office headed by the Prime Minister. The Government is composed of eighteen members including heads of the ministries, the State Bank of Lao, and the Committee for planning and Cooperation (CPC). The President of CPC is concurrently the Deputy Prime Minister.

The local government structure extends from provincial levels through district levels to village levels. The province is administered by a governor. Divisions of responsibilities within the provincial and district administrations are similar to those at the central level, covering the same fields as the central ministries except in the areas of national defense, foreign affairs and police. Decree 68 providing for the Fundamental Centralization of State Finance, Budget and Treasury, promulgated in August 1991, has reformed the administration from horizontal to vertical management, placing fiscal collection and budgetary allocation under the ministerial purview.

The Lao People's Revolutionary Party (LPRP) is the only political party. Its leading role in the political system is explicitly recognized in the Constitution. It is governed by a Central Committee and headed by an executive committee. The Party organization extends downward to the district and village levels, in parallel with the government administrative structure. In line with the NEM reform program, the administrative reform further delineation of the responsibilities of the Party from those of the State and restructuring of the civil service to correspond with the implementation requirements of the NEM reforms.

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN LAOS

All visitors, regardless of purpose, must have visas. If the date of arrival differs from that on the traveler's visa, the traveler must reapply for a new visa.

The Kip is the official currency of Laos. Although the US dollar and the Thai baht are widely used, there may be penalties for failing to trade in Kip. Credit cards are honored only major international institutions as hotels, airlines and some restaurants. Commercial banks and licensed trade bureaus will cash travelers' checks.

Government departments are open from 8 AM to noon and 2 PM to 5 PM Monday through Friday. Banks are open from 8 AM to 3 PM Monday through Friday.

Businesses are generally open Monday through Friday from 7:30 AM until 5 PM with a two to two and one half hour lunch break. Many offices are open on Saturday mornings.

Commercial banks are sub-divided into state-run commercial banks that are wholly owned by the state and foreign banks with full banking licenses. There are also joint venture banks set up with capital contributed by foreign and Lao parties and representative offices of foreign banks. There is no stock market in place in the Lao PDR.

Potential foreign investors must apply for a business license through the Foreign Investment Management Committee which is responsible for the promotion and management of foreign investments including licensing in consultation with the relevant ministries. The form of investments are wholly foreign owned enterprises; joint venture companies, representative offices and branches of a foreign company.

Foreigners may repatriate to their home countries or to a third country income and funds generated from their investments through a bank established in Lao PDR at the exchange rate periodically fixed by the Bank of the Lao PDR.

TELECOMMUNICATIONS SECTOR OVERVIEW

Laos has one of the least developed telecommunications systems in the region. Teledensity is only 0.45 per 100, the result of decades of under-investment, limited planning, and only modest attempts at integration. The system is fragmented and inadequate to meet the needs of the country's growing population, much less to achieve the government's economic growth or social services objectives.

The Government of Laos has set a number of telecommunications goals to redress this situation. It plans to increase the number of main lines to a total capacity of 86,000 lines by the end of the current five-year National Plan period, from a current level of around 21,000. This will raise the teledensity from its present 0.45 per 100 people to approximately 2 per hundred people by the year 2000. As of June 1997 there was a waiting list of approximately 2,000 in Vientiane Province and 200 to 300 in each of the remaining 15 provinces.

KEY PLAYERS (GOVERNMENT AND PRIVATE)

The LAO Telecommunications Company (LTC) operates the sector. LTC is a monopoly joint venture between Entreprise Telecommunications du Lao (ETL) and Shinawatra International of Thailand. ETL is a government department under the jurisdiction of the Ministry of Communications, Transport, Post and Construction (MCTPC). ETL owns 51 percent of LTC, which was registered in November 1997, and Shinawatra owns the remaining 49 percent. The joint venture has a life of twenty-five years.

REGULATORY REGIME AND MARKET ACCESS

The Ministry of Communications, Transport, Post and Construction (MCTPC) overseas the sector and the operations for the Post and Telecommunications sectors have been separated since March of 1995.

EXISTING NETWORKS

The Public Switched Network

The existing exchange switching capacity, based on the Fujitsu FETEX 150 system, is 26,000 lines of which 21,000 are in service. 6,000 additional lines of capacity are being installed in four provinces, to be completed by the end of 1997. The evaluation of bids from five companies is currently underway for a further 11,000 lines of switching, local networks, and transmission systems in all provinces. This work will be undertaken in 1998.

The long distance network consists of a 34 Mb/s backbone microwave system that extends from Louangnamtha in the north, to Khong in the south. Thin route 8Mb/s spurs provide service to rural communities. Subscribers in seven cities have access to national and international IDD through this network.

Cellular Services

Cellular service is available in Vientiane using AMPS technology and serves approximately 300 subscribers. A GSM network installed by Lao Shinawatra Telecom provides service to 4,500 subscribers in the provinces of Vientiane, Luang Prabang, Savannakhet, and Pakse.

International Satellite Services

International traffic is handled via two earth stations. One provides direct connections via AsiaSat-1 between Laos and Hong Kong, which allows transit to other destinations. A second Standard-A earth station accesses Intelsat 704.

LAOSTAR

LAOSTAR is a joint venture satellite project between the government of Laos (20 percent) and the ABCN consortia (80 percent). ABCN (Asian Broadcasting and Communications Network) consists of three Thai companies (the "M Group"), plus one from Japan, one from the USA, and one from Canada. A recent statement indicated that the Thai company UCOM might be taking an ownership position in ABCN. The satellites are being built by LORAL of the USA and launch facilities provided by Arianespace. The first launch is expected to take place in early 1998 with a second launch six months later. The first satellite has 32 transponders and

38 on the second. The Laostar operators plan to lease transponder space with no plans for their own programming at present. Services to be provided by the system will include Telecommunications, Distance Learning, and Telemedicine.

In August 1997, the English language newspaper, *the Vientiane Times*, reported a one-year renewable lease agreement between the PDR government and Subic Bay Digital Satellite Systems, a U.S. company based in Manila. Until this $450,000 agreement, which can be renewed for 5 years at the same price, was put in place, Laos lacked TV signals strong enough to reach remote areas. This technology will help improve the capacity of the Ministry of Information and Culture to access these areas.

Trends and Opportunities

Historically, telecommunications in Laos have been underdeveloped with low levels of investment and modest attempts at integration. Therefore, the fragmented infrastructure has been unable to meet the demands of the growing population. At a result of a 1989 study prepared by a New Zealand consultancy, Laos has worked with the World Bank to take progressive steps toward preparing a proper legal framework so as to attract capital on the international market which will help develop the network.

Competitive Environment

Through overseas direct assistance, the German, French and Japanese have had a hand in developing the telephony networks of Laos. Alcatel equipment can be found throughout the system and Japan's KDD Engineering Consulting (KEC) and Nippon Telecommunications Consulting Co Ltd (NEC) are working to increase the number of international circuits into the country. The Thai company Shinawatra is the dominant player with their long term agreement with the Lao PDR government.

Contacts

H.E. Mr. Phao Bounnaphol
Minster
Minstry of Communications, Transport, Posts and Construction
No. 1 Jawaharlal Nehru Road

0100 Vientiane
Tel: 856 21 412 278
Fax: 856 21 412 279

Lao Shinawatra Telecom Company
207/1 Bane Khoualuang 27
Khoualuang Road
Vientiane
Tel: 856 21 214 487
Fax: 856 21 214 486

Mr. Kaya Pali
Director
Department of Posts & Telecommunications
Jawaharlal Nehru Street
Vientiane
(856) 2141-2303

Prof. Dr. Bountiem Phissamay
Chairman
Lao Star Company Limited
Soi Wat Tai Noi, Vientiane
(856) 2121-6889

Mr. Houmphanh Intharath
Director of Telecommunication Projects
Enterprise of Lao Telecommunications (ETL)
Avenue Lang-Xang
0100 Vientiane
Tel: 856 21 212 143
Fax: 56 21 216 273

Mr. Nakorn Anantachai
Managing Director
Enterprise of Lao Telecommunications (ETL)
Avenue Lang-Xang
0100 Vientiane
Tel: 856 21 212 143
Fax: 856 21 216 273

LAOS

EAST LOOP PROJECT

PROJECT DESCRIPTION

Project Summary

Project Budget: $20million

Project Sponsor: Subregion Telecommunications Forum (STCF); local sponsor to be determined

Required Technology:
Fiber optics
Switching centers
Interface equipment

The Asian Development Bank (ADB) is expected to fund a high-capacity fiber-optic network system with ring topology linking the six countries of the Greater Mekong Subregion. The East Loop of the ring will include Thailand, Cambodia, Laos, and Vietnam, with the C1 section running from Vientiane in Laos to Vinh in Vietnam.

This project is part of a five-year effort by the Asian Development Bank to encourage telecommunications cooperation in the Mekong region. Since 1992, the ADB has been implementing regional technical assistance to encourage subregional cooperation among the Kingdom of Cambodia, the People's Republic of China, Lao People's Democratic Republi'c (Lao PDR), Myanmar, the Kingdom of Thailand, and the Socialist Republic of Viet Nam, which are collectively referred to as the Greater Mekong Subregion (GMS).

A Telecommunications Sector Study prepared in 1995 concluded that telecommunications linkages among the GMS countries were in urgent need of improvement. The study found, for example, that many GMS countries had no direct links between them, relying on transit arrangements with Singapore, Hong Kong, and Australia to make connections. Where direct links did exist, they often relied on outdated technology, which was expensive and offered limited capacity.

The report concluded that development of a subregional network linking the international gateways of the GMS countries would provide a number of advantages to the region and further cooperation. This conclusion gave rise to the development of the East Loop project, and a number of other regional linkage projects.

The primary benefits sought through this series of interlinked projects are to:

- reduce costs by eliminating transit and introducing lower cost technology
- reduce congestion and support increased traffic volume by expanding intraregional capacity
- improve reliability, increase service quality, and provide new services (such as data communications) through the introduction of digital technology
- provide alternative access to the global network through the gateways of other GMS countries, thereby lowering the cost and improving the reliability of extraregional communications.

The final report recommended priority projects for the implementation of the subregional network. It envisioned a modern, high-capacity network based on optical fiber transmission systems, configured in a ring topology, and employing synchronous digital hierarchy (SDH) technology and standards. *(Note: SDH is a digital transmission standard that supports voice, video, and data communications. It is designed for migration to higher data rates as would be required to expand existing services and add new ones.)*

East Loop is one of thirteen transmission links that were identified for implementation by the report. These links, to be implemented over about ten years, will fully interconnect all six GMS countries within a network that will provide technically advanced, high quality, and lower cost telecommunications services.

The East Loop project consists of three new transmission links that will connect existing facilities in Viet Nam and Thailand to complete a ring connecting Thailand, Cambodia, Lao PDR, and Viet Nam. These are:

- a link from Phnom Penh across the border with Thailand to connect to the Thailand network near Bangkok
- a link from Phnom Penh across the border with Vietnam to connect to the Vietnam network near Ho Chi Minh City
- a link from Vinh in central Vietnam, across Lao PDR via Vientiane and into Thailand, connecting to the Thailand network at Udon Thani

The governments of the GMS countries recognize that reliable, high-quality, low-

cost telecommunications services will contribute significantly to economic development in the subregion. Telecommunications are essential for the efficient conduct of trade and the development of tourism. They facilitate investment and are an important input to the delivery of subregional services such as transportation. The East Loop project will be an important first step in the development of a subregional telecommunications network. It will provide four countries with direct links to each other, in some cases for the first time, and will provide alternative routes of access to the global telecommunications network.

PROJECT FINANCING

The source of funds for the construction of the Lao section, which will be carried out under the direction of ETL, has yet to be identified. The U.S. embassy's commercial section reports that the Laotian Government has approached the Asian Development Bank to finance the project as part of its regional initiative in communications. The ADB is funding the feasibility study for the project, which increases the likelihood of the bank's funding the project itself. The total cost of the program will be in excess of $20 million. Part of the work of the feasibility study consultant will be to assess alternative financing arrangements including possible private sector financing (BOT - BOO) or public/private partnership arrangements, with or without ADB support.

STATUS OF PROJECT DEVELOPMENT

This project is a high priority project for countries of the region. Once completed, it will establish direct communications links among them. At present, links are accomplished by transmission through third countries outside the Mekong region.

A meeting in Phnom Penh in 1996 of the STCF established the East Loop as the priority project.

The first two of the three main links identified above are under partial implementation. Financing has been secured from Kreditanstalt fbr Wiederaufbau for one section within Cambodia (Phnom Penh to the border of Thailand) and is under negotiation for a second section (Phnom Penh to the Vietnam border).

The Laotian portion of the link from Vinh to Udon Thani is not yet financed. Thailand and Vietnam report that portions of their sections are being implemented, although it remains to be seen how the current financial crisis in Thailand will affect the pact of construction of the Thailand links.

The progress in development of the other loop sections increases the likelihood of donor financing for the Laotian portion, without which the ring would of course not be complete.

Final cost estimates and engineering for this project are not yet available, but are expected by mid-1998. On 28 January 1997, ADB included in its 1997 program technical assistance (TA) to the GMS countries to assist them with preparation of the East-Loop Project. The ADB is currently contracting for this feasibility study. Short-listing has been completed and the RFP issued, with bids due in October. Only one U.S. company, Communications General International, is known to be on the short-list.

The feasibility study will also answer key implementation questions that will shape the opportunity for U.S. companies. An important accomplishment of the subregional cooperation program to date is the formation of the Subregional Telecommunications Forum (STCF) in November 1995. During the second meeting of the STCF held in Phnom Penh, Cambodia in July 1996, the East-Loop Project was established as a priority project for the subregion. The STCF is expected to take the lead in project coordination, with each country responsible for its own segments. The Laotian entity has not been formally named.

U.S. Competitiveness and Export Potential

The likelihood of ADB financing increases the ability of U.S. firms to compete for the contracts associated with the East Loop. Conversely, if funding is provided by German or other bilateral aid programs, the U.S. role will be substantially weakened.

The project's principal opportunities are in the fiber optic loop itself, and associated switches. In addition, it is expected that the project will require or facilitate a number of different collateral investments in switching centers, interface equipment, and other facilities to provide a fully functional transmission ring.

The U.S. has strong technology in fiber optics, but so do a number of competitors, including German and Japanese companies that have traditionally been strong in the region.

Decision Making Process

The study consultants, who will be based in Vientiane, are expected to start the feasibility study for the project in November 1997. It is not expected that there will much progress until their work has been completed. Including reviews and approvals by the host country, this process is likely to take up to one year.

Contacts

Prof. Dr. Bountiem Phissamay
Chairman
Lao Star Company Limited
Soi Wat Tai Noi, Vientiane
Tel: (856) 2121-6889

Mr. Kaya Pali
Director
Department of Posts & Telecommunications
Jawaharlal Nehru Street
Vientiane
Tel: (856) 2141-2303

Mr. Houmphanh Intharath
Director of telecommunication Projects
Enterprise des Telecommunications Lao
Lane Xang Avenue, Vientiane
Tel: (856) 2121-2143

Mr. Nakorn Anantachai
Managing Director
Lao Telecommunication Co. Ltd.
Lane Xang Avenue
Vientiane
Tel: (856) 2121-4487

LAOS

TELECOMMUNICATIONS EXPANSION

PROJECT DESCRIPTION

LTC, the Laotian state-owned telecoms company, plans expansion in all key areas, including switching, outside plant, transmission systems, GSM cellular, public telephones and VAS. LTC will invest $100 million in its first five-year plan to expand the telecommunications network throughout the country.

The Lao Telecommunications Company (LTC) operates the sector for Entreprise des Telecommunications Lao (ETL) under jurisdiction of the Ministry of Communications, Transport, Posts and Construction.

Project Summary

Project Budget: $100 million (first phase only)

Project Sponsor: Lao Telecommunications Company (LTC)

Required Technology:
Switching equipment
Outside plant transmission systems
GSM cellular equipment

LTC will invest another $100 million in its second five-year plan, and $200 million during the last 15 years of the 25 year period.

PROJECT FINANCING

No comprehensive financing package has been secured for the expansion projects under this plan. Laos has worked with the World Bank to take progressive steps toward preparing a proper legal framework so as to attract capital on the international market which will help develop the network. The government has advised ETL that they will not be eligible for government financing so a reliance on the world capital markets and foreign partners is critical.

STATUS OF PROJECT DEVELOPMENT

In 1994, Lao Shinawatra Telecom Co. Ltd., was set up by Shinawatra International (of Thailand's Shinawatra) and Entreprise des Postes et Telecommunications of Laos (EPTL, later renamed ETL) as a joint venture to expand telecommunications in Laos under the national Telecom III project.

Lao Shinawatra Telecom operated a cellular GSM telephone network largely in the capital, Vientiane, but is gradually expanding into the areas beyond. In late 1996, Shinawatra International and the Lao Government signed new contracts transferring the assets of both Lao Shinawatra Telecom and the national telecommunications carrier, ETL, to a new joint venture company called Lao Telecommunications Co. Ltd (LTC). ETL owns 51 percent of LTC, and Shinawatra owns the remaining 49 percent. The joint venture has a life of twenty-five years.

The 25-year BOT license granted LTC the right to operate and undertake projects foreseen under the Lao Telecommunications Master Plan and makes LTC exclusively responsible for the expansion and development of the nation's telecommunications networks. The expansion of services and geographical area covered is expected to assist the Lao Government in creating a modern, efficient telecommunications network and support its economic development plans.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

The absence of secured funding for the program makes it likely that many of the investments will be made on a piecemeal basis, building on existing systems. This gives the advantage to entrenched suppliers.

Suppliers with established relations in Laos include Alcatel, Telstra, and several Japanese suppliers (notably NTT and Fujitsu). Many of these have benefited from bilateral aid-funded projects in the past or are currently involved in aid-funded projects.

DECISION MAKING PROCESS

Since Shinawatra has a strong position within LTC and considerable experience in developing a telecommunications network, they are expected to weigh in heavily on the procurement decision process for any equipment required for the network. Shinawatra itself is an operator and does not manufacture any equipment. For the development of its cellular network in Thailand, Shinawatra reduced its own risk by holding suppliers to very strict build out and performance guarantees and required suppliers to provide operations related training. It's possible that they will follow a similar pattern for developing the networks in Laos.

As background, it may be helpful to take a closer look at the Shinawatra Group which was originally founded by Dr. Thaksin Shinawatra. Together with his wife Potjaman, he began the Shinawatra Computer Service and Investment Company Limited in 1983, supplying mini and mainframe computers to government departments and state enterprises. That company evolved into Shinawatra Computer and Communications Public Company Limited, which is now the holding company of the entire Group.

The Group itself is concentrated on telecommunications and supplementary services. Advanced Info Service Plc is the leading mobile telephone operator in Thailand, offering both an analog and a digital system. Shinawatra Satellite Plc operates the three Thaicom satellites in orbit. It was the first private company in Asia to wholly own a commercial satellite.

Shinawatra International (INT) was formed to take advantage of opportunities in the region and is now a public limited company, which means that it has registered its intention to seek listing on the Stock Exchange of Thailand. At present, eighty percent of the company is owned by Shinawatra Computer and Communications Public Company Limited, which is the holding arm of the Shinawatra Group, and the other twenty percent is held by several large private institutional investors.

As a part of the Shinawatra Group, Shinawatra International utilizes the synergy of all other companies under the umbrella of the Group. This synergy provides the company with technical, legal, financial and management expertise.
In investing abroad, INT's policy is to seek a knowledgeable and able local partner, reasoning that such partnerships significantly add to the potential for success and the exchange of experience. As the primary areas of INT's investments are Indochina and Southeast Asia, potential partners need not have

telecommunications experience, but are financially sound with a strong understanding of the local business environment and culture.

CONTACTS

Mr. Houmphanh Intharath
Director of Telecommunication Projects
Enterprise des Telecommunications Lao
Lane Xang Avenue, Vientiane
(856) 2121-2143

Mr. Nakorn Anantachai
Managing Director
Lao Telecommunication Co. Ltd.
Lane Xang Avenue
Vientiane
(856) 2121-4487

MALAYSIA

Country Profile
Telecommunications Sector Overview
Projects:
➢Multimedia Super Corridor (MSC) ➢National and State Government IT System Requirements

Malaysia Profile

As of 1996

Capital - Kuala Lumpur
Population - 20.1 million
51% urban population (1994)
GDP per Capita - US$3,580 (1994)

Telephone Density
Overall: 16% (1995) ***Rural*** - 4.2% (1995)

Waiting List for
Telephone Lines - 111,112 (1995)
Cellular Subscribers - 745,000 (1995)
Paging Subscribers - 128,820 (1995)
Telex Subscribers - 6,858 (1995)

International Outgoing
Traffic (million calls) - 172 (1994)

Network Digitization
Switching - 93% (1995)
Transmission - 71% (1994) (Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, peninsula and northern one-third of the island of Borneo, bordering Indonesia and the South China Sea, south of Vietnam
Geographic coordinates:
230 N, 112 30 E
Comparative area:
slightly larger than New Mexico
Border countries:
Brunei, Indonesia, Thailand
Terrain: coastal plains rising to hills and mountains
Geographic note: strategic location along Strait of Malacca and southern South China Sea

COUNTRY PROFILE

PEOPLE

Malaysia's population is estimated at over 21 million and is growing at an annual rate of 2.3 percent. Eighty percent of the population is located on peninsular Malaysia, while 20 percent is dispersed mainly throughout Malaysia's eastern states of Sabah and Sarawak. Nationals in Malaysia are known as Malaysian(s), and include three very distinct ethnic cultures. The main ethnic groups are the Malays which make up 60 percent of the population, with Chinese making up 26 percent, Indians 7 percent and other ethnic groups making up the final seven percent.

The population, however, has shifted in its distribution. The major cities, notably Kuala Lumpur, George Town, Ipoh, and Johor Baharu have expanded rapidly. The annual growth rate of the urban population is 6 percent. The Malays and the other native ethnic groups that were previously largely rural are migrating in increasing numbers to urban centers.

Malaysia has great ethnic diversity. In peninsular Malaysia there remain some ethnic groups referred to as the Orang Asli, or aboriginal peoples. Included are several groups of Negritos and Senoi and such others as the Jakun and the Temelai, who may in fact be more closely related to the later Malay arrivals. These peoples are believed to be remnants of groups that have lived in the peninsula for thousands of years but who were driven into remote parts of the mountains and forests by subsequent migrant groups.

The later arrivals began infiltrating Southeast Asia from the north about 2000-1500 BC. They settled in the valleys and plains, but in certain areas they also occupied the mountainous interiors. These groups include the Malays in peninsular Malaysia; the Iban, Kayan, Kelabit, Kenyah, Bidayuh, Bisayah, Melanau, and Kelabit in Sarawak; and the Bajau, Kadazan, and Murut in Sabah. These groups are generally referred to collectively as the Bumiputra groups, or the "sons of the soil."

Under colonial rule Chinese, especially from the southern provinces, were encouraged to come to peninsular Malaysia and Sarawak. Indian laborers from South India were also brought to work on the rubber plantations. The Chinese and Indians together make up almost half of the population of peninsular Malaysia, though their proportions in Sarawak and Sabah are much lower.

The Indianized kingdoms of Southeast Asia influenced the Malays of the peninsula, though few cultural traces of this Hindu-Buddhist phase remain. During the 15th century Islam entered the region from India by way of northern Sumatra, and the Malay peoples quickly embraced this religion. The social and cultural life of the Malays revolves around their religious obligations and activities. Every village or kampong has its mosque. Malay children are often sent to religious as well as state schools. Many Malays make the hajj, or pilgrimage, to Mecca, and the major festival of the year is the celebration with which the Muslim month of fasting ends.

Chinese and Indian immigrant groups who arrived in the 19th and early 20th centuries brought with them their own languages and religions. Several southern Chinese dialects were represented among the Chinese immigrant population, but Cantonese and Hokkien were the two major ones. Tamil-speaking Hindus from around Madras were a large element among the Indians. The Chinese and Indians made strong efforts to maintain their distinctive ethnic identities, but with the coming of independence Malaysia worked toward a more unified national image. Education in all languages except Malay, Bahasa Malaysia, is being phased out, though the use of other languages is not prohibited. The population also includes small numbers of Europeans, Americans, Arabs, and Thai.

Although English is commonly spoken and used as a bridge between the three main ethnic groups and international communities, the official language of Malaysia is Malay. However, Chinese dialects, English and Tamil are commonly spoken. Malay is commonly used for educational purposes, while English is commonly used for governmental and commercial purposes. Over all, about 80 languages and dialects are spoken in the islands, of which about ten, belonging to the Austronesian language family, are of regional importance.

THE ECONOMY

The Malaysian economy, a mixture of private enterprise and public management, has posted a remarkable record of 8.4 percent average annual growth in 1995-96. The official growth target for 1996 was 8.3 percent. This growth has resulted in a substantial reduction in poverty and a marked rise in real wages.

Malaysia is a country in which the production and export of raw materials is a major part of the economy. But the country has made great strides in attempting to diversify its economy and to encourage the growth of modern industries and services. In 1996 it was estimated that 22.3 percent of the 8.4 million labor force was engaged in agriculture and other primary industries, 26 percent in manufacturing, 8 percent in construction, 21 percent in commercial and financial activities, 10 percent in government, and 12.7 percent in miscellaneous occupations.

Natural rubber has long been the most significant commercial crop. It is produced mainly in peninsular Malaysia, both from large-scale plantations and from smallholdings. Many of the smallholdings were created beginning in the 1960s in an extensive program of pioneer settlement, the establishing of impoverished families as farmers in government-planned settlement (FELDA) schemes. Smallholders were responsible for two thirds of the million and a half metric tons of rubber produced annually in the early 1980s. Palm oil, also from both plantations and smallholders, is another major commercial crop.

Rice has been cultivated in the region for centuries and remains a staple food item. Most rice cultivators are Malay peasant farmers on smallholdings. Yields and output have increased as a result of irrigation projects, such as the Muda Scheme in Kedah and Perlis, and the use of high-yielding rice strains. Annual production of padi at 1.7 million tons represents 80 to 85 percent of national self-sufficiency. Coconuts, cacao, peppers, pineapples, and tobacco are also grown. Tropical timber is exported. Peninsular Malaysia, Sarawak, and Sabah share more or less equally in this form of trade. The rate at which the country's 50 million acres (20 million hectares) of primary forest is being cut, however, has been slowed.

Malaysia is the world's leading tin producer, accounting for 30 percent of world supplies. Like most primary products, tin faces an uncertain future. Quotas are in force to restrict production. It was estimated that in 1985 Malaysia produced 40,000 tons of tin.

Petroleum is a later industry with reserves estimated at more than 3 billion barrels. Production is almost entirely from off-shore rigs that lie to the east of peninsular Malaysia and to the north of Sarawak and Sabah. Production of petroleum reached nearly 450,000 barrels per day in 1984 but was reduced in response to declining prices. The petroleum fields also contain vast reserves of natural gas that have been little exploited. There are plans to make natural gas the basis of several new industrial complexes, including one for aluminum smelting at Miri in Sarawak.

Industrialization in Malaysia began early. In its first stages it was linked to the production and export of industrial materials. Rubber processing, tin smelting, and palm-oil extraction all made their appearance before 1960. In the 1960s a policy of import substitution was initiated, with favorable terms accorded companies that began local industries to serve the Malaysian market. Such major industries as iron and steel, sugar refining, cement production, and fertilizers were begun. In the 1970s there was a policy shift toward encouraging the establishment of export-oriented industries. This led to factories in major urban centers, especially of peninsular Malaysia, that produced components for the international electronics industry. It also spurred the rapid growth of textiles and other manufactured items for sale in Europe and North America. The motor vehicle industry, though still dependent on imported parts, progressed by 1986 to the point of producing a prototype of a passenger car intended for the North American market.

By 1986 it was estimated that 880,000 workers were employed in manufacturing industries. Manufacturing accounted for 35 percent of the total export value in 1985 of M$38,007 million (US$15,836 million), contributing to a favorable trade balance. Over a decade later, manufactured goods exports expanded to $77 billion in electronic components, petroleum, timber and logs, palm oil, Natural rubber, liquefied natural gas, electrical products, and textiles with the U.S. accounting for 18 percent.

A notable feature of economic policy planning in Malaysia is the attempt to raise the economic status of the country's Malay population, long below that of the immigrant peoples. Development plans include land settlement schemes and shareholding trust funds that share in the purchase and management of modern industries. This has been done, however, at the cost of some alienation of the Chinese and Indian segments of the population. Foreign investors continued to commit large sums in the economy. The government is aware of the inflationary potential of this rapid development and is closely monitoring fiscal and monetary policies.

KEY ECONOMIC INDICATORS			
Indicator	**1995**	**1996**	**1997 (e)**
Constant GDP ($ Million)	48,126	53,323	57,656
GDP Growth (%)	9.5	8.7	8.4
GDP per Capita ($)	4,253	4,698	5,150
Gov. Spending	28.4	26.9	-
Inflation (%)	3.4	4.0	4.0
Unemployment (%)	2.8	2.8	2.6

POLITICAL OVERVIEW

Malaysia gained its Independence on August 31, 1957 from United Kingdom and later formed the Federation of Malaysia on July 9, 1963. Malaysia is a constitutional Monarchy, nominally headed by the Yang di-Pertuan Agong (paramount ruler) or King and is elected for five-year terms from among the nine sultans of the peninsular Malaysian states. The king also is the leader of the Islamic faith in Malaysia.

Executive power is vested in the cabinet led by the Prime Minister; the Malaysian constitution stipulates that the Prime Minister must be a member of the Lower House of parliament who, in the opinion of the Yang di-Pertuan Agong, commands a majority in bicameral parliament. The cabinet is chosen from among members of both houses of parliament and is responsible to that body.

The bicameral parliament consists of the Senate (Dewan Negara) and the House of Representatives (Dewan Rakyat). All 69 Senate members sit for six-year terms; the 13 state assemblies elect 26, and the king appoints 43. Representatives of the House of Representatives are elected to maximum terms of five years. Legislative power is divided between federal and state legislatures.

The Malaysian legal system is based on English common law. The Federal Court reviews decisions referred from the Court of Appeals; it has original jurisdiction in constitutional matters and in disputes between states or between the federal government and a state. Peninsular Malaysia and East Malaysian Borneo states of Sabah and Sarawak each have a high court.

The Federal government has authority over external affairs, defense, internal security, justice (except civil law cases among Malays and other indigenous peoples, adjudication under Islamic and traditional law,) federal citizenship, finance, commerce, industry, communications, transportation, and other matters. The states of East Malaysia enjoy guarantees of state rights with regard to immigration, civil service, and customs matters. Control over oil and timber, and the distribution of revenues from taxes from these resources, as well as state government and states of East Malaysia, particularly Sabah.

Diplomatic representation in US:

Chief of Mission:
Ambassador DALI Mahmud Hashim
Chancery: 2401 Massachusetts Avenue NW
Washington, DC 20008
Telephone: [1] (202) 328-2700
FAX: [1] (202) 483-7661
Consulate(s) general: Los Angeles and New York

U.S. diplomatic representation:

Chief of Mission: Ambassador John R. MALOTT
Embassy: 376 Jalan Tun Razak,
50400 Kuala Lumpur
Mailing address: P. O. Box No. 10035
50700 Kuala Lumpur
APO AP 96535-8152
Telephone: [60] (3) 2489011
FAX: [60] (3) 2422207

FOREIGN INVESTMENT AND TRADE

Malaysia's prospects for continuing growth and prosperity are excellent, with growth rates expected to be above eight percent. Malaysia possesses abundant resources and land, a well-educated work force, adequate infrastructure, and a stable political environment. It has been very attractive to U.S. investors, who have invested a total of $9 billion in the country, two-thirds of which is in petroleum development and electronic component production.

There are relatively few trade problem areas. Malaysia, a member of the World Trade Organization, has few restraints on trade in goods. Its service sector, however, constitutes about 44 percent of the national economy and remains highly protected, particularly in financial services.

TRADE AND PROJECT FINANCING

Malaysia has a dynamic and sound banking sector. It comprises Bank Negara Malaysia (central bank), 37 licensed commercial banks (local and foreign though two recent cases of bank mergers are likely to reduce this number), 31 representative offices of foreign-incorporated commercial banks, 12 merchant banks, 12 discount houses, and 40 finance companies. In 1996, commercial banks held assets worth more than $145 billion, of which domestic banks held 75 percent. The top five commercial banks hold about three-quarters of total assets. Three U.S. banks have operations in Malaysia: The Bank of America, Citibank and Chase Manhattan Bank have branches in Kuala Lumpur; Citibank also has a branch in Penang. Most Malaysian banks have correspondent relationships with banks in the United States.

Exports to Malaysia may be financed through letters of credit issued to importers by banks in Malaysia. Finance is readily available on the domestic market to Malaysian importers. There are no foreign exchange controls that would impede trade. The Malaysian Ringgit is freely convertible except for Israeli, Serbian and Montenegran currency. All payments to non-residents for any purpose are freely permitted, subject only to the completion of a simple form for remittances of more than RM 10,000 (US$4000). No permission is required from the Controller of the Currency for a company to maintain inter-company accounts with associate companies, branches, or other companies outside Malaysia.

In addition to the Malaysian banking sector, exports to Malaysia can be supported by the Export-Import Bank of the United States (EXIM), which can provide direct or intermediary loans, loan guarantees to enable a foreign buyer to secure private credit, loan guarantees to a private creditor to provide working capital to an exporter, and insurance policies for exporters to eliminate both political and commercial risk of repayment by foreign purchasers. Though EXIM financing has been rarely utilized for Malaysian projects, it has been involved in financing the sale of Boeing aircraft in the past.

Export financing is also available through the U.S. Small Business Administration (SBA), which provides regular business loans, a revolving export line of credit, joint guarantees with EXIM, investment company financing, long-term asset financing, and international trade loans to compete, export, and develop export markets. For exporters of agricultural products, the U.S. Department of Agriculture Market Promotion Program has been used to promote export market development efforts in Malaysia.

Major infrastructure projects have been funded by a variety of means, including Malaysian government funds, the domestic capital markets, banks and investment funds like the Employee Provident Fund, international consortia, and supplier credits. In the case of the new Kuala Lumpur International Airport (KLIA), for example, the Japanese Government made available a long term soft loan of $600 million through the Overseas Economic Cooperation Fund. This will, however, only cover a portion of the costs, the bulk of which will have to be raised on the capital markets.

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN MALAYSIA

Malaysia welcomes and actively invites foreign investment and has a liberal foreign exchange regime. Capital and earnings can be freely repatriated.

Kuala Lumpur's building spree continues, with a consequent upswing in the market for premises equipment. Building sites abound and many main roads are torn up for light rail construction. Local travel by car is very slow, and it is important that drivers know alternate routes to destinations. It is, therefore, perhaps wise to incur the extra expense of hiring a hotel car rather than trying to hail random taxis whose drivers may not know the area. A schedule of two appointments in the morning and two in the afternoon is ambitious and may be difficult to keep.

Like the other countries in the region, Malaysia has been affected by the currency following the devaluation of the Thai baht. Whether this temporary disruption of the markets will translate into a short-term or more serious economic downturn remains to be seen. Malaysia's macroeconomic and financial sector conditions are generally somewhat stronger than Thailand's, but for the moment at least, international markets are showing some hesitance to expand commitments in Southeast Asia.

Business in Malaysia slows down during the one-month Ramadhan fasting period and the major Hari Raya Puasa holiday that follows it. As the dates for this holiday follow the Islamic calendar, they vary from year to year. Appointments at this time of year should be kept to the morning when possible. Hari Raya Puasa and Chinese New Year festivals are celebrated on a grand scale; the Embassy suggests that visitors inquire about the dates, etc., before making travel arrangements so as to avoid these holidays, wherever possible.

TELECOMMUNICATIONS SECTOR OVERVIEW

The telecommunications sector under the Seventh Malaysia Plan (1996-2000) is expected to be one of the highest growth sectors in the economy. The thrust of the sector will be to increase capacity, to introduce new services and technologies and to upgrade existing networks. The Government of Malaysia (GOM) wants to develop a telecommunications infrastructure capable of supporting multimedia applications through broadband technology, which is to form the backbone of the information superhighway.

Malaysia launched its first satellite, Malaysia East Asia Satellite 1 (MEASAT) in January 1996 and launched MEASAT 2 later that year. As a result, immediate and simultaneous point-to-point and point-to-multipoint telecommunications, broadcasting and IT services will be available throughout Malaysia.

The national telephone penetration rate increased from 9.3 telephones per 100 persons in 1990 to 16.6 in 1995, and is expected to reach 24.7 by the year 2000. The cellular phone penetration rate is expected to increase from 3.5 per 100 persons in 1995 to 16.5 by 2000. The increase in the penetration rate can be attributed primarily to the upgrading of existing networks, using technologies such as digital, fiber optics, broadband wireless and cellular, including Asynchronous Transfer Mode, Synchronous Digital Hierarchy and Integrated Services Digital Network.

The telecommunications structure will create opportunities for value-added services including multimedia integration of voice, text, data, graphics and images, and Internet based solutions. Malaysia is expected to invest a total of US$6.5 billion in telecommunication infrastructure between 1996 and 2000. The Government of Malaysia (GOM) aims to achieve a total digital telecommunication infrastructure in the country by the year 2005.

The GOM's aspiration to make Malaysia a regional hub for telecommunications as well as information technology (IT) has led to the development of Putrajaya – the intelligent city/new government administration complex - and the Multimedia Super Corridor (MSC). Putrajaya will be equipped with state-of-the art

communications technology and IT infrastructure while the MSC will be the focal point for the manufacturing of high value-added IT goods and services.

As telecommunications and information technology begin to converge, the need for expertise from outside sources will increase. The opportunities for U.S. companies to help Malaysia's goals are apparent.

There is a growing demand in all fixed, cellular, satellite, wireless and broadcast networks. Basic fixed telephony and cellular services will continue to grow in the next 5 years.

The Malaysian Information Technology (IT) market was US$1.085 billion in 1995 and is expected to increase to US$2.253 billion by 1999.

The IT industry is currently being promoted as a new growth sector, as its development will help expand and complement industrial activity and create a higher level of technology and skill in the country. To help advance the industry, the Malaysian government is encouraging new product development, fostering strategic linkages between domestic and international firms, and providing support for IT promotion. Specifically, the Malaysian government has recently eliminated the 10 percent import duty on computer software, indicated an intention to lower long distance telephone rates, and organized a Multimedia Malaysia Exposition held in early August, 1996, among other things.

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In order to realize its goals, the GOM will need to draw on the expertise of foreign firms to provide technical know-how or technology transfer including policy on standards, resource utilization, interconnection issues and equipment/network development. One of the objectives of the National Telecommunications Policy (NTP) which was launched in 1994, is to promote local manufacture of

telecommunications equipment, to promote R & D and the expansion of services. This should give rise to joint venture opportunities for U.S. firms.

SECTOR STATISTICS			
	1993	**1995**	**1998 (Projected)**
IT Services Market			
Services market	US$131.3	US$263.2	US$535.0
Support services	51%	43%	31%
Professional Services	49%	57%	69%
IT Market Composition (Percentage of Shipment Value)			
Hardware		60.30	49.70
Services		20.20	27.30
Software		15.40	19.50
Data Communications		4.10	3.50

TELECOMMUNICATIONS SERVICES AND PENETRATION RATE				
Subscriber Base	**1992**	**1994**	**1995**	**1996 (Est.)**
Residential	1,504,4801	2,078,103	2,410,523	2,820,312
Business	587,098	785,652	929,240	1,087,211
Cellular Phone	200,573	571,720	872,788	1,571,018
Public Payphones	40,917	64,375	181,941	296,564
Electronic Mail	755	1,034	1,162	1,336
Toll Free	494	722	889	1,085
Paging	80,000	128,818	149,268	170,166
Telex	7,576	7,032	6,764	6,426
Leased Circuit	21,385	29,938	37,476	47,969
Maypac (packet switched data)	1,998	2,580	2,749	3,051
Telita/ videotext	640	714	710	703
Maycis	376	366	366	362
CT2/Telepoint (Smartfon)	4,596	9,155	11,000	12,650
Access lines /100 pop.	11.6	14.7	16.6	18.6
Source: Jabatan Telekom Malaysia				

Investment/Revenue Indicators - 1995

Total telephone lines:	2.864 million
Lines per 100 inhabitants:	14.69
Total revenue:	US$1.711 billion
Total investment:	US$1.22 billion
Investment per inhabitant:	US$62.5
Investment per main line:	US$426
Investment as a % of revenue:	71.2 %

Source: World Telecommunication Development Report 1995

Cellular Service Technology Subscribers in Malaysia

Year	ART 450	ART 900	AMPS 800	PCN	GSM
1990	54,616	23,315	-	-	-
1991	70,917	60,761	-	-	-
1992	83,118	123,330	-	-	-
1993	89,028	251,046	-	-	-
1994	96,730	442,890	32,100	-	-
1995	96,345	561,314	149,580	39,729	25,820
1995 share:	11%	64%	17%	5%	3%

KEY PLAYERS (GOVERNMENT AND PRIVATE)

Telekom Malaysia Berhad (TMB)

Telekom Malaysia Berhad (TMB) is the dominant telecommunication service provider. TMB has more than 3 million customers and has embarked on a multibillion ringgit investment program to upgrade and modernize its network. The company plans to modernize its existing infrastructure by installing state-of-the-art digital technology. TMB first introduced cellular communication in the country in 1985 via the Atur 450.

Telekom Malaysia acquired MRCB Telecommunications in 1996. MRCB had earlier introduced its PCN technology service - Emartel, shortly after Mutiara's debut in market.

Cellular Communications (M) Sdn Bhd (CELCOM)

Celcom is one of the GSM licensees and operates under the brand name of Celcom GSM and ART 900. The ART 900 system was introduced in 1989.

Binariang Sdn Bhd

Binariang is recognized as a dominant player in the industry. The cellular division operates under the brand name Maxis which uses GSM technology.

GSM licensees Binariang and Celcom share about 70,000 subscribers between them. Today, the three PCN operators have attracted a total of 80,000 subscribers in less than a year.

Mutiara Telecommunications Sdn Bhd

Mutiara provided the first PCN technology in the country, Digi 1800, in May 1995.

Mobikom Berhad

Mobikom operates the Mobifon 800 service that uses both analog and digital technology, introducing the system in 1994. However this service has not been widely accepted due to the relatively high price of dual mode handsets as compare to other analog sets.

Time Telekom

Sapura Digital, a PCN operator using the ADAM (or Advanced Digital Access for Mobile Telecommunication) brand, was recently merged with Time Telekom).

Binariang has a license to own and manage satellites for 20 years without restriction on the number of satellites that may be launched.

REGULATORY REGIME AND MARKET ACCESS

The primary regulatory body is the Telecommunications Authority, Jabatan Telekom Malaysia, established as a result of the restructure/privatization of the Telecommunications Department in 1987. At this time, the operating function was

transferred to Telekom Malaysia Berhad while the Jabatan Telekom Malaysia (JTM) was set up to regulate the telecommunication industry. JTM is also responsible for monitoring and enforcing licenses and frequency management.

All telecommunication equipment connected to the public exchange must comply with standards and regulations set by JTM. In the absence of local standards, JTM evaluates equipment based on standards set by other authorities such as the FCC, provided that all documentation/certification are submitted.

The Malaysian telecommunication regime was highly regulated prior to privatization. The GOM has since made efforts to liberalize the industry through the privatization of the government telecommunications department in 1987, the formation of the National Telecommunications Policy (NTP) in 1994, and, more recently, the proposed Telecommunications Master Plan. The Master Plan provides guidelines for competition, interconnection charges, tariff rates, network development, etc.

Although there are restrictions in business practices (e.g. participation in government tenders and equity restrictions in setting up manufacturing facilities), these barriers are not insurmountable. U.S. companies are highly encouraged to set up some form of local presence. U.S. companies/manufacturers should seek to appoint a representative or local agent/distributor that is well connected with telecommunications providers and government agencies. An agent/distributor or business partner that is well connected may help strengthen a U.S. company's position when vying for business contracts or government tenders.

The Government has expressed its desire for companies to merge (rationalize) and has acted as mediator to facilitate the reduction of the number of companies from nine to the present six. Having encountered steep opposition to its plan to reduce the group further to three operators, the GOM has now decided not to impose a market solution, but instead to leave any additional mergers to market forces.

The Ministry of Energy, Telecommunication and Posts issued a General Framework on Interconnections and Access (GFIA) in November 1995, in which the GOM announced that it would not mandate equal access for the emerging carriers within the next two years.

In July of 1996, the Government launched the Government Information Telecommunications Network (GITN), a project which aims to enhance coordination between various government departments through the application of

information technology. The goal of the GITN is to create an integrated information technology infrastructure for the public sector. GITN Sdn Bhd, a joint venture company between Permodalan Nasional Bhd (PNB) and Telekom Malaysia, will be responsible for implementation and management of the project. The Malaysian Administrative Modernization and Management Planning Unit (MAMPU), Public Administration Institute (INTAN), the Economic Planning Unit, the Ministry of Finance and the Chief Secretary's Office (KSN) are involved with the project. GITN is expected to play a significant role in the future development of IT projects in Malaysia.

EXISTING NETWORKS

Network Infrastructure

Malaysia's digital fiber-optic cable network is expected to expand and eventually replace the existing analog copper wire. This will allow introduction of advanced telecommunication services in the country. Currently digital fiber-optic cable constitutes the backbone of the telecommunications infrastructure. The narrow band Integrated Services Digital Network (ISDN) was also introduced by Telekom Malaysia.

Telekom Malaysia also introduced radio in-loop technology to the rural or remote areas of the country. This technology allows traditional telephones to be hooked to service providing public switched telecommunication network via radio.

The supply of switching and transmission products makes Fujitsu, NEC, Ericsson, Alcatel and Siemens major players in telecommunications industry. Some of these companies have longstanding relationships in Malaysia and possess strong and established distribution/business networks.

In more recent network developments, Global One, a tie-up between Sprint International, Deutsche Telekom and French Telecom, is working with the Penang state government and the private sector to establish the PenangNet, a US$200 million project. The project envisions the laying of fiber optic cables for the backbone infrastructure, with coaxial cables usually used for computer networks for the final links to office buildings. The local consortium comprised of Asia Connect, Binariang Sdn Bhd and the Penang Development Corporation (PDC).

Global One will provide the main communication pipeline using Binariang's international gateway license for PenangNet.

A joint venture between Binariang and U.S. West (with a 20 percent stake) is aimed at developing Malaysia's first fully integrated, local wireline and wireless communications network, including the nation's satellite system. Binariang has committed about US$1.7 billion to building multimedia networks and related support structures over the next five years.

TRENDS AND OPPORTUNITIES

There is growing demand in all fixed, cellular, satellite, wireless and broadcast networks. Basic fixed telephony and cellular services will continue to grow in the next 5 years.

The merging of telecommunications, broadcasting and computer technologies will give rise to new services such as cable TV, value-added multimedia applications like Video-On-Demand (VOD), video conferencing, remote diagnosis, distance learning, home banking and home shopping. Opportunities also exist for switching, transmission and networking equipment, satellite networks, telecommunication software and management systems.

Prices of U.S. products/equipment are generally higher than those of competitors, but are usually associated with quality. However, most purchasers in this market tend to look at price first and quality/standard second. U.S. companies are also perceived to be not as aggressive as some of their competitors. Marketing strategies should be of course be tailored to the local market.

U.S. companies must be willing and prepared to establish strategic business relationships with local companies and government agencies. This process may require a substantial investment of time, effort and patience.

Motorola Malaysia produces hybrid circuits, two-way portable and mobile radios, pagers, second generation digital cordless telephones (CT2) and systems. Motorola (and other U.S. electronic firms such as Intel, Harris, National Semiconductor) has a dominant presence in Malaysia, providing employment to more than 3000 Malaysians.

Northern Telecom Industries Sdn Bhd or Nortel Malaysia (Canada/U.S) manufactures a wide range of network products including printed circuit packs, terminals, magnetic components, wireless base stations, power rectifiers, power packs and electronic components. Nortel exports 80 percent of its production and local networks use the remaining.

Other U.S. companies including AT&T have representative offices in Malaysia. Although most of the foreign companies active in the Malaysian telecommunications industry are either European or Japanese, there is significant U.S. manufacturing presence.

History of Telecommunications Development

In 1874 the first British Resident, or High Commissioner, brought telecommunications to Malaysia and, two years later, he had a telegraph line installed between his office and that of his assistant 43 jungle kilometers away. The first telephone exchange was installed in Kuala Lumpur in 1891. Three years later, the first submarine cables of the Singapore-Labuan-Hong Kong route reached Sarawak . Wireless communications began in Penang in 1926. The nucleus of Malaysia's present radio network was a radio warning system set up after the great floods of 1926.

During World War II thousands of telephone poles were dismantled and miles of copper wire were removed for war use. The Japanese separation of Postal and Telecommunications Departments was maintained after the war by the British, who created the Telecommunications Department in April of 1946.

Since the war, Malaysia's telecommunications system has expanded rapidly, as shown by the following mileposts in its development:

1970: First international standard satellite earth station commissioned
1975: Manual Telex exchange replaced with automatic
1979: International direct dialing for subscribers on Semi-Electronic exchanges (IDD now available to 70 countries)
1980: First fully electronic exchange commissioned in Pelangi (currently 60 percent SPC exchange systems); commissioning of a submarine cable linking Kuantan and Kuchin
1981: Second standard satellite earth station in Lendu

1983: Datel introduced to provide data links for computer users through the public switched telephone network (PSTN)
1984: Packet switching introduced for Malaysia's own public data network
1987: Privatization of telecommunications, with transfer of operation from Jabatan Telekom Malaysia (JTMN) to Syarikat Telekom Malaysia (STM) Berhad, established in 1984, which received an initial 20-year license
1988: Intelsat Business Service (IBS) introduced; Kuantan-2A satellite earth station commissioned
1989: TELITA, Telekom Malaysia's inexpensive Videotext system, introduced; circuit switched public data network (MAYCIS) launched; TELEMAIL bilingual e-mail begun
1990: New serviced introduced include mobile public payphones on trains (ATURel); international toll free; prepaid cardphone (Kardfon), and three-way dialing
1993: Telekom Malaysia opens ISDN service

Major Market Segments

All major market segments are present in Malaysia, including the basic fixed line system, international service, cellular, trunked radio, paging, other value-added services, satellite-based, Internet, and submarine cables.

Fixed Line

Telekom Malaysia is Malaysia's largest telecommunications service provider. At the end of 1995, all operators signed interconnection agreements with Telekom Malaysia. Most carriers did not sign agreements with other carriers. Other service providers in the market, operating on the basis of 20-year licenses, include Cellular Communications (CELCOM), Binariang, Time, Mutiara Telecommunications and STW (Syarikat Telefon Wireless).

In July 1996, the Minister of Energy, Telecommunications and Posts announced that the Government would be issuing no more new licenses to private companies to provide telecommunications services in Malaysia. Any additions would be precluded for the time being as likely to cause costly duplication of infrastructure.

STM remains the dominant player, with 3.5 million subscribers. Of the new entrants, only Time Telekom (a subsidiary of the Renong Group) and Syarikat

Telefon Wireless have yet begun operations (with 5000 and 4000 subscribers respectively, as of July 1996).

Syarikat Telefon Wireless (STW) originally had a license for fixed wireless cellular network on the island of Langkawi on a trial basis, which was later extended to include nationwide coverage.

Now that pressure to rationalize has been eliminated, many predict that a development of strategic alliances between the operators will ensue. The players in the industry are aware of the limited markets and therefore their need to identify marketing niches in the industry. As a result, strategic alliances similar to the recent Time Telekom and Sapura partnership will be established. The sharing of infrastructure is already being done as companies realize that it is cheaper to lease an existing network than build their own. Most companies with networks have an over-capacity and are more than willing to lease their excess capacity.

While the industry was undergoing possible rationalization, some foreign companies made their entry into the market and provided much needed capital/investment, management expertise and technology. With aid from these foreign parties, a few of the smaller companies have been able to make significant inroads into the industry.

Analysts are of the opinion that with so many players in the market, the resulting revenues will be thin; it may not be worth it for operators to make necessary investments in the industry. It is difficult to predict the future of these operators but market forces will eventually determine which operators will survive in the long run.

Cellular

Digital technology is fast gaining momentum in the country. Demand for digital mobile handsets has seen a fall in prices. Cellular market in the country continues to grow with an anticipated average growth of 30 percent for the next three years reaching a total of about 2.5 million handphone users by 2005. There is a higher penetration/rate of growth for the cellular phone market as opposed to the paging industry.

One estimate puts the growth rate at around 20,000 new subscribers a month (a portion is attributed to CELCOM's already established ART 900 analog service).

In total there are about 1 million handphone users in the country among the eight providers in the country.

Malaysian's cellular phone penetration rate, or number of handphone users per 100 people, was reaching 6 percent which is considered much higher than other Asian markets in the region. The same industry sources are of the opinion that there is not much room for growth. However, countries such as Australia and the Nordic region, among the first to introduce cellular phones, have a penetration rate of approximately 40 percent and yet continue to demonstrate significant growth.

Five new networks were launched in 1995: two Global System for Mobile telecommunication (GSM) networks (Binariang and Celcom) and three Personal Communication Networks (Mutiara, Sapura Digital and MRCB Telecommunications). PCN is an enhanced version of the European GSM.

There were many concerns regarding these duplicate networks, not only about the cost of the networks, but also the commercial viability of having five domestic service networks, five international gateways, and eight cellular networks in a country of 19.3 million people.

Number of Installed Radio Base Station (RBS)

Cellular Operator	Technology	No. of RBS
CELCOM	Etacs 900	678
Telekom Malaysia	NMT 450	375
Cellular Communications Network	GSM 341	
Sapura Digital Sdn Bhd	PCN [DCS]1800	307
Mutiara Telecommunications	PCN [DCS]1800	288
Mobikom	AMPS 800	226
MRCB Telecommunications	PCN [DCS] 1800	161
Binariang Communications	GSM	137
Grand Total		**2,513**

Source: Jabatan Telekom Malaysia

Trunked Radio Services

Mobile communications using two way radios were introduced in the early '80s by the former Telecommunications Department. The system provided two-way communications to taxis, tow trucks, movers etc. using radio leased channel

services. The Telecommunications Department monopolized the services. Leased channel users were mainly fleet dispatch operators that use conventional two-way radio that operates on 150 MHz radio frequency. The leased channel services were prone to interruption and congestion.

By 1990 the Trunked Radio System (TRS) introduced to replace the Radio Leased Channel services. It is more secure especially for services offered on a sharing basis.

About 12 companies have been issued licenses to operate trunked radio services. The major companies are Telekom Malaysia Berhad (TMB), Electcoms Sdn Bhd, Celcom Trunk Sdn Bhd, Pelatus Sdn Bhd, Hasyon Teknik Sdn Bhd and Segi Maju Sdn Bhd.

Although TMB no longer holds the monopoly over mobile communication radio services, it remains the largest provider. TMB provides group mobile radio communication using Advanced Telekom Express channel (A-Tec) and Dedicated Telekom Express Channel (D-Tec).

Trunked radio subscribers increased from 8,263 in 1994 to 15,941 in 1995 - a 93 percent growth.

Number of Trunked Radio Subscribers 1995

Region	No. of Subscribers	Market Share
Central	10,492	65 %
Northern	2,636	16 %
Southern	1,523	10 %
Eastern	257	2 %
Sarawak	944	6 %
Sabah	89	1 %
Total		15,941

Source: Jabatan Telekom Malaysia

Paging Market

Malaysia has a total of 38 paging licensees. Eight of the 38 companies with local paging licenses have also been awarded nationwide licenses. Only 20 of the licensed companies currently serve the market.

The growth of the paging industry has been slower than the cellular market. Most operators offer regional coverage but have established roaming arrangements with each other allowing subscribers to enjoy national coverage. Three operators are believed to offer national coverage. The penetration rate in 1994 is about 1 percent as compared to Singapore's 20 percent. Operators expect the paging penetration rate to reach five percent by the end of 1998.

The market is in a stage of decline as reflected in the number of pagers sold over the years. A number of paging customers have migrated to other modes of communication such as the cellular phones. Industry sources estimate the total market potential for the paging industry to be 500,000 subscribers, but currently there are about 150,000 (1995) subscribers in Malaysia. There is therefore great potential for the paging market.

Electcoms Sdn Bhd is the dominant paging operator in the country with a market share of about 35 percent. Other major companies include Komtel Sdn Bhd, Easycall, Hutchinson Paging and Kilatcom. Komtel with a market share of about 28 percent, has a total subscriber base of 46,000 and operates about six networks. Easycall holds about 20 percent of the market share and has a subscriber base of 34,000.

Industry sources have expressed the opinion that the market would be more effective if the industry were consolidated, providing improved and standardized paging services. The quantity of licenses issued has made it difficult to control prices, which are dictated by customers. Brands in the market include Motorola, NEC, Phillips and Casio. Motorola is the dominant brand and is know for its quality and durability.

In the future, new features will be added to paging devices giving greater value-added services, thus making the industry more competitive.

The Internet

The Malaysian Institute of Microelectronic Systems (MIMOS), a government body, has the responsibility for running the Internet in Malaysia. In 1996, MIMOS added an E-1 link to the T-1 link already in service. Both links connect to sites in California. The additional capacity was filled in less than two weeks. MIMOS plans to continue expanding bandwidth with the goal of reaching T-3 speeds at an annual cost of $11.7 million. MIMOS hopes to provide connectivity of 2Mbit/s by 2000 and plans to expand the Internet backbone to rural areas.

Jaring (the Joint Advanced Research Integrated Networking) is the gateway to Malaysia's information highway and until recently, was the only access provider to the Internet. Telekom Malaysia has now been approved as the country's second Internet Service Provider (ISP). Jaring is owned and operated by MIMOS. Jaring currently uses Telekom's infrastructure to operate. The presence of two Internet Service Providers is expected to improve and expand the country's Internet service.

The number of Jaring subscribers is growing at about 20 percent per month with about 40,000 subscribers currently. In order to deal with this exponential growth rate, MIMOS planned to increase the number of Jaring access nodes nationwide from the present 22 to 140 by mid-1997 and to also increase the backbone to multimegabit bandwidth.

As part of its move to liberalize Internet services in the country, MIMOS recently appointed four companies as Jaring Access Service Providers (JASPs), who will take over the role of providing customer services from MIMOS. The four companies are Time Multimedia Sdn Bhd (TMM), a JV between Sapura Holdings Sdn Bhd and Time Telecommunications Sdn Bhd; the New Straits Times Technology Sdn Bhd (NSTT); Silicon Communications Sdn Bhd, a consortium of two state governments and local and international companies; and Utusan Melayu (M) Berhad. With the appointment of these JASPs, MIMOS will be able to concentrate on future development of Jaring and research and development.

Telekom Malaysia will invest up to US$30 million to develop more nodes throughout the country for Internet users. Telekom has targeted to have at least 250,000 Internet users by the end of next year. At present Telekom has about 35,000 Internet subscribers.

Submarine Links

In August 1996, STM signed an agreement with South African telecommunications utility Telkom to jointly develop the proposed South Africa Far East Asia (SAFE) submarine cable system. With an estimated cost of between $290 million and $360 million, this system will connect Cape Town with Penang and will be the first direct submarine cable link between East Asia and Southern Africa.

Satellite Systems

Recognizing the $80 million resource drain the rental of satellite transponder time cost annually to provide 65 percent of its international traffic, in 1991, Malaysia decided to acquire its own satellite. MEASAT-1 (Malaysia East Asia Satellite), a Hughes HS376 satellite was launched in 1996 costing MEASAT's owners, Binariang Sdn Bhd and the Ministry of Finance, some $235 million. It has 12 C-band transponders for regional telecommunications traffic and four Ku-band transponders for broadcast services, covering the Philippines and southern India as well as Malaysia. The C band service will provide commercial and economic benefits to all regional network operators who require broadband capacity for video, data and voice service. A second satellite (MEASAT-2) was launched in 1996, with a third and larger satellite scheduled for 1998. Binariang has a license to own and manage satellites for 20 years without restriction on the number of satellites that may be launched.

Measat Broadcast, a branch of Binariang, is beginning a digital satellite TV service. This will be Malaysia's first such service, satellite dishes having previously been banned to prevent "unsavory" foreign material from entering. The new system will entail the creation of an "All-Asia Broadcast Center" in Malaysia's new Multimedia Super Corridor.

Radio Television Malaysia (RTM), the government radio/television station will lease two 36 MHz C band transponders on a full-time basis and one additional 36 MHz C band transponder for occasional use. Subscribers will be able to receive communication, entertainment and information from the 20 TV and eight radio Direct-To-User (DTU) services.

Payphones

The three major payphone operators in the country are Telekom Malaysia, Uniphone and recently Citiphone. Telekom Malaysia is planning to introduce new credit card models capable of handling international calls. Telekom has the largest share of the pay phone market (55 percent), followed by Uniphone with 44 percent and Citifon with 1 percent.

Number of Public Payphones Installed in the country

Operators	1990	1995
Telekom Malaysia	6,798	99,225
Uniphone Sdn Bhd	17,793	80,216
Citifon Sdn Bhd*	NA	2,500
Total	24,591	181,941

Callback Services

According to industry sources there are currently 10 operators of callback services in the country. Although there is no legislation that prohibits callback services, controversy with regard to these services has caused the GOM to declare callback services illegal. The Ministry of Energy, Posts and Telecommunications is expected to amend the Telecommunications Act soon to reflect this. At this point of time, the GOM has not indicated what action will be taken against the existing operators.

Contacts

Government :

H.E. Datuk Leo Moggie anak Irok
Minister
Ministry of Energy, Telecommunications and Posts
1st Floor, Wisma Damansara
Jalan Semantan
50668 Kuala Lumpur
Telephone 60 3 256 2222
Facsimile 60 3 255 7901

Tuan Haji Hod Parman
Director Pengarah
Ministry of Energy, Telecommunications and Posts
Jabatan Telekom Malaysia
Wisma Damansara
Jalan Semantan
50668 Kuala Lumpur
Tel: 603-255 6687
Fax: 603-253 0508

Trade Associations/Chambers of Commerce

Ms. Kristal Alley
Executive Director
American - Malaysian Chamber of Commerce (AMCHAM)
11.03 AMODA, 22 Jalan Imbi
Kuala Lumpur 55100
Tel: 603-2482407

Fax: 603-2428540
email: exdir@amcham.po.my

Mr. Tan Keok Yin
Chief Executive Officer
Federation of Malaysian Manufacturers (FMM)
17th Floor, Wisma Sime Darby
Jalan Raja Laut, 50359 Kuala Lumpur
Tel: 603-293 1244
Fax: 603-293 5105

Mr. Peter J. L. Jenkins
Executive Director
Malaysian International Chamber of Commerce & Industry
Wisma Damansara
P.O. Box 10192
50706 Kuala Lumpur
Tel: 603-254 2205
Fax: 603-255 4946

Mr. Veiven Goon
Director
PITO Malaysia (Private Investment and Trade Opportunities)
Yee Seng Building, 7th floor
15 Jalan Raja Chulan
50200 Kuala Lumpur
Tel: 603-238 9491
Fax: 603-38 9493

INDUSTRY CONTACTS:

Operators:

Mr. C.Y. Chin
Director of Marketing
Binariang Communications Sdn Bhd
Block B, 20th Floor
Wisma Semantan
12, Jalan Gelenggang
Bukit Damansara
50400 Kuala Lumpur
Tel: 603-252 2000
Fax: 603-252 3295

Encik Mohd Badry Bin Hanafi
Senior Vice President
Cellular Communications Network (Malaysia) Sdn Bhd
New Business Development Division
15 Floor, Bena Tower, 160 Jalan Ampang
50450 Kuala Lumpur
Tel: 603-262 3900
Fax: 603-262 5101

Mr. Sulaiman Adam
Senior Manager
Emartel Sdn Bhd
27th Flr, Plaza Raja Chulan
8, Jalan Raja Chulan
50200 Kuala Lumpur
Tel: 603-201 8686
Fax: 603-201 9595

Mr. Alex Wong
Marketing Manager
Mobikom Sdn Bhd
Suite 21.1-21.4, 21st Flr
Wisma Cyclecarri,
P.O.Box 13800
288 Jalan Raja Laut
50350 Kuala Lumpur
Tel: 603-294 0800
Fax: 603-294 9800

Mr. Chan Nam Kiong
Senior Manager
Mutiara Telecommunications Sdn Bhd
Lot 30, Jalan Delima 1/3
SUbang Hi-Tech Industrial Park
40000 Shah Alam
Tel: 603-731 1800
Fax: 603-732 1857/96

Mr. Zulfiflee Rosli
Manager
Sapura Digital Sdn Bhd
Level 17, MNI Twins 2
11, Jalan Pinan
50450 Kuala Lumpur
Tel: 603-261 7117
Fax: 603-261 2117/2217

Mr. Joseph Vijaya Kumar
Managing Director
Syarikat Telefon Wireless (M) Sdn Bhd
Wisma Segar
Jalan Tun Sambanthan
50470 Kuala Lumpur
Tel: 603-273 5948
Fax: 603-273 5955

Mr. M. Radzi Mansor
Senior Vice-President, Regulatory Management &
Telekom Malaysia Berhad
External Affairs
Wisma Telekom
Jalan Pantai Bahru
59200 Kuala Lumpur
Tel: 603-208 9494
Fax: 603-232 1100

Mr. Shahrein Zainal
Marketing Manager
Time Telecommunications Sdn Bhd
3rd Floor, Wisma Time
249 Jalan Tun Razak
50400 Kuala Lumpur
Tel: 603-466 8000
Fax: 603-466 9047

Paging:

Mr. Azahar
Finance Manager
CT Paging Sdn Bhd
12 Jalan 1/82B
Bangsar Utama
Off Jalan Bangsar
59000 Kuala Lumpur
Tel: 603-282 7722
Fax: 603-282 6805

Mr. Gopi Pillay
Managing Director
Easycall Malaysia Sdn Bhd
43rd Floor, Menara Maybak
100 Jalan Tun Perak
50050 Kuala Lumpur
Tel: 603-230 5255
Fax: 603-230 6867

Mr. Michael Chan
General Manager
Hutchison Serting Telecom Sdn Bhd
8th Floor, Wisma Jerneh
38 Jalan Sultan Ismai;
50250 Kuala Lumpur
Tel: 603-225 4100
Fax: 603-242 2888 (Motorola Pagers)

Mr. Sooi Took Seng
General Manager
Kilatcom Sdn Bhd
Tingkat 20, Semua House
Lorong Bunus 6
Off Jalan Masjid India
50100 Kuala Lumpur
Tel: 603-291 3131
Fax: 603-292 3976

Mr. Syed Hussain
Assistant General Manager
Komtel Sdn Bhd
121 Jalan SS 6/12
Kelana Jaya
47300 Petaling Jaya
Selangor
Tel: 603-704 6633
Fax: 603-704 6622

Dr. Lai Chong Teng
Managing Director
SkyTel Systems (M) Sdn Bhd
Tingkat 2, Wisma Telekom Taman Desa
Jalan Desa Utama
58100 Kuala Lumpur
Tel: 603-780 8008
Fax: 603-780 8778

Trunked Radio:

Mr. Mazman Sulaiman
Vice-President
Celcom Trunk Sdn Bhd
15th Floor, Bena Tower
160 Jalan Ampang
50450 Kuala Lumpur
Tel: 603-262 3900
Fax: 603-262 5101

Mr. Y.P. Yong
Managing Director
Hasyon Teknik Sdn Bhd
No. 4, Tingkat 1, Medan Ramah
Happy Garden
58200 Kuala Lumpur
Tel: 603-783 9288
Fax: 603-781 9797

Mr. Tan
Pelatus Sdn Bhd
No. 70C, Jalan Kg. Attap
50640 Kuala Lumpur
Tel: 603-273 2110
Fax: 603-274 3646

Mr. T.O. Lee
Managing Director
Segi Maju Sdn Bhd
10A, Jalan SS 15/4
Subang Jaya
47500 Petaling Jaya
Tel: 603-734 7878
Fax: 603-733 9593

Agents/Distributors:

Mr. Silan
Managing Director
Abex Inc Sdn Bhd
113 Jalan Aminuddin Baki
Taman Tun Dr Ismail
60000 Kuala Lumpur
Tel: 718-1530/717-6977/719 4343
Fax: 717-5572

Y.M. Raja Noraini Bt. Raja Datuk Nong Chik
Managing Director
Bumisat Telecommunications (M) Sdn Bhd
Lot 3427, 3rd Mile
Klang-KL Federal Highway
41300 Klang, Selangor
Tel: 03-550-6719
Fax: 03-550-6854

Mr. Andrew Tan
Managing Director
Electra Communications (M) Sdn Bhd
16B, Jalan 51A/225
46050 Petaling Jaya, Selangor
Tel: 03-776-9222
Fax: 03-775-9130

Mr. Ayub Hassan
Chairman
Superior Communication & Electronics (M) Sdn Bhd
Suite 7.0618, 7th Floor, Wisma Cental
Jalan Ampang
50450 Kuala Lumpur
Tel: 03-264-1207
Fax: 03-263-6937

MALAYSIA

MULTIMEDIA SUPER CORRIDOR (MSC)

PROJECT DESCRIPTION

Malaysian President Dr. Mahathir Mohamad has taken a personal role in developing the Multimedia Super Corridor (MSC) concept and in moving this megaproject forward toward implementation. The MSC project is the core of the government's strategy to transform Malaysia into the Information Age as a global player in technology development and application. As such, the MSC has the full commitment of the Malaysian Government at the highest level.

The Multimedia Super Corridor is a massive real estate and investment project occupying a 15 km. by 50 km. corridor (750 sq. km.). The corridor links Kuala Lumpur, the capital, to Kuala Lumpur International Airport, which is to be commissioned next year. The corridor will be anchored by the construction of two new cities: Putrajaya, a new administrative capital, and Cyberjaya, an intelligent city with multimedia industries, R&D centers, and a new Multimedia University. Cyberjaya is planned as the home for multinational investments in information technology. The projected total investment for the MSC over the next 23 years is M$43 billion ($14.3 billion at current exchange rates).

A separate corporation, the Multimedia Development Corporation (MDC), has been established to manage this project, headed by Tan Sri Dato' Dr. Othman Yeop Abdullah. , which has been assigned the highest priority by Malaysia's prime minister. MDC is scheduled to move by the end of the year into new headquarters in the prestigious 88-storey Petronas twin towers. MDC has formed an advisory committee for President Mahathir, which includes such global

Project Summary

Project Cost: $2 billion (first phase)

Project Sponsor:
Multimedia Development Corporation

Required Technology:
ATM technologies
ATM equipment
Electronic government systems
Telemedicine technologies
Smart card systems
Distance education systems
Consulting services for ATM-based information systems and applications

information technology (IT) leaders as Microsoft, Sun Microsystems, IBM, British Telecom, Sony, Oracle, Motorola, Apple, and Netscape.

The core of the MSC is a set of initiatives called the seven "Flagship Applications" of the MSC: Electronic Government, Smart Schools, Multi-Purpose Cards, Telemedicine, R&D Clusters, Borderless Marketing and World-wide Manufacturing Webs.

The first four Flagship Applications – Electronic Government, Smart Schools, Multi-Purpose Cards, Telemedicine – are categorized under 'Multimedia Development', while the other three are categorized under 'Multimedia Environment'. The key characteristics of the Multimedia Development Flagship Applications are that they involve industry project teams in conceptualising the applications, offer concrete business opportunities and require development of comprehensive, leading-edge multimedia solutions.

The Multimedia Environment Flagship Applications, on the other hand, are supportive applications for Multimedia Development Flagship Applications. They are intended to define optimal operating conditions for multimedia companies, provide focus for new business development and help market MSC to target companies.

PROJECT FINANCING

The Government plans to develop these projects as joint government-private ventures, and it is expected that financing must be provided by both sides to the agreement.

To facilitate investments in the MSC program, the government has created a number of special incentives, including no income tax for up to 10 years or an Investment Tax Allowance, depending on the project, and no duties on the importation of multimedia equipment.

The Government is eager to attract small and midsize firms to the MSC, in part because the project has been criticized as targeting primarily large, non-Malaysian firms. To promote the involvement of small and midsize firms, the MDC is planning to launch an MSC R&D Grant Scheme (MGS).

The MSC project is one of a family of related initiatives in the Southeast Asian region through which the respective governments are seeking to jump start their high technology industries and overcome their current weakness in research and development. As in the Nusantara 2 project in Indonesia, the Singapore ONE project in Singapore, and the Information Technology master plan in Vietnam, the financing for the MSC program remains somewhat unspecified. Companies that are prepared to bring financing to the table will clearly be in a preferential position, as the programs are making minimum use of traditional tender-based procurement and government project funds. Given the very high level of commitment to this program, however, it appears clear that the government will come forward with financing, or mobilize it from the Malaysian private sector, to advance its priority projects.

U.S. firms are at something of a disadvantage in that there is essentially no bilateral foreign aid available for Malaysia. Japanese and European firms can take advantage of technical cooperation assistance provided through various channels by their governments to gain an inside edge on the specification of systems and standards to guide MSC systems.

STATUS OF PROJECT DEVELOPMENT

In July 1997 the MDC issued a group of fifteen "Conceptual RFPs," or CRFPs covering four of the seven flagship applications (see below).

The MDC distinguishes between CRFPs and traditional RFPs as follows:

- The principal differences between a regular RFP and CRFP are that in the latter, more emphasis is placed on defining the project objectives and targeted benefits, rather than specifying detailed technical requirements. This give companies the opportunity to collaborate with government and other companies in developing innovative solutions.
- The CRFPs will hence support the objectives of the MSC by helping to attract leading multimedia companies to Malaysia, motivating them to leverage their full potential in providing technologies that maximize benefits to users and the country and encouraging collaboration and technology transfer, especially with small- and medium-scale enterprises.

As a practical matter, it appears that the CFRP process is essentially a prequalification round, which is intended to motivate industry leaders and

innovative midsize firms to come forward with proposed solutions. The MDC will then work with promising technologies to develop specific projects, which, depending on their customer base and ability to rely on market forces, will be implemented through a variety of mechanisms. For example, an educational project might be implemented through a sole-source procurement with the education ministry, while a smart card application might be pursued through creation of a new local company. The traditionally close state-private sector relations in Malaysia and the high priority of this program make it possible for the MDC to use a variety of mechanisms that would not generally be available to a government in the United States.

The MSC CRFPs have generated a high degree of interest. As of early September, some 349 CRFPs for Electronic Government had been purchased, 122 for Smart Schools, 172 for Telemedicine and 128 for Multi-Purpose Card. In addition, 1,107 Electronic Government CRFP documents were downloaded from the MDC website, 789 for the Multi-Purpose Card, 1,220 for Smart Schools, and 915 for Telemedicine. The tasks of assessing and then integrating the large number of responses expected will clearly be a major task.

U.S. Competitiveness and Export Potential

The United States enjoys a strong position of world leadership in most of the technology areas to be emphasized in the MSC. Specific priority areas such as distance learning and telemedicine are particularly dominated by the United States, while others, such as smart cards and electronic government, offer good opportunities for U.S. companies, despite strong competition from European suppliers.

This project offers particular opportunities for small and midsize companies, particularly those willing to partner with new entrants from Malaysia in their areas of expertise. The MDC is eager to attract small and midsize firms to the program, and can offer assistance in the matching process. As many of the technologies to be tested and rolled out are currently in use in U.S. state governments and universities, interested companies would be well advised to work with their local customers to showcase their expertise to their Malaysian counterparts.

DECISION MAKING PROCESS

In order to be eligible for participation in the MSC project, companies must seek designation as MSC status companies. This designation is given by MDC based on an evaluation against three criteria: a) the company must be a provider or a heavy user of multimedia products and services, b) the company must employ a substantial number of knowledge workers, and c) the company must be able to outline how it will transfer technology and/or knowledge to Malaysia or otherwise contribute to the development of the MSC and Malaysia's economy.

Pioneer companies with MSC status include NTT, MIMOS Berhad, Sun Microsystems, Telekom Malaysia Berhad, and the MDC itself. More than 1000 companies have expressed interest in MSC status or MSC projects and 40 companies have already been granted MSC status out of a planned total of 50 to be so-designated by year-end 1997. U.S. companies on the list include Sun Microsystems, Oracle MSC, PDS International, Intel Malaysia Design Center MSC, Ericsson Hewlett-Packard Telecommunications, High Summit Technologies, and Asia Pacific Info Services. In general, however, the list is dominated by European and Asian firms. U.S. companies have to date been less aggressive in pursuing this program, having been put off by the somewhat loose implementation structure and schedule.

The project is currently in the first of three conceptual phases. The first phase is expected to include the creation of MSC, attraction of a core group of world-class companies, establishment of Putrajaya and Cyberjaya, and the launching of seven "Flagship Applications." The latter include: electronic government, smart schools, telemedicine, R&D clusters, a national multipurpose card, borderless marketing centers, and world-wide manufacturing webs. While these concepts are quite visionary, and initially attracted considerable skepticism, the Government is now proceeding to develop specific ventures.

In July 1997, fifteen "Conceptual RFPs" (CRFPs) were issued covering four of the Flagship Applications. Five CRFPs were issued for electronic government, one for the multi-purpose (smart) card, five for smart schools, and four for telemedicine, as follows:

- Electronic Government: Licensing and related vehicle services and utility payment, Prime Minister's office (Generic Office Environment); electronic

procurement, human resource management information system, and project monitoring system

- Smart Schools: Smart school teaching-learning materials, smart school assessment system, smart school management system, smart school technology infrastructure, and smart school systems integration

- Telemedicine: mass customized/personalized health information and education, continuing medical education, teleconsultation, and lifetime health plan

- Multipurpose Card: the development of a single Multi-Purpose Card platform that will support all initial government and payment applications, as well as provide a convenient platform for additional government and private sector innovation

The CRFPs are available on the MSC web site (http://www.mdc.com.my) and can be downloaded directly. The schedule calls for proposals to be evaluated by the end of 1997. The evaluation committee for each group of proposals will be led by a technical committee involving the relevant ministries. The CFRPs and their respective team leaders are as follows:

- Electronic Government: Malaysian Administrative Modernization and Management Planning Unit

- Multipurpose Card: Bank Negara

- Smart Schools: Ministry of Education

- Telemedicine: Ministry of Health

CONTACTS

Tan Sri Dato' Dr. Othman Yeop Abdullah
Chairman, MDC
Tel: 603-262-9323
Fax: 603-469-7031
Email (corporate communications department): rodhiah@mdc.com.my or alina@mdc.com.my

MALAYSIA

NATIONAL AND STATE GOVERNMENT IT SYSTEM REQUIREMENT

PROJECT DESCRIPTION

This project is designed to enhance the Information Technologies (IT) infrastructure by shifting to paperless applications for the national and state governments in Malaysia. The first project funded is the relocation and modernization of the national government from Kuala Lumpur to Putrajaya City. Putrajaya City will be a futuristic ultra modern new city located in the center of the Multimedia Super Corridor (MSC). The modernization of IT for this government will be among the initial showcase projects of the Prime Minister's MSC overarching project.

Project Summary

Project Budget: US$405 to US$580 Billion

Project Sponsor: Malaysian government agencies

Required Technology:
Databases
Hub, switches, and routers
File servers

This year USTDA funded and Booze-Allen & Hamilton hosted a group of government executives involved in the development of the MSC where they learned more about real applications of paperless government by visiting the federal and state governments in the U.S. that have implemented advanced MIS/IT systems.

The goal of each project is to provide the necessary computer, software, and data telecommunications infrastructure that will allow state governments to pursue business and economic projects in service of its constituent population. In meeting this goal, the following will be required:

- Implement the most current IT system to meet the state government's requirements.
- Help the governments to hire and retain the appropriate mix of managers and staff who will be capable of providing the technical services by each agency of the government.

- Plan and develop a network infrastructure that will improve and facilitate internal and external communications.
- Implement the necessary agreements with outside vendors to provide maintenance and repair services, applications development, and technical LAN/WAN support that best meets the need of each governmental agency
- Build a network platform that will permit the rapid communications with other state agencies, customers, vendors and the Internet.
- Develop a method that will continue investment in computing power that allows each agency to keep pace with advances in hardware and software technology.
- Acquire a library, training technical staff, and training facility for the IT systems acquired that will be used as government IT learning center.

The state governments of Malaysia , like most state governments, consist of autonomous agencies such as, transportation, education, taxation, regulation, commerce and labor, courts and justice, agriculture, etc. Each agency will have its own IT system with software applications supporting its function. However, in order for each state government to be economically IT efficient , all agencies must be supported by a common help desk with the most current network management applications and capabilities. Each IT system will consist of the following components:

- Object Oriented Database
- Computer Platform
- File Servers
- Smart Terminals
- Printers
- Wiring Hub, Switches, and Routers
- Software Applications (Designed for specific functions)
- LAN/WAN
- Network Management Center and Help Desk

PROJECT FINANCING

It is estimated that the getting-started value of these projects assuming the WAN portion would be leased from the Long Distance Carriers will be as follows:

Entity	Cost Estimate	Status
Putrajaya	$100,000,000 to $150,000,000	Underway
Selangor	$50,000,000 to $75,000,000	Underway
Johor	$30,000,000 to $50,000,000	Planning
Perak	$30,000,000 to $50,000,000	Planning
Penang	$25,000,000 to $30,000,000	Planning
Malaka	$25,000,000 to $30,000,000	Planning
Pahang	$25,000,000 to $30,000,000	Planning
Negri-Sembilan	$20,000,000 to $25,000,000	Planning
Kedah	$20,000,000 to $25,000,000	Planning
Kelantan	$20,000,000 to $25,000,000	Planning
Treng-Ganu	$20,000,000 to $25,000,000	Planning
Perlis	$20,000,000 to $25,000,000	Planning
Sabah	$10,000,000 to $20,000,000	Planning
Sarawak	$10,000,000 to $20,000,000	Planning
Total	**$405,000,000 to $580,000,000**	

A range has been used to estimate these projects due to insufficient data on existing IT systems already in place and an accurate survey of each states requirements.

Projects such as these are ideal for Build, Operate, and Transfer (BOT) or Build Own, and Operate (BOO). This type of financing promotes privatization of government entities and offers the government a guaranteed source of funds for the projects presented above.

STATUS OF PROJECT DEVELOPMENT

The state governments of: Selangor, Pahang, Negri-Sembilan, Johor, Kedah, Perak, Kelantan, Treng-Ganu, Perlis, Penang, Sabah, and Sarawak will require new IT Systems. The states with the most populous business centers are Selangor with the cities of Petaling Jaya (450,000 Pop.) and Kuala Lumpur (1.3 Million Pop.), Johor with the city of Johor Bahru (500,000 Pop.), Perak with the city of Ipoh (700,000 Pop.), and Penang with the city of Georgetown (475,000 Pop.). In order of priority, it would appear that the states of Selangor, Johor, Perak, and Penang will upgrade IT systems before year 2000. The remaining states should upgrade IT systems before year 2005.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

Digital, IBM, Oracle, Novell, and other U.S. hardware and software firms are the dominant players in the IT related MSC marketplace. Hewlett Packard, Dell, Motorola, and Iomega are also strong in Malaysia, though more hardware oriented. Additionally, HP is also selling test systems and instruments to Telekom Malaysia and other telephone companies.

FOREIGN COMPETITION

Pacific Rim and European country IT vendors are currently small players as compared to the U.S. dominance in the IT marketplace, particularly in the area of software and systems integration. Foreign competition is, however, significantly stronger in the area of computer hardware, with strong competitors from Japan, Korea, and Taiwan.

Near term revenue for IT through 1998 will top $225 million. In addition to this partial MSC revenue, the IT government systems for the Putrajaya and Intelligent City Projects will bring in approximately $580 million in revenue by 2005. Total IT revenues for companies providing government sector MSC projects will be in excess of $1 billion.

It is estimated that 90 percent of these expenditures could be U.S. exports.

DECISION MAKING PROCESS

Since the Putrajaya and Selangor projects have already started and U.S. companies all already participating as viable competitors, further U.S. participation may not be required. RFPs need to be prepared for each of the remaining state governments.

RELATED PROJECTS

The state of Selangor and the National Government are both being implemented in the MSC and are also backbone projects. These IT system will be show case systems for investor entrants into the MSC.

U.S. Companies with a strong presence in Malaysia such as SAIC/Bellcore, GTE, Lucent Technologies, IBM, Digital, HP and others are in an excellent position to be suppliers for these projects. These companies have been leaders in IT manufacturing, software design, and deployment. Supporting this project would further solidify their marketing efforts and continued acceptance in Malaysia.

CONTACTS

Mr. Kamarudin Abdullah
Business Operations Manager
(Vice President's Office)
MIMOS Berhad
Industrial Business Sector
Technology Park Malaysia
Kuala Lumpur
Malaysia 5700
Tel: 603 966 5000
Fax: 603 966 2755
E-mail: kamak@ms.mimos.my

PHILIPPINES

Country Profile
Telecommunications Sector Overview
Projects:
➢BayanTel Expansion Procurement ➢PMTS Wireless Licenses
➢Philippine Armed Forces (AFP) Modernization Program ➢Meralco Telecommunications Network

The boundaries shown do not imply, on the part of U.S. Government, any judgement on the legal status of any territory.

Philippines Profile

As of 1996

Capital - Manila
Population - 70.27 million
44% urban population
GDP per Capita - US$860
(1994)

Telephone Density
Overall - 2.01%
Rural - 1%

Waiting List for
Telephone Lines - 847,392
(1994)
Cellular Subscribers - 493,862
Paging Subscribers - 324,816
Telex Subscribers - 232 (1994)

International Outgoing
Traffic (million calls) - 6,778,932 (1994)

Network Digitization
Switching - 72.5%
Transmission - 90% (1994)

(Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, archipelago between the Philippine Sea and the South China Sea, east of Vietnam **Geographic coordinates**: 13 00 N, 122 00 E **Comparative area**: slightly larger than Arizona **Climate**: tropical marine; northeast monsoon (November to April); southwest monsoon (May to October) **Terrain**: mostly mountains with narrow to extensive coastal lowlands

COUNTRY PROFILE

PEOPLE

The Republic of the Philippines population is estimated at over 70 million and growing at a yearly rate of 2.3 percent. Nationals in the Philippines are known as Filipino(s). The main ethnic group is the Christian Malays comprising 91.5 percent of the population with 83 percent of the people following the Roman Catholic religion. About 10 percent of the population are Protestant or other denominations and approximately 4 percent are Muslim.

The official language of the Philippines is Filipino. English is commonly used for educational, governmental, and commercial purposes and Spanish is spoken by a small margin of the population. Over all, about 80 languages and dialects are spoken in the islands, of which about ten, belonging to the Austronesian language family, are of regional importance.

THE ECONOMY

The Philippine economy is primarily a mixture of agriculture and light industry. The agricultural sector accounts for over 40 percent of employment, but provides less than one-fourth of the Gross Domestic Product. The Philippines historically has had to grapple with chronic trade deficits and a "boom-and-bust" economic growth pattern. The government is currently in the midst of economic reforms that will enable the Philippines to move closer to the development of the newly industrialized countries of East Asia.

With the emergence of economic recovery, the Philippines are laying the foundation for sustained growth and development. Economic growth has accelerated in the past few years with robust expansion in exports and investment. The private sector has played a pivotal role in creating this new found economic growth and the government's reform programs focusing on fiscal and monetary

management, trade liberalization and private participation in infrastructure have bolstered economic confidence throughout the country.

Following the 1970s, the Philippines experienced a period of economic and political turmoil. The accumulation of external debt, combined with the economic and political crises of the early 1980s, affected investment and savings causing domestic problems that hampered economic growth.

In the early 1990s, the economic situation began to take an upward turn after an array of reforms including privatization; and price, trade and investment liberalization. The recovery was led by expansion of exports and foreign investment with merchandise exports rising by 17.7 percent in 1996, after a 29.4 percent increase in 1995. In 1996, real Gross National Product (GNP) grew by 6.8 percent and unemployment gradually fell to 8.6 percent. With improved fiscal and monetary management underway, the government has turned its focus to alleviating poverty. Additionally, with a more stable macroeconomic environment, private investment can continue to be an important stimulant to growth.

Investment requirements in infrastructure for the upcoming decade are projected to be $50 billion, or nearly 7 percent of Gross Domestic Product (GDP). Given the scarcity of public resources, the government is focusing on ways to attract private investment to undertake infrastructure projects, such as expanding its Build-Operate-Transfer program to include transport and water supply projects to complement growing private investment in power.

The World Bank has extended about $9 billion in commitments to the Philippines, as of June 30, 1997. Projects financed by the World Bank have benefited nearly all sectors of the economy, particularly agriculture, infrastructure, energy, and industry.

The World Bank's strategy in the Philippines is to promote environmentally sustainable development and poverty reduction through sound macroeconomic policies, to strengthen public sector capacity, and to promote private investment in infrastructure. The Bank is also backing efforts to develop rural infrastructure to improve the productivity of small farmers. It is also using innovative approaches to community development. Forthcoming Bank studies will focus on managing global integration, urban transport, energy, and rural development.

In FY97, the Philippines received $281.4 million in loans for four projects. The Third Elementary Education Project ($113.4 million) is helping to improve the

quality of education for 6 to 12 year-olds, especially from poor families. The Water Resources Development Project ($58 million) is strengthening the national irrigation system and fostering better water resources planning and management to increase the incomes and productivity of some 20,000 small-farmer families. The Agrarian Reform Communities Project ($50 million) is improving rural infrastructure, agriculture and enterprise development, and community development in areas undergoing agrarian reform. And the Second Subic Bay Project ($60 million) is supporting infrastructure development and strengthening the Subic Bay Metropolitan Authority's regulatory and management capacity.

The Bank's assistance program is based on long-standing partnerships with a large number of government agencies in the Philippines, and has increasingly been implemented through cooperation with other major donors, NGOs, and the private sector. Over the past two years, the Bank has substantially increased interactions with the local and foreign private sector on issues ranging from capital market development to promoting investment in infrastructure.

The World Bank coordinates closely with other multilateral and bilateral organizations through the Consultative Group process, which has been reorganized to be more client focused and to involve the active participation of a wide group of donors. These efforts are supplemented by local aid coordination led by the Bank's Resident Mission in Manila.

KEY ECONOMIC INDICATORS

Indicator	1994	1995	1996 (e)
Constant GDP ($ Billion)	64.1	74.1	83.5
GDP Growth (%)	4.4	4.8	5.7
GDP per Capita ($)	937	1058	1162
Gov. Spending	18.8	18.4	18.8
Inflation (%)	9.0	8.1	9.0
Unemployment (%)	9.5	9.5	9.0
Foreign Reserves ($ Billion)	7.1	7.8	10.2
Total Exports ($ Million)	13,483	17,370	21,730
Total Imports ($ Million)	21,333	26,333	33,250

POLITICAL OVERVIEW

The Philippines declared independence from the United States on July 4, 1946. A new constitution was ratified by national referendum in February 1987 and provided for the separation of powers and guaranteed freedom of speech, religion, the press, and equality under law. The President, Fidel Valdes Ramos, was elected by popular vote in May 1992 to a single six-year term.

Under the Philippine constitution, the bicameral legislature consists of a 24 member Senate serving six-year terms, and a House of Representatives with a maximum of 250 members elected to three-year terms. The first general elections for the legislature under the new constitution were held in May 1987.

The Philippines is divided into 14 regions, 21 municipal districts, 60 chartered cities, and 74 provinces (including Metro Manila). These are further divided into more than 1,500 municipalities and more than 40,000 barangays, the basic geographic units of the Philippine political system. Each local government unit can create its own source of revenue and levy taxes. Each is governed independently by elected officials who are accountable to the national government for their actions.

The Supreme Court is made up of a chief justice and 14 associate justices, all appointed by the country's president. This court of final appeal has the power of judicial review: it may rule on the constitutionality of any law, ordinance, or executive order. Other judicial bodies include court of appeals, courts of the first instance, and municipal courts.

Diplomatic representation in US:

Ambassador Raul Chaves Rabe, *Chief of Mission*
1600 Massachusetts Avenue, NW
Washington, DC 20036
Tel: 202 467 9300
Fax: 202 328 7614

US diplomatic representation:

Ambassador Thomas C. Hubbard
1201 Roxas Boulevard
Ermita Manila 1000
Mailing address: APO AP 96440
Tel: 63 2 521 7116
Fax: 63 2 522 4361

FOREIGN INVESTMENT AND TRADE

Continuing and accelerating the initiatives of its predecessor, the Ramos administration is implementing a far-reaching reform program aimed at sustaining economic growth, preserving macroeconomic stability, and transforming the Philippines into an industrialized market-driven economy.

Within the past three years, the Government has implemented important reforms liberalizing trade, foreign exchange and investment regimes; privatizing parastatals; reducing entry barriers for vital industries (such as banking, insurance, aviation, telecommunications, and oil); and encouraging key private-sector infrastructure investments under a Build-Operate-Transfer (BOT) program. These reforms have boosted exports, increased overseas workers' remittances, and attracted foreign investments, trade financing and capital flows. Real Gross National Product (GNP) growth has been accelerating since 1993. With every sign of continuing, reforms are feeding optimism that the Philippines has, at last, embarked on a path of sustained economic expansion.

The government also entered into an agreement with the International Monetary Fund (IMF) in July 1997 to extend the existing External Financing Facility to the end of 1997; coupled with an augmentation of this arrangement, $1.05 billion was made available from the IMF.

There are certain investment barriers in dealing with the Philippines through the Foreign Investment Act of 1991 that contains two categories of foreign investment "negative lists."

"List A" covers activities in which foreign equity is excluded or limited by the Constitution and other laws. These include investments in mass media, practice in

licensed professions, retail trade, small-scale mining and private security agencies which are reserved for Filipinos. In addition to land ownership (where a 40 percent foreign-equity ceiling applies), varying foreign ownership limitations are imposed, among others, on companies engaged in advertising (30 percent), employee recruitment (25 percent), private construction (40 percent), financing (40 percent), public utilities (40 percent), and the exploration and development of natural resources (40 percent). "List B" limits foreign ownership (generally to 40 percent) for reasons of public health, safety and morals (e.g., gambling operations and sauna and massage parlors), and to protect local small and medium-sized firms. To protect smaller firms, a company must be capitalized at a minimum of $200,000 to be more than 40 percent foreign-owned.

Within the telecommunications sector, the Philippine Constitution limits foreign ownership in telecommunications firms to 40 percent.

The Government generally imposes a foreign ownership ceiling of 40 percent on firms seeking incentives with the Board of Investment (BOI) under the government's annual Investment Priorities Plan. While there are exceptions to the ceiling, divestment to 40 percent is required within 30 years. The BOI imposes industry-wide local-content requirements under its motor-vehicle development program and requires participants to generate, via exports, a certain ratio of the foreign exchange needed for import requirements. The Government has issued guidelines to phase out these trade-related investment measures by the year 2000.

Current regulations limit domestic borrowings by foreign firms, set as maximum debt-to-equity ratios, which must be maintained for the term of the debt. The Bangko Sentral intends to lift these restrictions in 1997.

Contracts for government procurement of goods and services are awarded by competitive bidding. In general, government procurement policies do not discriminate against foreign bidders. However, preferential treatment of local suppliers is practiced in government purchases of medicines, rice, corn, and iron/steel materials for use in government projects. Government agencies must procure petroleum from government-owned sources.

Contractors for infrastructure projects which require a public utility franchise (i.e., water and power distribution, public telephone and transportation systems) must be at least 60 percent Filipino-owned. For other major contracts (such as BOT projects), where operations do not involve a public utility franchise, a foreign constructor must be duly accredited by its government to undertake construction

work. To the benefit of U.S. suppliers, areas of interest including power generation equipment, communications equipment and computer hardware do not generally confront significant restrictions.

The foreign debt level (estimated at $38 billion) has been growing, but debt servicing is no longer a major problem. The ratio of debt service to merchandise and service exports has fallen to under 15 percent, from 40 percent in the early 1980s. The Philippines has had four debt rescheduling rounds with official bilateral (Paris Club) creditors. It implemented a debt-to-equity swap program from 1986-1993 and, between 1990 to 1992, repurchased and/or restructured nearly $6 billion in debt owed to foreign commercial banks. The Philippines reentered the voluntary international capital markets in 1993 after a decade's absence. The Government did not exercise a fifth Paris Club debt rescheduling agreement. The IMF approved a three-year extended arrangement in mid-1994, which the Philippines intends to use as an exit program. The country continues to benefit from sector-specific and structural adjustment programs provided by multilateral institutions such as the Asian Development Bank and the World Bank Group.

The Philippines is a founding member of the World Trade Organization and is also a member of the Association of Southeast Asian Nations (ASEAN)

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN THE PHILIPPINES

The United States has strong commercial ties to the Philippines. Moves toward liberalization, particularly in telecommunications, have created a business climate in the Philippines that is more attractive than ever to U.S. companies. Historically close bilateral ties and extensive people-to-people contacts have helped solidify the U.S. position as the Philippines' primary trading partner and foreign investor.

To do business effectively in the Philippines, companies need a presence in Metropolitan (Metro) Manila, the country's national center, capital and nerve center of industrial, financial and trade activity. 85 percent of Philippine foreign trade passes through the Port of Manila; 90 percent of imports enter this Port to be distributed to the other principal cities via trucks and inter-island vessels. Most of the Philippine's national importers and distributors are located in Manila.

METRO MANILA

About 90 percent of all Philippine industries are located in the greater Manila area in three major locations. Heavy industry and cargo from vessels in the bay is clustered along the banks of Pasig River. A second industrial district with medium-sized plants is located at Antipolo, about 15 miles outside of Manila in the Marikina Valley. The third major industrial area is located in Makati, currently the central business area in the country and the most prosperous of the Manila suburbs. Makati is also a shopping area for higher income residents. Other major interregional centers are Cebu City, Iloilo, Davao, and Zamboanga. Forty smaller major and secondary centers give the archipelago basic economic, political and social services. Most of these centers are on the coasts and a number of them are medium-sized ports.

AGENTS

U.S. manufacturers benefit from having Filipino agents/distributors. These relationships are bound by a contract, which should detail the rights and obligations of the manufacturers and the agent. Filipino agent/distributor should be registered with the Philippine Securities and Exchange Commission. U.S. firms selecting a Philippine representative should consider using services offered by the US & Foreign Commercial Service, Manila, such as the "Agent/Distributor Service (ADS)" or the "Gold Key Service."

JOINT VENTURES/LICENSING

An increasingly common method for enterprises embarking on business operations in the Philippines is through joint ventures with local enterprises. Philippine law on joint venture corporations states that where activity to be undertaken is partially "nationalized" (reserved for ownership by Filipino citizens only), the foreign entity is limited to 40 percent equity participation.

TECHNOLOGY TRANSFER

In the Philippines technology transfer arrangements are contracts or agreements entered into by and between domestic companies and foreign/foreign-owned companies involving the: transfer of systematic knowledge for the manufacture of a product or the application of a process; rendering of a service, including management contracts; licensing of computer software except software developed

for mass market; and the transfer, assignment, or licensing of all forms of industrial property rights.

All technology transfer arrangements are registered with the Technology Transfer Registry of the Bureau of Patents, Trademarks and Technology Transfer in the Department of Trade and Industry. Royalties are remitted through any bank authorized by the Bangko Sentral ng Pilipinas (Central Bank).

ESTABLISHING AN OFFICE

Before it can start operations, a business enterprise must apply for registration of the business name with the Bureau of Domestic Trade; register a partnership or corporation with the Securities and Exchange Commission; apply for a Barangay permit and Mayor's permit to operate in a chosen locality of business; secure municipal license (Export Processing Zone Authority enterprises excluded); register with the Bureau of Internal Revenue for a tax account number and a value-added-tax registration number, and individual residence certificates for owners/incorporators; and register employees with the Social Security System, Medicare, and Department of Labor and Employment.

The essential forms of business organization in the Philippines are sole proprietorships, partnerships, and corporations. Other less common business forms include joint stock companies, joint accounts, business trusts, and cooperatives. A foreign entity, depending upon the nature of its intended activity in the Philippines, may establish and register any of the following: a branch, a subsidiary, a licensing and franchising agreement, a joint-venture agreement, and a regional headquarters.

BUSINESS HOURS

Office hours for business firms and the government are from 8:00 AM to 5:00 PM. Traffic delays hamper efforts to conduct business in a timely manner. Business objectives are ideally met mid morning, late afternoon and informally during meals, entertainment and golf.

SELLING FACTORS/TECHNIQUES

Americans should exercise due diligence in the selection of their local distributors, agents, or representatives, since they are critical links to the market. (NOTE: the Commercial Service assists U.S. exporters to locate representatives overseas.)

After selection, U.S. suppliers must provide full support to their local representatives.

U.S. suppliers should visit the Philippines at least once each year to keep abreast of developments in the industries they are serving, to show support for their local representatives, to discuss problems or to devise marketing techniques and to visit customers. There should be a strong emphasis on regular customer calls by local representatives in order for them to identify sales targets or opportunities. Training programs for customers and distributors, advertising and product promotion support, and participation in trade fairs, exhibitions and product seminars are also important for U.S. suppliers to maintain leadership in this highly competitive market.

ADVERTISING AND TRADE PROMOTION

The Philippines is a brand-conscious market. Advertising plays a significant part in promoting the sale of most goods. Most of the 178 advertising agencies have patterned their organization after American advertising agencies.

There are hundreds of radio stations throughout the country, making advertising penetration difficult. Television, with much fewer stations, is far more efficient. 48 percent of Philippine households have televisions.

Over 20 national daily newspapers, all published in Manila, provide domestic and international news, as well as an expanding standard medium for advertising. The widest-circulated paper is the Manila Bulletin. Other widely-read newspapers are the Manila Times, Manila Chronicle, Philippine Daily Inquirer, Philippine Star, Manila Times, Business World, Today, and Manila Standard. There are also business journals for various industrial sectors. These include Computer Times and Computer World and the newsletters of various trade associations such as the Philippines Electronics and Telecommunications Federation (PETEF).

PRICING

In most instances, price is the primary consideration in the purchase decision of Philippine buyers. However, in some cases the quality of the product as well as the after sales service/support, and availability of spare parts, supersede price as a primary criterion. End-users prefer American-made products if they can afford them because they are well known for high quality and durability. While the reliability of U.S. products works to the advantage of U.S. suppliers, they should

nevertheless be concerned with cheaper prices of third-country competition. U.S. manufacturers and suppliers should be flexible in their prices and, where appropriate, should be prepared to provide end-users in different income brackets with alternative products.

AFTER-SALES SERVICE/CUSTOMER SUPPORT

Next to price, after-sales service and support are extremely important factors to marketing success in the Philippines. It is imperative for U.S. vendors to provide this support during and after the warranty period in order to satisfy their customers. The proximity of Taiwan, Japan and other Asian nations works against U.S. competitiveness.

SELLING TO THE GOVERNMENT

The Philippine Government is a large direct importer of many essential products. Government agencies pattern their regulations and procedures after those of the Bureau of Supply and Coordination of the U.S. Government's General Services Administration. The Department of Transportation & Communication (DOTC) and the Department of National Defense (DND) number among the major government purchasers. DND purchases usually require an offset commitment from the foreign supplier.

Philippine Government procurement regulations permit a foreign company to bid on government procurement only if it maintains a registered branch office or a registered resident agent in the Philippines. The first step in obtaining Government business is to be placed on the Bidder's Mailing List of the agency with which the applicant is interested in doing business. This is done by sworn application accompanied by certified copies of the company's application for the Certificate of Registration issued by the Philippine Bureau of Commerce, articles of incorporation, a receipted franchise tax bill, an up-to- date financial statement, and other attachments, as required. Application forms of the various procurement agencies are substantially the same in most respects.

PROTECTION FROM IPR INFRINGEMENT

In order to protect their products from intellectual property rights (IPR) infringement, U.S. manufacturers and suppliers should register their patents, trademarks, and brand names with the Bureau of Patents and Trademarks located at

the 5th Floor, Department of Trade and Industry Building, Sen. Gil J. Puyat Avenue, Makati City.

The U.S. Trade Representative (USTR) moved the Philippines from its special 301 "priority" watch list to the "regular" watch list following a 1993 agreement between the two Governments. This agreement strengthened significantly IPR protection in the Philippines. A list of Philippine lawyers specializing in IPR cases is available from the U.S. Embassy's Commercial Service Office.

For firms maintaining operations in the Philippines, it is advisable to retain a local attorney and accountant. Leading law and accounting firms, some of which are members of the American Chamber of Commerce in the Philippines, also provide good business and commercial advice. A list of recommended lawyers and accountants is available from the U.S. Embassy. The U.S. Embassy Special Consular Services Branch can authenticate legal documents notarized by Philippine lawyers. Attorneys and accountants can also facilitate access to the various government offices involved.

TELECOMMUNICATIONS SECTOR OVERVIEW

The Philippines enjoys a deregulated and competitive market. The impact of the deregulation begun in 1987 has been dramatic, particularly with the issuance of additional measures to consolidate and speed up the competition process in 1995. In the 66-year period between the launching of PLDT and effective deregulation, only 1 million lines were put in place. In the next two years, with aggressive competition, 2 million more have been installed, tripling the network's capacity. The national teledensity has now reached 4.66 lines per 100 population (as of mid-1997), and 18 per hundred in Manila. The Philippines' teledensity is doubling annually and will reach 9.78/100 by 1998.

The Philippines telecommunications sector is almost fully liberalized, and is nearing the completion of one of the most successful liberalization and reform processes in global telecommunications. At the start of this process, the Philippines was already nearly unique among Asian countries in that its telecom sector was overwhelmingly in private hands – albeit a private monopoly, PLDT. The liberalization process that started in 1987 has transformed the telecom sector and the country now has one of the most open and competitive markets for telecom services in Asia.

This shift has been brought about by the Government of the Philippines in response to its recognition of the vital importance of telecom development to the Philippine economy, regarded throughout the 1980s as the "sick man of Asia." Investment policies are geared toward promoting the rapid implementation of a nationwide telecommunications network by encouraging both local and foreign investment. At present, equity participation by foreign companies is limited to 40 percent. Rapid telecommunications growth in this deregulated environment now is making an important contribution to the nation's thriving domestic economy, which is achieving the annual growth rates of between 7 and 8 percent that characterized the "miracle years" experienced by other ASEAN nations.

When President Ramos took office, only 21 percent of the nation's territory was served by telecommunications. By the end of his term, 83 percent of the Philippines will have service, with 1,601 cities and municipalities being served, including a large share of the 212 communities currently without service. If all of

the carriers meet the build-out requirements included in their licenses, 5.5 million additional lines will be installed by the end of the first four years following liberalization.

KEY PLAYERS (GOVERNMENT AND PRIVATE)

GOVERNMENT AGENCIES

The Department of Transportation and Communications (DOTC) is the primary policy, planning, programming, coordinating, implementing, regulating and administrative entity of the Executive Branch of the Government. DOTC promotes, develops and regulates dependable and coordinated networks of transportation and communications, as well as in the fast, safe efficient and reliable postal, transportation and communications services.

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

DOTC is entrusted with overseeing telecom development in the Philippines by the Telecoms Policy Act of the Philippines, which was enacted by Congress on March 1, 1995 as Republic Act No. 7925. DOTC's main responsibility is to develop and maintain a long-term strategic national development plan for telecommunications in order to serve as a guide to the industry and potential investors and to the National Telecommunications Commission (NTC, see below). The DOTC coordinates research and development activities with other telecommunications institutions. It represents and promotes the Philippines' interests among international bodies, and negotiates the nation's rights and obligations in international telecommunications matters.

DOTC operates a national consultative forum to facilitate interaction among the telecommunications industries, user groups, and academic and research institutions in the airing and resolution of important issues in the field of communications.

NATIONAL TELECOMMUNICATIONS COMMISSION

Agencies attached to the DOTC have specific functions and responsibilities in the sector. Principal among them is the National Telecommunications Commission (NTC), the regulatory arm of the Government of the Philippines, having both regulatory and quasi-judicial powers. NTC is also the principal administrator of

the Telecom Policy Act. NTC supervises and regulates the telecommunications and broadcasting industries. It promulgates and adopts necessary guidelines, rules and regulations pertinent to the establishment, operation and maintenance of various telecommunications facilities and services throughout the country.

While the NTC remains under the administrative jurisdiction of the Department of Transportation and Communications, it is independent insofar as its regulatory and quasi-judicial functions are concerned. Its decisions can be appealed only and directly to the Supreme Court.

Universal access to basic telephone service remains the major focus of the Commission's development plans and programs. Executive Order 109 mandates that the operators of the very lucrative Cellular Mobile Telecommunications Services (CMTS) and International Gateway Facilities (IGF) services cross-subsidize and develop local exchanges in both urbanized areas and in underserved and unserved rural areas.

TELECOMMUNICATIONS OFFICE

The Telecommunications Office (TELOF) is the operating arm of the Government and continues to provide some telephone and telegraph services in rural areas.

Funding for TELOF has been cut drastically by Congress, a move that is consistent with the nation's liberalization and deregulation of telecommunications. TELOF is expanding public call offices.

MUNICIPAL TELEPHONE PROJECTS OFFICE

The Municipal Telephone Projects Office (MTPO) is the implementing arm for the Government's nationwide municipal telephone program, which is to install a telephone in every unserved municipality.

NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY AND OTHER AGENCIES

The National Economic and Development Authority (NEDA) formulates the country's overall economic policies and development strategies. DOTC policies are prepared within this general framework. The Department of Trade and Industry (DTI) and the Board of Investments (BOI), an agency of the DTI, formulate policies regarding investments in the Philippines. They identify preferred areas of investment, which may qualify for incentives. The Congress is

empowered to enfranchise private carriers while the NTC grants specific authorities.

PRIVATE SECTOR PLAYERS

The following table demonstrates the tremendous growth in the number of service providers that have replaced the Philippine Long Distance Telephone's monopoly, which ended in 1987 with the beginning of the liberalization process.

TELECOMMUNICATIONS INDUSTRY STRUCTURE

Type of Service		Number of Operators	
		Authorized	Operational
Local Telephone	Private	63	63
	Government	4	4
Domestic Long Distance		2	2
International Long Distance		9	9
Cellular Mobile Telephone		5	5
Public Repeater Network		10	8
Radio Paging		14 (6/30/96)	6
Domestic VSATS		3	3
Domestic Satellite		3	3
International Satellite		1	1
Domestic Carrier		6	6
International Leased Line		5	5
Domestic Value-added		16	16
International Value-added		5	5
Public Coastal Stations		12	12
Domestic Radiotelephone		5	5

Source: 1996-1997 PETEF Yearbook

Specific operators in each of these areas are discussed in the section below on the network.

REGULATORY REGIME AND MARKET ACCESS

The principal regulations that underpin the liberalized operating and investment environment include the following:

- Full deregulation of Paging, Trunk Radio and VAS
- Executive Order 59 mandates Interconnection (if facilities are available, i.e., COFAC and CAFAC)
- Executive Order 109 mandates universal telephone service (nationwide)
- Public Telecoms Policy Act of 1995 (RA 7925) consolidates various policy issuances of the Government

Deregulation began in 1987 when DOTC issued Departmental Order 87-188. The first competition opened up the market for radio paging, following the widespread practice in the region of beginning liberalization with relatively uncontroversial value-added services. A new license issued for Easy Call radio paging service broke the monopoly of the previous license holder, a company called PocketBell. Other paging companies then joined the market.

In 1988 Express Telecom was allowed to provide cellular service in direct competition with PLDT's Cellular Mobile Telephone Service (CMTS). Then, in 1991, NTC approved the application of Piltel to charge rates for nationwide cellular telephone services. Service by three other carriers, GMCR, Smart, and Islatel soon followed.

The Telecoms Policy Act (Republic Act #7925) of 1995 set out that the Government of the Philippines must sell all its operating company assets, and that the National Telecommunications Commission (NTC) would serve as the principal architect of the telecommunications liberalization process, while the Department of Transportation and Communications (DOTC) would provide interface with the international world.

The Philippines began liberalization of basic services with a duopoly strategy, licensing a competitor to PLDT in each of ten areas in 1996. There has been considerable success and progress with this so-called "Service Area Scheme,"

particularly after a mandatory interconnection policy forced PLDT to allow interconnection with its core backbone.

The new law does not mention the services area scheme, as such. The area system, which carves up the country into a number of distinct service areas for licensing, was devised by industry as a response to government proposals that were regarded as less attractive by the private sector.

Competition was fiercest for the Metro Manila market, but all of the licenses were ultimately taken up. To speed build-out, the government imposed a requirement to construct a given number of lines in underserved areas on each of the new licensees (the number varied with the attractiveness of the license area). Companies were given two years to reach their targets for build-out, but only BayanTel has been successful in meeting its target.

The provision of basic service in less attractive areas was further stimulated by Executive Order #109, which requires International Gateway Facilities (IGF) operators and Cellular Mobile Telephone Service (CMTS) operators to provide local service on a cross-subsidizing basis as well. NTC took the decision to require that the cellular and IGF licensees provide cross-subsidization (toward universal service) by installing 400,000 lines in each of the ten basic service areas. For each 10 cellular lines in an urban area, one line has to be installed in a rural area. Similarly, each IGF operator is required to install a minimum of 300,000 local exchange lines within three years from the date of authority to operate and maintain Local Exchange Carrier service (LEC) and to maintain a ratio of 300 local exchange lines per international switch termination.

Changing technology has greatly influenced the implementation of this plan. When the NTC agreed that wireless telephony would be acceptable for the subsidized service, for example, local operator Piltel decided to wait and meet its requirement to provide a rural network by constructing a new wireless local loop system at the end of 1997.

Interconnection issues have continued to impede the liberalization process, an experience common to developed and developing countries alike. Private operator BayanTel, for instance, experienced delays in establishing interconnection with PLDT's backbone, despite mandatory interconnection ordered in Executive Order # 59. BayanTel, which owns the electric company, TV and radio broadcast stations, and the concession for the privatization of water supply, plans to put in a minimum of another 500,000 lines.

As the liberalization process goes forward, continued success in obtaining new licenses or even in maintaining existing ones will depend heavily on the new entrants' ability to build out the network and roll out telecommunications service in a timely manner. There has been early evidence that some of the new players do not have the capital or the expertise to meet the requirements set by the NTC.

To apply for a license, an enterprise must get on the docket, pay fees, and announce in the local newspaper its intentions to build a network and provide service. The opposition may file opposing views. Four public hearings must be held with financial and technical witnesses. Then, the NTC decides if the enterprise's application for a license has sufficient merit. Bid bonds and escrow funds are also required. Inspections must be carried out to ensure consistency with the original application. Finally, a certificate of public convenience and necessity and a 25-year license are granted.

This process has worked well and has encountered comparatively few delays. Some analysts believe, in fact, that too many licenses have now been issued and that some consolidation will be seen in the future, although not necessarily in the next two to three years.

The liberalization program will continue and extend to additional areas. Following are several areas that have been identified as likely to see new policies issued in the coming period:

1. Cable TV Policy
2. Information Technology (IT)
3. Internet
4. Emerging Technologies (PCN, PCS, PHS, etc.)
5. Technology Convergence (Cable Telephony, Computer Technology, etc.)
6. Equal Access
7. Interconnection Fees

Companies already in the marketplace and those seeking to enter it should monitor developments in these areas closely, as they will clearly affect operating conditions in the marketplace.

EXISTING NETWORKS

The liberalization process has encouraged most of the major established Philippine industrial groups to enter the telecom marketplace. The existence of powerful family-based industrial groups has facilitated this process, accelerating the pace for development of new telecom giants. Further speeding this process has been the aggressive entry of international telecom leaders, not only from the United States, Europe, and Japan but also from elsewhere in the Southeast Asian region. These companies have formed strategic alliances and investment partnerships that are transforming the face of the telecom sector in the Philippines.

PLDT AND THE SECOND SERVICE PROVIDERS – THE BASIC SERVICES DUOPOLY

Philippines Long Distance Telephone Company (PLDT) remains the dominant service provider in the Philippine marketplace, despite the growth of a score of new entrants. PLDT's seventy-year record as the monopoly carrier, privately owned from its establishment in 1928, have given it a strong institutional and financial base that has, thus far, enabled it to stay ahead of the competition. This pattern, with the dominant carrier retaining more than half of the total marketplace, parallels experience worldwide. It will take a decade or more for the new entrants to grow to the point where they pose a serious challenge to PLDT's position.

The following table shows the main leaders in the provision of basic services as the result of the new licenses issued and continuing build out.

Main Providers of Basic Services

Lines Deployed	**Year 1**	**Year 2**	**Year 3**	**Commitment**
OPERATOR				
Smartcom	137,700	206,800	359,500	704,000
Globe Telecom	77,000	227,300	359,700	664,000
Islacom	190,000	100,000	410,000	700,000
Philcom	111,346	89,681	99,538	300,565
ICC/BayanTel	165,000	165,000	--	330,000
Piltel	74,880	124,880	211,200	410,960
Capwire	36,800	127,634	78,660	243,094
Digitel	58,650	105,018	162,656	326,324
PLDT (Zero Backlog)	350,000	420,336	250,000	1,020,366
Total	1,201,376	1,566,649	1,931,254	4,699,279

The Philippines telecom network is organized into 67 Local Exchanges (LEXs). In order to enter the market in a given area, or group of LEXs, carriers must establish a legal entity, apply to Congress for a franchise, find sponsors, secure NTC approval, and build the network in the period specified in its license (two years, in the case of the basic service carriers).

As further discussed below, not all of the new carriers have met their build-out obligations. The Government's response to missed deadlines thus far has been tolerant. Even though entrants have not met deadlines, the government feels it should not, at this time, withdraw licenses in view of the overall tremendous success of the scheme in moving the country from 700,000 lines to 7 million lines in a very short time. For example, operator Islatel has accelerated its line growth from 20,000 in the first quarter of its license to 180,000 in the third quarter and 450,000 by the end of its first year. Government spokesmen report that Moslem areas, which had virtually no service previously, now are connected to the national network through the wireless local loop by means of PABX's and facsimile machines. This kind of growth in access to the network was unknown until the implementation of deregulation, and the government is trying to give operators more time.

There remains some question as to whether the smallest service providers will survive or disappear. Implementation of interconnection requirements is a key factor in this marketplace, given PLDT's continued dominance of the main backbone. This control will be effectively ended when Telicphil, a joint venture of several of the main providers to create an independent nationwide fiber optic backbone, goes into preliminary operation in early 1998. Pending the operational startup of Telicphil, the interconnection situation has gradually improved. At present, PLDT must allow the other carrier to interconnect to any of its long lines.

OVERVIEW OF NEW ENTRANTS

As the government approaches the next phase in its liberalization program with issuance of the PCS licenses, it is moving toward a diversified supplier base. The following table shows the number of operators in each area:

MAJOR SERVICES	NUMBER OF OPERATORS
Local exchange	10 major operators
International Gateway	9
Cellular Mobile Telephone	5
Paging	11
Trunked Radio	10

Sources: the Asia Pacific Telecommunity's APT YearBook 1997, OPTEL's Philippines Telecoms Overview, dated May 1997, and the 1996-7 Electronics and Telecommunications Yearbook: Facts and Directory, published by the Philippine Electronics and Telecommunications Federation (PETEF), copyrighted 1993.

The government of the Philippines is determined to achieve a rapid and broad-based expansion of telecommunications services. The local exchange operators and, as the system is further liberalized, new mobile operators have explicit requirements for line deployment, with built-in requirements to reach unserved and underserved areas, rather than merely increasing service in the high-income areas.

This requirement has proved difficult for many companies to meet particularly those that are poorly capitalized or lack organizational systems to support a broad-based investment program. As the following table shows, only BayanTel has been able to meet its commitment.

In evaluating this performance, the government is seeking to balance a number of competing concerns, including the desire to avoid overconcentration in the industry. Thus far, the government has taken a fairly liberal view of underperformance, but whether this continues or the government begins to cancel licenses remains to be seen.

INTERNATIONAL GATEWAYS

Until 1989 the only international gateway belonged to PLDT. That year, the Philippine Global Communications Inc. (Philcom) and Eastern Telecommunications Philippines, Inc. won approval to create new gateways. At present there are nine international gateway operators in the country.

WIRELESS AND CELLULAR

As elsewhere in Asia, cellular is growing rapidly. Cellular began in Manila in 1987 with installation of PLDT's AMPS-A band system. In 1991, this system was

transferred to sister company Piltel. Additional licenses were granted in 1993 and, at present, cellular mobile licenses have been issued to five major operators in total. These include the following:

- Express Telecommunications, operating as Extelcom and using AMPS-B and N-AMPS technologies
- Globe Telecom (GMCR, Inc.) using the European GSM standard
- Isla Communications, operating as Islacom and using GSM technology
- Philipino Telephone Corporation, operating as Piltel and using AMPS, D-AMPS, and N-AMPS technology, with plans to convert to CDMA this year
- Smart Communications, using TAC technology

New licenses for an additional PCN/PCS cellular band are in the process of being issued. Cellular service in the new bands is to be provided nationwide by zone, following the existing model. Each of the four zones – the Visayas, Luzon, Mindanao and Metro Manila – will have separate spectrum bands. The "bid" is for the annual users' fee. In some countries, the regulator describes the service and asks for the lowest bid. In the Philippines, in contrast, if an aspiring entrant bids for a zone, the fee is already determined. Prequalifications must be completed by the end of October 1997, with the bidding expected to begin in the near future.

Three wireless cable licenses have just been granted in the 27 GHz range, but it remains to be seen how this system will be developed.

INTERNET SERVICE PROVIDERS (ISP)

Only 20 of the 120 Internet service providers (ISP) in the Philippines are registered. The provision of Internet service is a deregulated service, although there is some thought that the NTC might move to curb some content. If measured local service is introduced it is expected that the high level of use by Internet users is expected to diminish somewhat.

INTERNATIONAL SATELLITE POLICY

One present regulatory and policy challenge is how to allow the entry of Global Mobile Personal Communications Services (GMPCS). These services have high-level political support: an Executive Order, rather than a Departmental Order supports the entry of GMPCS into the Philippines telecommunications market. The Philippines is already in the process of coordinating satellite slots.

TRENDS AND OPPORTUNITIES

Of the 20 players the last ten do not have strategic partners. Even those with partners might need second or third partners for specific projects such as wireless cable and value-added services such as pre-paid phone cards. When the PCS licenses are granted there will be opportunities in equity and in the purchasing of hardware.

Equity opportunities are concentrated in several areas where expansion is expected to be greatest in the coming years:

- Tier 2 paging and trunk radio to serve low-income populations
- PCS – Tier 2 players are looking for capital and some tier 1 players are looking for specific opportunities.
- VAS
- Internet enhanced services such as telemedicine and telesecurity
- cable
- wireline
- 3 Local Multiple Distribution System licenses (MDS)
- wireless pay TV
- Philippines Information Infrastructure, including data networks and the possibility of creating a "topweb" giving all executives access to the Internet

There is also a wide-range of special opportunities. For example, the conversion of Subic Bay into a state-of-the-art industrial facility and Global TransPark by the Subic Authority creates many openings to support an information hub. A variety of technologies that can support free trade zone operation will find a ready market opportunity in Subic. Special projects underway in Subic include the reorganization of the Precision Measurement Electronics Labs (PMEL) left by the

U.S. military. There is no precision test equipment in the Philippines at present, forcing companies to go abroad for these services. With capital, expertise and a strong local partner, PMEL could become a successful niche project in the Philippines.

As shown by the following table drawn from the PETEF 1996-1997 YearBook, the leading telecommunications companies in the Philippines have been aggressive in establishing technology and investment partnerships with the international telecommunications leaders.

Company	Foreign Partner
Capwire	Korea Telecom
Digitel	NZ Telecom
Eastern Telecoms	C&W (HKG)
Express Telecoms	Millicom (USA)
Globe Telecom	Singapore Telecom
ICC	Nynex/Bell Atlantic
Islacom	Shinawatra (Thailand/Deutsche Telekom/Germany)
Philcom	Comsat
Piltel	Malaysian Group
SMARTCOM	First Pacific (HKG)/NTT(Japan)

These alliances leave a number of openings for new companies willing to make a strong commitment to the Philippines. Of the 20 top operators, only 10 have established strong core relationships, and even these firms are always open to additional relationships that offer them an advantage in technology, finance or marketing skill.

The margins around the main systems also offer numerous opportunities in the Philippines, given the country's archipelagic structure and many remote areas. These areas offer opportunities for experimental applications of new, low-cost technologies.

COMPETITIVE ENVIRONMENT

U.S. technologies are welcomed in the Philippines, which has a long history of close trading relationships with the United States. The Philippine market is a

highly competitive one, which increasingly looks for the latest technologies to speed development and give the purchaser a competitive edge.

U.S. firms have an advantage in the Philippines relative to their position elsewhere in Asia, because of the reliance on English as the main language for business and government and the many local companies that have established expertise in dealing with U.S. firms.

The dominance of European and Japanese equipment suppliers, characteristic of most ASEAN countries, is much less in evidence in the Philippines, although Nokia, Alcatel, and other Euroean suppliers have a strong and growing presence.

CONTACTS

Government Agency Representatives
Broadcast Services Department
U.P. Computer Center
University of the Philippines
Diliman, Quezon City
Tel. No.: (632) 96-88-37
Fax No.: (632) 99-44-33
Contact: Dr. Luis Alarilla, Jr.
Director

Department of Transportation and Communication
Engr. Aurora Rubio
Chief, Telecoms Policy and Planning Division
5/F Philcomcen Bldg., Ortigas Center
Pasig, Metro Manila
Tel: 631-58-23/631-78-73
Fax: 631-51-83

Department of Transportation and Communication
Mr. Jose Raul A. Saniel
Mr. Raul Nilo
Director, Directorate for IT Plans and Policies

National Telecommunications Commission
Vibal Bldg., EDSA cor. Times St.
Quezon City
Tel. No.: (632) 924-40-26; 924-37-25 (Engr. Cabarrios)
(632) 924-37-44 (Mr. Saliwan)
Fax No.: (632) 921-71-28

Supervising Communications Development Officer
Telecoms Policy and Planning Division
5/F Philcomcen Bldg., Ortigas Center
Pasig, Metro Manila
Tel: 631-58-23/631-78-73
Fax: 631-51-83

Department of Transportation and Communications (DOTC)
Project Implementation Unit
Anthony Building
J. P. Laurel Avenue
Lanang, Davao City 8000
Mindanao, Philippines
Tel.: (63 82) 224 0535 to 37
Fax: (63 82) 224 0538

National Computer Center
Camp Aguinaldo, Quezon City
Tel. Nos.: (632) 911-50-56 local 208; 912-26-69
Fax No: (632) 912-29-73
Contacts: Col. Fermin Javier
Managing Director
and

Contact: Engr. Edgardo V. Cabarrios
Director II
Common Carrier & Authorization Department
and
Engr. Carlos Saliwan
Officer-in- Charge

National Telecommunications Commission
Mr. Dante M. Vengua

Electronics and Communications
Engineer
Department of Transportation and
Communications
865 Vibal Bldg.
EDSA cor. Times St.
Quezon City, Metro Manila
Tel: 924-37-25/924-40-84

National Telecommunications Commission
Engr. Edgardo Cabarios
18/F PCI Bank Tower II
Makati Ave., Makati
Tel. No.: (632) 813-37-81 to 95
Fax No.: (632) 814-58-72

Makati, Metro Manila
Tel. No.: (632) 816-79-66
Fax No.: (632) 812-13-24
Contact: Mr. Noel Gabayan
Product Manager
Alcatel Cabling System

Asian High-Technology Corp.
Mr. Andy Colcol
Marketing Manager
Guevent Building, 49 Libertad St.
Mandaluyong, Metro Manila
Tel: 531-04-06
Fax: 531-04-06

DISTRIBUTOR

Asian High Technology Corporation (alternate contact)

Chief, Common Carriers
Authorization Department
Department of Transportation and
Communications
865 Vibal Bldg.
EDSA cor. Times St.
Quezon City, Metro Manila
Tel: 924-37-25/924-40-84

PRIVATE SECTOR

3M Philippines, Inc.
Contact: Mr. Romulo Carlos, Jr.
Market Planning Coordinator
Alcatel Philippines, Inc.
2303 Pasong Tamo Ext.

Guevent Building
49 Libertad St., Mandaluyong
Tel./Fax No.: (632) 531-04-06
Contacts: Mr. Petronilo Guevarra
President
and
Mr. Rey Gonzales
Supervisor, Sales and Marketing

AT&T Philippines
Mr. Eugene L. Stahl
President
5/F BA Lepanto Bldg.
8747 Paseo de Roxas
Makati, Metro Manila
Tel: 814-89-35
Fax: 810-89-56

AT&T Philippines (alternate contact)
Mr. Medi Pepper
Sales Director - Network Systems
5/F BA Lepanto Bldg.
8747 Paseo de Roxas
5/F, BA-Lepanto Bldg.
8747 Paseo de Roxas
Makati, Metro Manila
Tel. No.: (632) 812-54-81; 814-89-50
Fax No.: (632) 815-16-97
Contacts: Ms. Pilarcita Sta. Ana
Sales Executive
and
Mr. Ted Sandoval
Sales Director, Network Cable Systems

Avesco Marketing Corporation
Aurora Blvd. cor. Yale, Cubao, Quezon City
Tel. No.: (632) 912-88-81 to 99
Fax No.: (632) 912-29-99; 912-29-11; 912-23-52
Contact: Mr. Jimmy Tang
President

BayanTelecommunications Holdings Corp.
Mr. Primitivo T. Penaranda, Jr.
Executive Vice President - Business Development
5/F Benpres Building, Exchange Road
Pasig City, Metro Manila
Tel: 633-11-11 loc. 2123
Fax: 634-30-06
Makati, Metro Manila
Tel: 814-89-35
Fax: 810-89-56

AT&T Philippines, Inc. (alternate contact)

Bell Telecommunication Philippines, Inc.
8/F Vicente Madrigal Bldg.
6793 Ayala Ave., Makati, Metro Manila
Tel. No.: (632) 894-12-59
Fax No.: (632) 894-56-89
Contact: Mr. Edgardo Reyes
Chairman

Cable Communications, Inc.
Room 203, Centrum II Building
150 Valero St., Salcedo Village
Makati, Metro Manila
Tel. Nos.: (632) 815-1176; 86-8533; 815-0861
Contact: Mr. Ray Lopez
Area Manager - Southern Luzon

Capitol Wireless, Incorporated
Dolmar Gold Tower
107 Alvarado St., Salcedo Village
Makati, Metro Manila
Tel. No.: (632) 818-05-11 to 25; 816-4228
Fax No.: (632)
Contact: Engr. Epitacio Marquez
Officer-in-Charge

Comfac Corporation
8/F, The Valero Tower
122 Valero St., Salcedo Village
Makati, Metro Manila
Tel. Nos.: (632) 817-14-88;
819-36-79; 819-37-74
Fax No.: (632) 819-10-08
Contact: Mr. Conrado Legaspi, Jr.
General Manager

Contel Communications, Inc.
Mr. Anthony Concepcion
Vice-President - Mobile Services
7224 Malugay St., Makati
Metro Manila
Tel: 812-62-56 to 59
Fax: 818-30-78

Contel Communications, Inc.(alternate contact)
Ms. Belinda Singson
Marketing Assistant
7224 Malugay St., Makati
Level 21, Galleria Corporate Center
Ortigas Avenue, Pasig
Metro Manila
Tel: 634-89-89
Fax: 634-53-06

Ericcson Networks Phils. Inc.
3/F Goodwill Building
393 Sen. Gil Puyat Ave.
Makati, Metro Manila
Tel. No.: (632) 818-76-46
Fax No.: (632) 817-93-71
Contact: Mr. Alex Manuyag
Metro Manila
Tel: 812-62-56 to 59
Fax: 818-30-78

Eastern Telecommunications Philippines Inc.
Telecoms Plaza, 316 Gil J. Puyat Ave.
Salcedo Village, Makati, Metro Manila
Tel. Nos.: (632) 816-00-01;
760-06-22; 815-89-21 local 309
Fax Nos.: (632) 818-73-89; 760-62-04
Contacts: Mr. Antonio Urera
Chief Operating Officer
and
Mr. Nick Cruz
Assistant Vice President, Planning and Engineering

Easy Call Communications, Inc. Phils.
Mr. Rey Dedicatoria
Vice President, Technical
Sales and Marketing Manager

Express Telecommunication Co., Inc.
Mr. Emilio P. Festejo
Executive Vice President - Subscriber Services
2/F Centerpoint Condominium
Dona Julia Vargas Ave. cor. Garnet St.
Ortigas Commercial Complex
Pasig, Metro Manila
Tel: 634-00-01

Fax: 633-65-82

Fujitsu Philippines, Inc.
2/F, United Life Building
A. Arnaiz Ave. (Pasay Road), Legaspi Village
Makati, Metro Manila
Tel. Nos.: (632) 812-40-01 to 08; 812-33-18
Fax No.: (632) 817-75-76
Contact: Mr. Jaime L. Ching
Manager, Marketing Division

Pasig, Metro Manila
Tel. Nos.: (632) 631-31-15; 633-11-11 local 2154
Fax Nos.: (632) 632-12-30; 633-33-88
Contacts: Mr. Primitivo Penaranda, Jr.
General Manager
or
Ms. Agnes de los Reyes
Senior Manager, Administration

Isla Communications Incorporated
4/F, SGV II Building
6758 Ayala Ave., Makati
Metro Manila
Tel. No.: (632) 812-77-19
Fax No.: (632) 813-7233
Contact: Mr. Jovino Lorenzo, Jr.
President

Liberty Telecoms
Mr. Renato J. Fernandez
Vice President
Technology Centre

Globe Telecom
8753 BPI Condominium
Paseo de Roxas, Salcedo Village
Makati, Metro Manila
Tel No.: (632) 813-73-73
Fax No: (632) 813-75-19
Contact: Mr. Mark Anthony Javier
President

International Communications Corporation
5/F Benpres Bldg., Meralco Ave cor. Exchange Road
2298 Pasong Tamo Ext., Makati
Metro Manila
Tel: 815-98-01/815-88-31
Fax: 816-00-49

Liberty Telecoms (alternate contact)
Mr. Raymond M. Moreno
Chairman
Technology Centre
2298 Pasong Tamo Ext.
Makati City
Tel: 815-98-01
Fax: 816-00-49

Motorola
Mr. Rodeo B. Mawis
National Sales and Distribution Manager
Asia-Pacific Cellular Subscriber Division
18/F Pacific Star Building
Sen. Gil Puyat Ave. cor. Makati Ave.

Makati, Metro Manila
Tel: 810-07-62
Motorola - Land Mobile Products Sector
Mr. Wayne E. Peterson
Area Manager - Radio Network Solutions Group
18/F Pacific Star Building
Sen. Gil Puyat Ave. cor. Makati Ave.
Makati, Metro Manila
Tel: 810-07-62
Fax: 812-91-16

Oceanic Wireless Network, Incorporated
Ground Floor, Electra House
115-117 Esteban St., Legaspi Village
Makati, Metro Manila
Tel. No.: (632) 815-37-50; 815-37-46
Contact: Mr. John Young
General Manager

Philippine Cable Network and Constuction, Inc.
Enrile Express Bldg. II Compound
2293 Pasong Tamo Extension
Makati, Metro Manila
Tel. No.: (632) 813-13-22
Philippine Global Communications, Inc.
PHILCOM Building
8755 Paseo de Roxas, Makati
Metro Manila
Tel. No.: (632) 816-28-51
Fax No.: (632) 818-97-20
Contact: Engr. Alex Villamar
Fax: 812-91-16

Fax No.: (632) 817-33-07
Contacts: Mr. Thomas Allum
General Manager
or
Mr. Cesar Villaceran

Philippine Communications Satellite Corp.
Mr. Jose Ma. Ozamiz
Vice-President - Marketing
Telecoms Plaza Building
316 Sen. Gil Puyat Ave.
Makati, Metro Manila
Tel: 815-84-06
Fax: 817-95-96

Philippine Communications Satellite Corp. (Alternate contact)
Mr. Arsenio R. Afable, Jr.
Assistant Vice-President - Marketing
Telecoms Plaza Building
316 Sen. Gil Puyat Ave.
Makati, Metro Manila
Tel: 815-84-06
Fax: 817-95-96

Philippine Long Distance Telephone Company
Mr. George Lim
VP - Marketing
5/F Allied Bank Bldg.
Ayala Avenue, Makati City
Tel: 816-85-77/ 817-51-31
Fax: 810-43-65

Philippine Long Distance Telephone Company (alternate contact)
Ramon Cojuangco Building
Makati Ave., Makati, MM
Tel. No.: (632) 816-89-11
Fax No.: (632) 818-68-00
Contact: Mr. Antonio Cojuangco
Chief Executive Officer
or
21/F Pacific Star Building
Makati Ave., Makati, Metro Manila
Tel. No.: (632) 816-87-39
Fax No.: (632) 815-15-99
Contact: Mr. Felizardo dela Merced
Program Engineering Division

Pilipino Telephone Corporation
Ground Floor, Mobiline Center
6764 Ayala Avenue
Makati, Metro Manila
Tel. No.: (632) 819-18-19; 816-73-46; 816-68-43
Fax No.: (632)
Contacts: Mr. Ramon Cojuangco
President
and
Mr. Crispin Venal, Jr.
Director, Mobiline Engineering and Operations Division
General Manager
9/F Strata Bldg., Emerald Avenue
Ortigas Center, Pasig City
Tel: 634-83-51 to 55
Fax: 634-83-50

RMJ Development Corp.
Room 204, Centrum II Building
150 Valero St., Salcedo Village
Makati, Metro Manila
Tel. No.: (632) 815-44-06
Fax No.: (632) f817-54-62
Contact: Mr. Ramon Magsaysay, Jr.
President

Siemens, Inc.
6/F Sterling Centre Bldg.
Esteban cor. de la Rosa Sts.
Legaspi Village, Makati, Metro Manila
Tel. No.: (632) 818-48-18; 812-69-75
Fax No.: (632) 812-22-07
Contact: Mr. Wilfredo Asuro
Sr. Engineer

Sky Cable (Central CATV, Inc.)
Alexander Condominium, Amber St.
Pasig, Metro Manila
Tel. No.: (632)632-9788
Fax No.: (632)632-9796
Contact: Mr. Mel Velarde
General Manager

Smart Communications, Incorporated
12th Floor, Rufino Pacific Towers
6784 Ayala Avene
Makati, Metro Manila
Tel. No.: (632) 811-12-11
Fax No.: (632) 813-1191
Contact: Mr. Orlando B. Vea

Director
Engineering Services:

Smart Communications, Inc.
(Alternate contact)
Mr. Ramon Esberto
Public Affairs Manager

4/F Rufino Pacific Tower
Ayala Avenue, Makati City
Tel: 811-02-11
Fax: 811-01-08

TRADE ASSOCIATIONS:

Bankers Association of the Philippines
7/F, Sagittarius Bldg
H.V. dela Costa St., Salcedo Village
Makati, Metro Manila
Tel. No.: (632) 810-38-581
Fax No.: (632) 812-28-10
Contact: Mr. Rafael B. Buenaventura
President

Computer Distributors and Dealers Association of the Philippines
(COMDDAP)
7/F SEDCCO I Bldg., Legaspi cor. Rada Sts., Legaspi Village
Makati, Metro Manila
Tel. No.: (632) 810-38-14
Fax No.: (632) 815-65-31
Contact: Mr. Wilton Ngo
President

Integrated Telecommunications Suppliers Association of the
Philippines (ITESAP)
c/o Tesoro Electro-Digital Systems
15/F Robinson's Galleria Corporate Center
EDSA cor. Ortigas Ave., Quezon City
Tel. Nos.: (632) 633-83-18; 633-83-19
Fax No.: (632) 633-83-20
Contact: Mr. Angel Fojas
President

Philippine Cable Television Association, Inc.
Room 221, Blanco Center Building
119 Alfaro St., Salcedo Village
Makati, Metro Manila
Tel. No.: (632) 819-52-54
Fax No.: (632) 817-54-62
Contact: Engr. Fernando Morales
President

Philippine Electronics and Telecommunications Federation
6/F, Telecoms Plaza
316 Sen. Gil J. Puyat Ave., Makati
Metro Manila
Tel. Nos.: (632) 813-63-98; 816-00-01 local 379/220
Fax No.: (632) 813-63-97
Contact: Mr. Fortunato Perlas
President

United Architects of the Philippines
Upper Basement, CCP Complex,
Roxas Boulevard, Manila
Tel./Fax No.: (632) 832-37-11
Contact: Arch. Nestor Mangio
President

TRADE PUBLICATION

Computerworld Philippines
WS Computer Publishing Corporation
5/F SEDDCO I Bldg., Rada St., Legaspi Village
Makati, Metro Manila
Tel. Nos.: (632) 815-14-22; 812-83-97; 812-84-01

Fax No.: (632) 817-64-30
Contacts: Mr. P.W. Wong
Publisher

TRADE PROMOTION OPPORTUNITIES

Name of Event: Phil-Itec '94
Dates of Event: October 5 - 8, 1994
Event Organizers: Computer Distributors and Dealers Association of the Philippines (COMDDAP)
7/F SEDCCO I Bldg., Legaspi cor. Rada Sts.,
Legaspi Village Makati, Metro Manila
Tel. No.: (632) 810-38-14
Fax No.: (632) 815-65-31
and
Philippine Computer Society
6/F, Emmanuel House, 115 Aguirre St., Legaspi
Village
Makati, Metro Manila
Tel. No.: (632) 818-42-27
Fax No.: (632) 818-03-81
Venues: Hotel Nikko Manila Garden
and
Shangri-la Hotel Manila

Contact: Mr. Wilton Ngo
President, COMDDAP

Name of Event: Philippine Cable Show
Dates of Event: April 1995
Event Organizer: Philippine Cable Television Association, Inc.
Room 221, Blanco Center Building
119 Alfaro St., Salcedo Village
Makati, Metro Manila
Tel. No.: (632) 819-52-54
Fax No.: (632) 817-54-62
Venue: Bacolod City
Contact: Engr. Fernando Morales
President

Name of Event: Telecomex Asia
Dates of Event: 2nd half of 1996
Event organizer: HQ Link Philippines, Inc.
Unit B, 8th Floor
Cacho Gonzales Bldg.
101 Aguirre St., Legaspi Village
Makati, Metro Manila
Tel. No.: (632) 810-36-94; 810-56-85; 819-27-38
Fax No: (632) 815-31-52
Venue: Not available
Contact: Ms. Carol Odvina
General Manager

PHILIPPINES

PHILIPPINE ARMED FORCES (AFP) MODERNIZATION PROGRAM

PROJECT DESCRIPTION

The AFP plans to modernize its communications system to provide an expanded and more reliable service for all branches of the armed forces. The present system, which is several years old, consists of nine switching nodes, which are connected by a variety of microwave systems. Despite software upgrades and tape/disc conversions, the system has become difficult and expensive to maintain, and does not meet the current and projected AFP communications needs. Spare parts for transmission facilities are difficult to obtain and system outages are common during electrical storms because of inadequate grounding systems.

Project Summary

Project Budget: $10-20 million (total for first phase estimated at $30 million)

Project Sponsor: Commel/Philippine Armed Forces

Required Technology:
Video conferencing
Command and control systems
Data base integration

The existing network is composed of both analog and digital transmission systems, the most significant is the Collins backbone T 1 standard microwave system covering most of the main bases from Metro Manila south via tandem switching sites located in Metro Manila and Cebu City. An old analog microwave system connects Metro Manila via tandem switching to Camp Emelio Aquino in Northern Luzon. Both of these main systems are no longer being manufactured and therefore difficult to maintain. Most of the Radio relay stations are also older, difficult to support systems, and updating the transmission sites will be an early priority.

Most of the switching systems are pre-1982 with the same problem of continuing supply of spare parts. They are composed of a mixture of digital switches, Crossbar, analog electronic, and even some old step by step machines.

Planning is underway for upgrading and modernizing this network by replacing the older transmission and switching systems and to add new enhancements including

Video- conferencing, Command and Control system, data base integration and other system and features associated with today's modem technology.

The technologies most in need of modernization are:

- Video conferencing
- Command and Control Systems
- Data base integration

The main tandem points have recently been upgraded to more reliable CPUs with extended memory, but this upgrading did not use the highest level of technology and is also expected to require replacement within the timeframe of the new network project.

The final configuration for the new system has not yet been developed, but the following system elements are expected to be included in the design:

- Upgrading of all older analog elements to digital
- Provide high-speed data and multimedia capability
- Inter-link command posts system-wide
- Provide SDH facilities for new network operations
- Digital switching, transmission, and OSP

U.S. Competitiveness and Export Potential

At this time, specific offset requirements have not been identified, but it can be expected as well that some degree of offset will be required.

Strong competition for this project is expected, with most of the major telecommunications companies expected to consider bidding. U.S. companies have an inherent advantage in that the AFP has long-term relationships with the U.S. military and U.S. vendors. Compatibility with U.S. military technologies as well as demonstrated acceptability in the military marketplace should both count in a U.S. supplier's favor.

The military nature of this procurement somewhat limits the ability of U.S. official financing agencies to support U.S. bidders, a factor that clearly will not benefit U.S. competitors relative to those from Europe or elsewhere in Asia.

Additional factors that are expected to weigh heavily in the decision process include the following:

- In-country support and presence
- Training capabilities and commitment
- Track record with AFP
- Military supply track record in other markets

PROJECT FINANCING

Funding for the modernization of the AFP network will be provided from part of the proceeds of the recent sale to commercial developers of a major portion of Fort Bonifacio located within Metro Manila. Total cost estimates are in excess of $10 million.

It is expected, however, that companies that are serious in their intention to bid for this project will be able to provide ten-year financing in support of their offer.

STATUS OF PROJECT DEVELOPMENT

The RFP for this work is expected to be issued in 1998 and implementation to commence and finish in 1999. The time to the issue of the RFP depends on the time taken by the AFP to determine the systems and features needed and include specifications detailed enough for bidder responses.

This project has a high priority for the Philippine government and is expected to move ahead quickly. Detailed engineering work is still to be completed, creating an opportunity for U.S. companies both to sell engineering services to the client and to promote their technologies for inclusion in the final design.

The project is expected to move ahead in three phases, beginning with a feasibility study and design, followed by a pilot phase and full implementation. Because of

the sensitive nature of the application, it is expected that final decisions and approvals will be made by the President's office.

The next procurement action will be for development of a complete engineering study. This will encompass all details of network configuration, traffic analysis, data, and video conferencing integration, and phasing-in of new systems/phasing out of old systems. The latter will be in accordance with an approved AFP priority listing.

An early priority will be replacement of the aging, difficult-to-support transmission system. The system backbone will be a high priority, as will a major overhaul of the trunking system in the Metro Manila area. The latter, and possibly the former as well, will include upgrading to fiber optics.

A second priority for the first phase will be replacement of as many as 40 of the older switching sites with modern digital switching systems or a wireless local loop (WLL) configuration.

A third priority area is an updated grounding and associated transient voltage protection system. The geography of the Philippines creates a high risk for lightning strikes and disruption due to tropical storms, flooding, etc. New techniques for grounding have never been implemented to provide proper protection to the high technology systems in place, much less to meet the needs of newer systems.

The project phasing and design will give particular consideration to maintaining the integrity and functionality of the system through all stages of the project, as would be expected for a project that directly affects the military capabilities of the nation. Phaseout of existing systems and failsafe/redundancy procedures during the transition will be required for all major components.

Although the RFP has not been released, the solution proposed is expected to be vendor-independent to encourage maximum competition. The contract is expected to take the form of an EFI&T (engineer, furnish, install, and train) contract. Operation will be on a turnkey basis, although offerors may be requested to include proposals for long-term maintenance of the facilities. Extensive training will be required from the vendors as part of the turnkey process and possibly extending into operation.

Project financing will be a competitiveness issue in selecting among bidders. The government has designated part of the revenues from the sale of Ft. Bonafacio land in Manila to private developers (this sale has been completed). Nonetheless, competitive offerors will enhance their position by offering financing, preferably with terms of 10 years or more. Concessional financing offers can be anticipated from international competitors.

DECISION MAKING PROCESS

U.S. suppliers are in a strong position to be successful with this project. Philippine partners should be established and aggressive marketing should take place following bid announcements. Use of a local partner will help to increase influence during the procurement process. The next procurement action will be for development of a complete engineering study.

CONTACTS

Colonel Rolando San Juan
Chief, Communications and Electronics Command (COMEL)
Camp Emelio Aguinaldo
Quezon City, Metro Manila
Tel: (632) 774-6610

PHILIPPINES

BAYANTEL EXPANSION PROCUREMENT

PROJECT DESCRIPTION

Note: the following description is based on a USTDA Definitional Mission completed earlier this year. USTDA is currently considering support to this project in accordance with the recommendation made by the Definitional Mission consultant.

Project Summary

Project Budget: $1.085 billion
Foreign Component: $546 mil.

Project Sponsor:
BayanTelecommunications Holding Company (BayanTel)

Required Technology:
Switches, Remote Concentrators, Multiplexers, Distribution Points, Cable Closures, Cable Splicing Modules and Connectors, Power Supplies

As the most successful of the new telecommunications license-holders, BayanTel is consolidating its position by making extensive additions to its system. The company is currently finalizing plans for 300,000 additional local exchange lines as well as positioning the firm to participate in the Personal Communications System licenses and add to its long distance network. The local exchange lines will be built to serve BayanTel's existing Metro Manila service area and to expand service in Mindanao, and the Visayas.

The planned expansion will build on BayanTel's present level of approximately 350,000 local exchange access lines, installed in parts of Metro Manila and provincial areas. As the only telephone company that has met its obligation to roll out local exchange service in its existing franchise areas, BayanTel is ready to build out in other under-served regions. BayanTel will consider construction of Local Exchange Carrier (LEC) facilities in any regions designated by the NTC, but has targeted Regions 6 and 10 (Visayas), as well as 11 (Mindanao). Endorsement supporting BayanTel's plans from mayors, governors and provincial boards in these regions have been forwarded to the NTC for consideration. The commitment of BayanTel for regions 6, 10 and 11 equate to 300,000 local exchange lines. It is estimated that approximately six local exchange switches will be required to support the proposed services.

The planned BayanTel network expansion program will consist of facilities additions in all business units (see description below), but the majority of capital expenditures will be concentrated in the following projects:

- Local Exchange Additions
- Personal Communications System (PCS) Implementation
- Long Distance Network Additions

Each of the above noted projects has technical synergies with the other elements and will require planning and analysis to ensure compatibility, integrated deployment and cost effectiveness.

LOCAL EXCHANGE ADDITIONS

Once BayanTel receives the necessary permission from the NTC, the company plans to implement 300,000 lines including significant broad band capabilities in the indicated regions of the Philippines. BayanTel has estimated that this build out can be completed in approximately two years from the vendor contract award date. As a point of reference, BayanTel (ICC) completed installation of 300,000 lines with 18 months of vendor contract award in the Metro Manila (Quezon City) area.

BayanTel has completed initial high level studies of potential areas and has estimated that the expansion project will cost approximately US $300M. An estimate of this cost, by major network segment, is shown below:

ESTIMATED COST OF PROJECT EXPANSION		
Component	**Established Price**	**Percent Total**
Land	$ 15,000,000.00	5
Building	$ 36,000,000.00	12
Switch	$ 66,000,000.00	22
Transmission	$ 45,000,000.00	15
Access (OSP)	$ 105,000,000.00	35
Telephone Sets	$ 12,000,000.00	4
OSS	$ 21,000,000.00	7
Total	$ 300,000,000.00	100%

Of the total amount noted above, approximately 90 percent is for materials and the remainder is for labor.

All of the switch and transmission equipment is generally imported due to the absence of manufacturing plants for this equipment in the Philippines. Approximately 100 percent of the access equipment (closure, terminals, connectors, etc.) is also imported. The remainder (poles, hardware, etc.) are sourced locally.

Equipment specifications used by BayanTel for the telecommunications network are world class and meet Bellcore, CCITT, ITU and other guidelines.

Based on past practice, there is good potential for BayanTel to purchase a significant portion of the planned LEC networks from the USA. For example, in the 300,000 LEC built in Metro Manila, the following US firms supplied equipment:

EQUIPMENT SUPPLIED BY U.S. FIRMS FOR LEC IN METRO MANILA

Company	Equipment Furnished
Nortel	Switches, Remote Concentrators, Multiplexers
Raychem	Distribution Points, Cable Closures
3M	Cable Splicing Modules & Connectors
Lorain	Power Supplies

For future builds in provincial areas, it is estimated that a significant amount of digital microwave radio equipment will be required. US companies presently supplying this equipment to BayanTel are:

- DMC
- California Microwave, Inc.
- Andrews Antenna

These vendors and other US vendors will be eligible to compete for all future BayanTel tenders and projects.

PERSONAL COMMUNICATION NETWORK ADDITIONS

Through its subsidiaries RCPI and ICC, BayanTel will bid for Personal Communication Services (PCS) spectrum when the NTC releases the procedures, expected to be announced before year end 1997. A bidder, if successful in winning a franchise in all four areas proposed by the NTC, would incur a 400,000 land line obligation in conjunction with the PCS spectrum. The BayanTel companies plan to bid for all four regions.

If successful in the bidding process, BayanTel will require a comprehensive network development study and plan covering the following areas, which it would be expected to outsource at least in part:

- To plan the PCS network
- To plan the local exchange networks
- To integrate the new networks into existing BayanTel long distance networks
- To complete a nation-wide interconnect plan

The specifics of the PCS project (and its associated landline obligation) are discussed in a separate project profile.

Should BayanTel win all four PCS licenses, the estimated amount of new equipment necessary to implement the PCS and CMTS networks, and to integrate/interconnect them to BayanTel's long distance and PSTN, would be greater than any single telecommunications project ever implemented in the Philippines. Clearly, it would require significant planning and other outside support to BayanTel.

LONG DISTANCE NETWORK

The BayanTel (RCPI) long distance network consists of the following major segments:

- Toll Switches
- SDH Digital Microwave Transmission Backbone Network
- PDH Digital Microwave Radio Spur Links
- A future SDH Optical Fiber Submarine Backbone Network (this project will be managed by Telic Phil, a separate company set up by several of the leading Philippine telecos)

BayanTel's long-term goal is to develop the long distance network into an all optical fiber backbone network consisting of several survivable rings. This will be accomplished by reinforcing all microwave radio backbone routes with optical fiber and then connecting these routes to the future Telic Phil routes. Telic Phil is now scheduled for a January 1998 in-service date. Telic Phil consists of STM-16 optical fiber routes and lower speed land-based microwave radio routes. BayanTel is managing director of Telic Phil and owns approximately 60 percent of the capacity.

Based in Telic Phil costs, it is estimated that completion of BayanTel's vision would require an investment of approximately US $60,000,000. The majority of this expenditure would be for optical fiber, transmission equipment and fiber placements. US companies such as AT&T, Lucent Technologies and Nortel, and their established suppliers, are well positioned to play a role in the design and implementation of this project.

OVERVIEW OF BAYANTEL

Successful suppliers to BayanTel for these and other projects must be aware of both the substantial accomplishments and the ambitious objectives of this company, which is emerging as one of the strongest of the new breed of Philippine telecommunications companies.

BayanTelecommunications Holdings Corporation (BayanTel) was established in 1994, consolidating the Lopez Group's investments in the highly competitive local telecommunications sector. BayanTel combines the group's equity stakes in International Communications Corporations, Radio Communications of the Philippines, Eastern Visayas Telephone Company, and Naga Telephone Company, as further discussed below. This structure paves the way for the group's wider exposure in telecommunications.

BayanTel has a strong orientation toward cooperation with the United States, driven by both equity partnerships and existing procurement relationships, giving U.S. companies a slilght but important edge in dealing with the company. BayanTel's corporate ownership structure is as follows:

BAYANTEL OWNERSHIP STRUCTURE	
Company	**Percentage**
Lopez Group	67.76%
NYNEX Network Systems Company	20.00%
Telecom Holding Co., LTD. (TH)	5.00%
Asia Infrastructure Fund Advisors	6.31%
Chase Overseas Banking Corp.	0.93%

BayanTel's strategy is to capitalize on rising demand for telephone lines and other telecommunications facilities to create new markets, rather than merely to build on existing or pent up demand or to increase its share of current markets. BayanTel seeks to position itself as a strong market leader, able to take advantage of the Philippines' increasing per capita income. As the country experiences more affordable phone ownership and rising incomes, the very low residential usage levels (currently around 1.6 telephone density index) are certain to increase.

BayanTel is organized into six operating companies, each of which is further described below:

- International Communications Corporation (ICC Telecoms)
- ICC-Bicol (formerly Naga Telephone Company, NAGATEL)
- Eastern Visayas Telephone Company (EVTELCO)
- Radio Communications of the Philippines (RCPI)
- Butuan Telephone Company (BUTELCO)
- Express Telecommunications Company, Inc. (EXTELCOM)

International Communications Corporation (ICC Telecoms). ICC Telecoms started commercial operations in 1991 to cater to the needs of businesses requiring reliable connectivity to all points within and outside of the Philippines. Using state-of-the-art equipment and rendering service unmatched by others, ICC Telecoms gained broad-based customer acceptance, capturing more than 50 percent of the satellite-based domestic market in its first three years. In 1994, ICC Telecoms was granted a provisional authority to operate an International Gateway Facility (IGF) to provide international long distance services. It was also tasked by the NTC to provide 300,000 local exchange lines within the boundaries of Quezon City, Valenzuela, Malabon, and Region V (the Bicol Region) in three years.

ICC's 300,000 line roll-out is served by four Nortel DMS-100/200 switches with advanced functionality located in three central exchange offices in Quezon City. For this system, BayanTel utilizes state-of-the-art fiber to the node technology, which will have broad-band capability, giving the network strong capabilities to upgrade and expand with future technological change.

ICC - Bicol (formerly Naga Telephone Company - NAGATEL). Since its beginnings in 1953, ICC Bicol has evolved into one of the major telephone companies in the province (which covers most of southern Luzon). As of year-end 1996, ICC Bicol had approximately 12,000 subscribers and expects to have about 36,000 by the end of 1997. BayanTel has been awarded a contract to construct a 200 kilometer fiber line which uses high capacity SDH transmission. By the first quarter of 1997, BayanTel was projected to have a total capacity of 36,000 lines in the Bicol region.

Eastern Visayas Telephone Company (EVTELCO). EVTELCO owns and is enfranchised to operate telephone systems in Region 8 (Eastern Visayas), covering the provinces of Leyte, Southern Leyte, Eastern Samar, and recently, Northern Samar - including Metropolitan Tacloban and fifteen municipalities. EVTELCO offers toll and long distance facilities including data and facsimile services through its Tacloban Central Station and 26 public calling offices. The company is seen as the potential dominant telecommunications network for the fast growing Eastern Visayas Region, considering the large under-served and unserved areas of the provinces. As of year-end 1995, EVTELCO had approximately 9,000 subscribers, with plans to increase its subscriber base to 14,000 in the near future. EVTELCO is currently planning to build out a fiber network to link its three exchange offices in Tacloban and a microwave transmission network to connect the various rural exchanges to Tacloban. All these plans are expected to be completed relatively soon in order to make calling more efficient.

Radio Communications of the Philippines, Inc. *(RCPI).* RCPI commenced operations in 1958 and has become one of the largest service providers in the Philippines. From the traditional telegraph and telefax services, RCPI has ventured into leased data and voice channels; long distance telephone, facsimile and value added services in domestic and international voice and data communications. RCPI has a total of forty-one (41) existing PABX sites: one (1) at Quezon City Distribution office, one (1) at Pasig City Distribution Office, and thirty-nine (39) remote sites. There are seven (7) different types of PABX, namely: AT&T (27), Siemens (8), and NT (2), Alcatel (1), and Mitel (4). This is mainly for PCOs,

Phone Plus, agencies, fax and administrative services including Telco inter-connection.

RCPI has recently upgraded its transmission capability and large capacity SDH microwave from Manila to Cebu. The SDH microwave link has a capacity to handle 3,600 simultaneous conversations. The SDH backbone from Manila to Laoag and Cebu to General Santos will be completed by the second quarter of 1997. BayanTel is also actively leading the Telecoms Infrastructure Corporation of the Philippines (Telic Phils) which is the government supported consortium of telecommunications providers that will put up a fiber based national backbone.

Butuan Telephone Company (BUTELCO). The newest member of BayanTel, Butuan Telephone Company or BUTELCO operates the franchise for Northern Mindanao (Region XIII) composed of Agusan del Norte, Agusan del Sur, Surigao del Norte and Surigao del Sur.

Express Telecommunications Company, Inc. (EXTELCOM). BayanTel recently acquired 46.62 percent share of EXTELCOM, one of the five CMTS operators in the Philippines. EXTELCOM started operations in March 1990 using Band Amps standard and is currently offering nation-wide cellular service with seventy-seven cell sites nationwide. This recent acquisition marks the entry of BayanTel into the CMS business.

BayanTel is aggressively expanding in all of its strategic business units. The company is accelerating its roll-out of the local exchange operations to take advantage of the growing market. BayanTel is extremely customer focused, and customer service will be a distinctive attribute. The company is growing oriented and will keep looking for new and other opportunities in the industry to add to the company's portfolio of businesses.

BayanTel's expansion program will involve its diverse business lines. BayanTel seeks to be the provider of choice for telecommunications services and allied information services nation-wide. By the turn of the century, the company expects to be the second largest telecommunications group in the Philippines, after the longstanding monopoly holder PLDT. BayanTel's main lines of business, further described below, include:

- Local exchange carrier services (LEC)
- Domestic long distance services (DLD)
- International Gateway Facility (IGF and international long distance

- Cellular mobile telecommunications services (CMTS)
- National transmission
- Private networks
- Storefront services

Local Exchange Carriers (LEC) Services. The LEC, specifically in Metro Manila, is expected to be the largest strategic business unit of BayanTel. The assigned franchise areas are Quezon City, Valenzuela, Malabon, and the Bicol region.

Domestic Long Distance (DLD) Services. Bayan Domestic Direct "1231" is BayanTel's answer to the growing domestic long distance market. This National Direct Dial (NDD) service for domestic long distance offers Philippine subscribers an alternative to operator assisted calls that offers faster connections and cheaper rates.

International Gateway Facility (IGF) and International Long Distance Services. The IGF business is still the most profitable segment of the industry. In 1994, ICC Telecoms was granted provisional authority by the National Telecommunications Commission to operate an IGF. In September 1995, BayanTel commercially launched Bayan "1234" which captured two (2) million outgoing international minutes by year-end. BayanTel has one of the most extensive international agreements and links to over 130 countries around the world. BayanTel aims to reach a service level of twenty-five (25) million minutes in the near future.

Cellular Mobile Telecommunication Services (CMTS). The recent acquisition of EXTELCOM marks the entry of BayanTel into the CMTS business. This gives BayanTel a foothold into the lucrative cellular telecommunications business in the Philippines. With this development, EXTELCOM's cellular network will be expanded and upgraded, giving the company a much needed competitive boost.

National Transmission. It is expected that the LEC lines will increase from the current 1.5 million lines to 7 million lines by the year 2000. Cellular phone users will also grow from 435,000 at present to 1.6 million by the turn of the century. This provides a key opportunity for the company in the long distance market where it envisions itself to be a major inter-exchange service provider, connecting all exchanges into a seamless network. An integrated transmission network includes the Synchronous Digital Hierarchy (SDH), Time Division Multiple Access (TDMA), Very Small Aperture Terminals (VSAT) and optical fiber technologies.

Such a network will provide nation-wide coverage and flexibility to compete with other inter-exchange carriers.

Private Networks. The integration of transmission facilities (SDH, TDMA, VSAT, Point-to-Point) complemented by the value-added networks (X.25 switch, E-mail, Store and Forward fax, IGF and LEC) meets BayanTel's goal of offering a complete network solution to its clients. With the added capacity of SDH, large band-widths will be available to corporate clients. RCPI is the market leader in providing leased lines using VSAT. There are currently over 1,300 circuits available for both voice and data, and demand is expanding, particularly from multi-national companies. Revenues in this area are also growing rapidly (doubling in 1994 and growing by 46 percent in 1995).

Storefront Services. The Public Calling Office (PCO) or storefront services market remains a large attractive market, particularly for long distance services. RCPI's outlets are strategically located in the entire archipelago. Value-added services such as video or multi-media conferencing, fax, copying service, and others will be provided in key cities and towns. In addition to this, RCPI has started to open more branches on a 24-hour, 7-day-a-week basis to make the company's services available anytime to the public. The aggressive expansion of RCPI's public calling offices nationwide presents a good potential for pay phone products and services. Future consolidations will be focused on providing wireless pay phone services for more than 1,600 outlets.

BayanTel is aggressively expanding in all of its strategic business units. The company is accelerating its roll-out of the local exchange operations to take advantage of the growing market. BayanTel's strategy is to be extremely customer focused, and customer service will be a distinctive attribute for suppliers as well. The company is growth oriented and will keep looking for new and other opportunities in the industry to add to its portfolio of businesses.

PROJECT FINANCING

BayanTel typically finances its projects with a combination of debt and equity. Generally, a debt-equity ratio of 1.5 to 1 is maintained. Debt financing is obtained from equipment suppliers, export credit agencies, as well as foreign and local banks. Later this year, BayanTel will be exploring the capital markets as another source of debt financing.

STATUS OF PROJECT DEVELOPMENT

The overall capital construction preliminary cost estimate for the BayanTel Network Expansion Project could exceed one billion US dollars over the next five years.

The estimated capital costs for constructing the LEC, Long Distance and PCS networks are summarized below:

ESTIMATED CAPITAL COSTS FOR LEC, LONG DISTANCE, AND PCS NETWORKS

Project	Scope	Time Frame	Established Costs ($'000)
LEC – Expansion of Current Network	300,000 lines	1998-2000	300,000
Long Distance Network	Nation-wide	1998 - 2000	60,000
PCS – Cellular	500,000 subs	1998 - 2003	325,000
PCS – LEC obligation	400,000 lines	1998 - 2000	400,000
TOTAL			1,085,000

Approximately 90 percent of the capital costs is for materials, and 10 percent is for labor. The switch transmission and access equipment (closure, terminals, connectors, etc.) are all generally imported due to the lack of manufacturing plants for this equipment in the Philippines. The bulk of the remainder of equipment is sourced domestically (poles, hardware, terminal equipment, land and buildings).

The three main components vary in terms of the projected U.S. (foreign) import potential, as shown in the following table:

PROJECTED U.S. IMPORT POTENTIAL		
Project US Foreign Import Potential:	**Low**	**High**
Local Exchange Additions	$27.3M	$273.0M
Long Distance Network	$2.3M	$50.0
MPCS - Cellular	$12.7M	$217.0M
TOTAL	$42.3M	$540.0M

The following table summarizes the project's main equipment requirements in terms of their projected cost, their contribution to total project cost, and the potential foreign content:

EQUIPMENT REQUIREMENTS		
Component	**Percentage Cost**	**Approximate Imported Value** ($'000)
Switch	22	154,000
Transmission	15	105,000
Access	35	245,000
Telephone Sets	4	14,000
All Others	24	28,000
TOTAL	100	546,000

The range of US foreign import potential for the BayanTel expansion projects is therefore, in round numbers, from US $40M to US $500M.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

With NYNEX as a foreign strategic partner, BayanTel has world class capabilities and experience in telecommunications operations along with the domestic business experience offered by the Lopez Group. This combination minimizes the long-term project risks associated with BayanTel's expansion.

Conceivably, if a US vendor wins a turn key project for BayanTel, the total US export value of equipment and facilities would approximate the total equipment costs. No known tariffs or non-trade barriers exist in the Philippines that would inhibit US exports in relation to exports of equipment from any other foreign entity.

BayanTel solicits bids from all world-class telecommunications vendors for all of their network expansion and addition projects. Vendors from the US that have been qualified as approved manufacturers and network contractors are:

- ADC
- Lorain
- Lucent Technologies
- Nortel
- Raychem
- DMC
- California Microwave, Inc.
- DSC

Despite the linkage to NYNEX (Bell Atlantic) and other U.S. firms, U.S. suppliers do not have any particular advantage in supplying BayanTel. As with any customer, potential suppliers should seek to establish a long-term relationship, based on maintaining close contact to track the customer's needs, and build an in-country presence to meet BayanTel's service and support needs.

Decision Making Process

As a major international corporation, BayanTel's procurement practices follow international standard practices, with formal RFPs and tenders for major procurements, often preceded by formal or informal shortlisting. BayanTel prefers the total turn-key approach for their network projects. U.S. firms will be strongly encouraged to bid on the conduct of technical studies as well.

Contacts

Mr. David Petruziello
Vice President - Network Services Division

5/F Benpress Building
Exchange Road
Pasig City 1600, Philippines
Tel: (632) 634-3012 Fax: (632) 634-2639

Mr. Millard Bels T. Belotindo
Senior Mgr. - Network Services Division
5/F Benpress Building
Exchange Road
Pasig City 1600, Philippines
Tel: (632) 633-3921
Fax: (632) 634-2639

Mr. Philip J. Blanchette
Senior Executive Consultant
Technical Operations Division
5/F Benpress Building
Exchange Road
Pasig City 1600, Philippines
Tel: (632) 633-1111
Fax: (632) 633-3930

PHILIPPINES

MERALCO TELECOMMUNICATIONS NETWORK

PROJECT DESCRIPTION

Meralco, the Philippines' largest electrical utility, is finalizing plans for a new Network Management Center to centralize the monitoring, supervision, and control of its digital telecommunications network. The system will centralize and update Meralco's control and monitoring system by building a telecommunications backbone with high capacity, high density and highly reliable fiber optic cable network. Once in place, the system is intended to boost the company's electric and information systems.

Project Summary

Project Budget: $23 million
Foreign procurement:
US$15.6 million

Project Sponsor: Meralco (Philippines' largest electric utility)

Required Technology:
Terminal equipment
Network management systems

The project will involve the installation of 220 kms. of all dielectric self-supporting (ADSS) fiber optic cable from Plaridel in the north and Antipolo in the east to Dasmariñas and Sta. Rosa in the south. The fiber optic cable will be installed 28 ft. above the ground on the 115 kV subtransmission line poles which have been chosen as the most rigid and most durable of all Meralco poles. The terminal equipment will be installed at major substations and offices.

The core of the system will be a centrally controlled center for Network Management Monitoring and control of Meralco's Digital Telecom Network. Links among Meralco's 33 district offices will connect the central facility to the nationwide field network.

The new backbone will run franchise wide. It will provide transmission links to support voice, data, SCADA/DA (Supervisory Control and Data Acquisition system/Distribution Automation) and other information between major sites.

The project will serve Meralco's information and monitoring needs in three major areas:

- distribution automation (DA) and SCADA
- demand side management or DSM
- information system

More than 3,500 distribution facilities (switches, capacitors, voltage regulators) are expected to be automated by the year 2000 under the project. Distribution automation will enable Meralco to obtain remote control and monitoring of its switches and other equipment to speed up restoration of power in case of an outage.

In the area of DSM, the project will give Meralco the capability to implement remote metering via a communication link between Meralco and industrial customers, which will also facilitate Meralco's DSM program, an energy conservation program that optimizes use of electricity through direct load control and time of day metering scheme.

U.S. Competitiveness and Export Potential

U.S. suppliers are regarded as having a good position to compete on this project. Competitive pricing will be important for this buyer, as well as a state-of-the-art technology. Companies interested in this project must expect to establish and maintain a strong local presence with the ability to provide service and training in all parts of the country. A local agent or partner will be critical to monitoring progress of the project, both before issuance of the RFP and during implementation.

Many of the winners are expected to seek implementation of their system on a turnkey basis, while in other cases the winners will manage the process themselves. In both situations, there will be major opportunities for U.S. suppliers of switches, terminal equipment, and other hardware, as well as systems for billing, monitoring, and other support systems.

PROJECT FINANCING

The Meralco company has the strong backing of the Lopez family and is not cash poor so financing is not expected to be a problem. However, Meralco is currently exploring the feasibility of ADB financing for the foreign portion of the project, based in part on its contribution to energy efficiency. As of mid-August, the ADB was still reviewing the proposal.

STATUS OF PROJECT DEVELOPMENT

The proposed telecommunications backbone resulted from a 1995 study by Utility Consulting International (UCI). UCI recommended the construction of a high capacity, highly reliable (ring topology) SDH fiber optic backbone.

The total projected cost is $23 million, of which $15.6 million is expected to be foreign procurement.

The central procurement opportunity is the Network Management System itself, but the project will also generate a number of smaller procurement opportunities in the areas of software, training, and other add-ons.

Based on the project's contribution to Meralco's DSM and distribution automation programs, it is anticipated that some or all of the cost of the new system will be recovered through better peak load management and reduced losses from power outages. Industrial and other major customers are also expected to benefit from increased ability to take advantage of the option to use multiple electricity rates within a time period.

DECISION MAKING PROCESS

It is expected that if an RFP is released, it should be done by early 1998. If the ADB becomes involved in the project, the procurement will go through the standard ADB project procurement process. U.S. companies interested in providing a Network Management Center for Meralco should maintain an active presence in the Philippines to obtain details of the procurement opportunity expected in early 1998. They should also avail themselves of any opportunity to

gain an understanding of the existing Meralco telecommunications network. From this they can pre-position themselves, by making early estimated determination of the Scope of Work and TMN elements that may be required.

CONTACTS

Mr. Jaime Camacho
Assistant Vice President
Head-Telecommunications
Meralco Center
Ortigas Avenue, Pasig City
Metro Manila, 0300
Philippines
Tel: (632) 631-2222 Loc. 8279 , D.L. 632-8279
Fax: (632) 632-8879

PHILIPPINES

PMTS WIRELESS LICENSES

PROJECT DESCRIPTION

Note: this description relies primarily on a USTDA Definitional Mission completed in June 1997. USTDA is currently considering support to the PCS wireless license project, as recommended by the Definitional Mission consultant.

Project Summary

Project Budget: $1.6 billion to $2.5 billion.
Foreign procurement:
$325 million (PCS lines only)

Project Sponsor:
License awarded by NTC

Required Technology:
Antennas
Power Amplifiers
Transceivers
Interface hardware
Project Management

The National Telecommunications Commission (NTC) of the Philippines is in the final stages of preparation for public bidding/auction procedures for awarding licenses for Public Mobile Telephone Service (PMTS), including associated radio frequency bands. The current plans of the latest NTC Memorandum Circular draft calls for issuing a total of twelve licenses. Three operators would be licensed in each of four zones:

- Metro Manila (National Capital Region)
- Luzon (Excluding Metro Manila)
- Visayas and Palawan
- Mindanao

The band to be auctioned includes frequencies from 1800 to 2000 megahertz and is suitable for a number of technologies at the lower end of the mobile phone cost profile, including PCS, PCN, and PHS. Current licenses are for frequency bands in the 800mhz and 900mhz range, assigned to the five (5) existing cellular mobile telephone service (CMTS) operators.

In addition to the wireless licenses themselves, each licensee will incur an obligation to install fixed lines in conjunction with the mobile phone investment.

This requirement ranges from 125,000 in Metro Manila and 100,000 lines in Luzon to 75,000 in Mindanao and 50,000 in the Visayas/Palawan. The total for the twelve licenses will thus be 1,050,000 fixed lines, in addition to the PCS lines themselves. Current drafts of the bid documents call for the new lines to be installed in unserved and underserved areas, with the priority on the former.

Taken together, the twelve licenses will generate investment of $1.6-$2 billion dollars, exclusive of the fixed line obligation that each licensee will also incur. This project If the NTC issues twelve licenses as is currently proposed, and projections of 80,000 lines per operator are realized, the new lines would total nearly a million lines nationwide. At a rough estimate of $600-$1,000 per line installation, the Philippine line expansion market would generate a total investment of $600,000-$1 million for the lines alone, with additional expenditures for PMTS/PCS infrastructure cost and handset capital expenditures on the order of another $1 billion. Other estimates put the cell-site investment at up to $2.5 billion, based on 1000 cell sites at $250,000 per site, with the fixed line obligation estimated to add $1 billion to the total.

This project clearly offers a tremendous opportunity for American manufacturers to participate in Philippines telecoms expansion when the project moves forward, as well as offering openings for U.S. investment, engineering, and other strategic partnerships with the new Philippine license holders.

PROJECT FINANCING

It is estimated that the twelve licenses will require over 80 cell sites for each operator at a cost of $250,000 per site. Thus the capital construction costs for the project are estimated at approximately $2 billion. Financing will be probably be by using a variety of license/vender consortium financing.

STATUS OF PROJECT DEVELOPMENT

The issuance of the auction documents for the PCS license has been subject to repeated delays. As of this writing, it is expected that the auction will be indefinitely delayed until the Philippine market is more mature, thus avoiding the overcapacity and subsequent consolidation experienced in Malaysia. Some believe

that the auctions should go ahead as quickly as possible, to increase service in rural areas, to encourage competition, and to move the overall liberalization process forward. High churn rates, subscription fraud, and cloning problems in the current high-growth cellular market are problematic for the cellular industry.

At this time, 22 Philippine companies have expressed interest in bidding for the PCS licenses. Most of the major companies are represented, including PLDT, Digitel, LBNI, MajorTel, Omninet Phils, Inc.,UTS, Islacom, Smartcom, RCPI, Philippine Wireless, Extelcom, Capwire, Globe Telecom, Philcomsat, Infocom, ICTI, MTI, Piltel, and BellTel.

Several of these companies already hold licenses for other cellular bands, including the two current cellular leaders, Piltel (with a 1996 subscriber base of 330,000, which gave them a 38 percent share of the total 1996 market of 875,000 subscribers) and Smart. The latter had a 35 percent share at end-1996, but as of April 1997 reported total subscribers of 405,000, putting it in the lead. It is expected that the current operators will seek to take control of the PCS band as well, to limit competition for their existing services.

At this time, the eligibility of all of these bidders has not been determined. Once the license auction documents (the Circular) are issued, those telecom companies that complete NTC hearings on their PMTS application at least sixty (60) days from effective date of approved Circular will then be evaluated to qualify for bidding. If a company has an existing local exchange lines roll-out obligation, it must have fully compiled with such obligation to be qualified to bid. This is not a pro forma requirement: as the following table shows, as of mid-1997, only BayanTel had met its roll-out obligation:

RATE OF CONFORMATION WITH THE CIRCULAR		
Company	**% Complete vs. Obligation**	**Line Capacity Available**
ICC/ BayanTel	114	380k
Digital	57	170k
PT&T (Capwire)	30	90k
Major/ Philcom	15	45k
Smart	27	186k
Globe	15	118k
Islacom	1	9k

The timing for the auction is as follows, once the process is formally initiated:

TIMING OF AUCTION	
Action	**Timeframe**
Bid committee named (five members)	15 days after issuance
Qualified bidders list period	minimum 60 days after issuance (no fixed period
Pre-bid conference	30 days after qualified bidders list issued
Bids opened	Not more than 150 days from effective data of circular

The license price, in the form of the annual Spectrum Users Fee, will be determined by the auction, with the following minima tentatively set:

- Metro Manila: P 15.00/MHz per Station, Based on Bid Price
- Highly Urbanized Areas: P 7.50/MHz per Station, Based on Bid Price
- All Other Areas: P 3.75/MHz per Station, Based on Bid Price

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

US companies are familiar with the Philippine National Telecommunications Commission standards and expectations. Furthermore, since the US is a leader in the development and design of wireless systems that serve both low density and high density regions (i.e. CDMA/PCS in both US sparsely populated western states

and urban areas requiring High bit rate digital loop features such as B-ISDN), it should be in a favored technical position to participate in the projects coming from the license awards.

- **Equipment**

Antennas
Transceivers
Power Amplifiers
Multiplexes
Handsets
Interface hardware

- **Services**

Design & Survey
CAD/CAM mapping & Design Systems
Project Management
Installation

DECISION MAKING PROCESS

The interested suppliers and consultants should establish local strategic partnerships as quickly as possible. Marketing and sales of the US concept should be done at the policy making levels of the license holders rather than technical and purchasing levels.

CONTACTS

NATIONAL TELECOMMUNICATIONS COMMISSION

Simeon Kintanar
Commissioner
National Telecommunications Commission
856 Vibal Building
Quezon City, Metro Manila
Tel: (632) 924-4042

George Kintanar
Chief of Staff
National Telecommunications Commission
856 Vibal Building
Quezon City
Metro Manila
(632) 924-4008

SINGAPORE

Country Profile
Telecommunications Sector Overview
Projects:
➢Two Public Cellular Mobile Telephone Services Operators
➢Public Basic Telecommunications Services ➢Singapore ONE

The boundaries shown do not imply, on the part of U.S. Government, any judgement on the legal status of any territory.

Singapore Profile
As of 1996

Capital - Singapore
Population - 2,930,200 (1995)
2% Population Growth
GDP per Capita - US$22,900 (1995)

Telephone Density - 47.4 %

Waiting List for
Telephone Lines - 8
Cellular Subscribers - 305,914
Paging Subscribers - 815,420
Telex Subscribers - 4,500

International Outgoing
Traffic (million calls) - 16.4

Network Digitization
Switching - 100% (1994)
Transmission - 100% (1994)

(Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, islands between Malaysia and Indonesia **Geographic coordinates**: 1 22 N, 103 48 E **Comparative area**: slightly more than three times the size of Washington, DC **Climate**: tropical; hot, humid, rainy; no pronounced rainy or dry seasons; thunderstorms occur on 40% of all days (67% of days in April) **Terrain**: lowland, gently undulating central plateau contains water catchment area and nature preserve **Geographic note**: focal point for Southeast Asian sea route

COUNTRY PROFILE

PEOPLE

Singapore's population is 3.4 million (1996) and has a recorded national growth rate of 1.5 percent. The majority of the population is concentrated on the southern part of the island. The population is ethnically diverse and consists principally of Chinese (about 78 percent), Malays (14 percent), and Indians (7 percent). The country has four official languages—English, Mandarin Chinese, Malay, and Tamil. English is the language of administration. Among the principal religions of Singapore are Buddhism, Islam, Hinduism, Confucianism, and Christianity.

THE ECONOMY

Singapore has an open entrepreneurial economy with strong service and manufacturing sectors and excellent international trading links. In 1995 the manufacturing, financial and business services sectors led economic growth. Rising labor costs, however, continue to threaten Singapore's improving infrastructure. The GDP per capita in 1995 was estimated at $22,900 and the real growth rate at 8.9 percent.

Singapore has one of the highest standards of living of any country in Asia. In the late 1980s the gross domestic product was estimated at $23.7 billion, or $8870 per capita; the annual budget included $5.8 billion in revenue and $6.2 billion in expenditure. Agriculture is relatively unimportant to the economy because of the limited land area and the relatively poor soils, but market vegetables and fruits are grown. The fishing industry is centered on the port of Jurong, on southwestern Singapore Island. In the mid-1980s the annual catch landed by Singapore vessels was about 13,200 metric tons.

Industry has grown rapidly since the 1960s, and Singapore now produces a diversity of goods, including chemicals, pharmaceuticals, electronic items, clothing, plastics, rubber products, steel pipes, plywood, and processed foods.

Shipbuilding and petroleum refining are also important. The leading industrial area is the Jurong Industrial Estate.

Singapore is a major world port and has extensive dock facilities along Keppel Harbour on the southern coast. Much of its trade involves the transshipment of goods produced in the region. The country has one of the largest international airports in Asia, and a 26-km (16-mi) rail line that crosses Johore Strait and links with the Malaysian railroad system. In the late 1980s annual imports cost $40.3 billion while exports earned $38 billion. Singapore's principal trading partners include the United States, Japan, Malaysia, China, Taiwan, Germany, and Hong Kong. Singapore is also a member of the Association of Southeast Asian Nations (ASEAN). Tourism and international banking are important sources of foreign exchange revenue. The unit of currency is the Singapore dollar (1.629 Singapore dollars equal U.S.$1; 1992).

KEY ECONOMIC INDICATORS			
Indicator	**1994**	**1995**	**1996**
Constant GDP ($ Billion)	61.6	72.1	76.8
GDP Growth (%)	10.1	8.8	6.0
GDP per Capita ($)	21,757	24,020	24,981
Gov. Spending (% GDP)	9.0	9.3	14.2
Inflation (%)	3.6	1.7	1.3
Unemployment (%)	2.6	2.6	2.7
Foreign Debt ($ Million)	3.1	-	-

POLITICAL OVERVIEW

According to the constitution, as amended in 1965, Singapore is a republic with a parliamentary system of government. Political authority rests with the prime minister and the cabinet. The prime minister is the leader of the political party or coalition of parties having the majority of seats in parliament. The president, who is chief of state, previously exercised only ceremonial duties. As a result of 1991 constitutional changes, the president is now elected and exercises expanded powers.

The legal system is based on English common law. Judicial power is vested in the High Court and the Court of Appeal. The High Court exercises original criminal and civil jurisdiction in serious cases as well as appellate jurisdiction from

subordinate courts. Its chief justice, senior judge, and six judges are appointed by the president. Appeals from the High Court are heard by the Court of Appeal. The right of appeal to the Privy Council in London was abolished effective April 1994. The Chief Justice of the Supreme Court is appointed by the president who is elected to a six-year term by popular vote. The Prime Minister, deputy Prime ministers and the cabinet are appointed by the president and are responsible to the Parliament that is a unicameral legislative body.

The parliament consists of 83 members elected on the basis of universal adult suffrage. In the last general election, in January 1997, the governing People's Action Party (PAP) won 81 of the 83 seats. The president may appoint up to six members of parliament from among nominations by a special select committee. These nominated members of parliament (NMPs) enjoy the same privileges as MPs (members of parliament) but cannot vote on constitutional matters or expenditures of funds. The maximum term of any one parliament is five years. Voting has been compulsory since 1959.

The ruling party in Singapore, dominant since 1959, is the PAP, now headed by Prime Minister Goh Chok Tong. Goh succeeded Lee Kuan Yew, who served as Singapore's Prime Minister from independence through 1990. Since stepping down as Prime Minister, Lee has remained influential as Senior Minister.

The PAP has held the overwhelming majority of seats in parliament since 1966, when the opposition Barisan Sosialis Party (Socialist Front) resigned from parliament, leaving the PAP as the sole representative party. In the general elections of 1968, 1972, and 1980, the PAP won all of the seats in parliament. Workers' Party Secretary General J.B. Jeyaretnam became the first opposition party MP in 15 years when he won a 1981 by-election. Opposition parties gained a small number of seats in the general elections of 1984 (two seats out of a total of 79), in 1988 (one seat of 81), and 1990 (four seats of 81). Meanwhile, the PAP share of the popular vote declined from 78 percent in 1980 to 65 percent in 1997.

PRINCIPAL GOVERNMENT OFFICIALS
President--Ong Teng Cheong
Prime Minister--Goh Chok Tong
Senior Minister--Lee Kuan Yew
Deputy Prime Minister--Lee Hsien Loong
Ambassador to the United Nations--Bilahari Kausikan

U.S. Diplomatic Representation
Chief of Mission:
Ambassador Timothy A. Chorba
27 Napier Street, Singapore 258508
Tel: 65 476 9100
Fax: 65 476 9340

Diplomatic Representation in the U.S.
Ambassador Sellapan Rama Nathan
3501 International Place NW
Washington, DC 20008
Tel: 202-537-3100
Fax 202-537-0876

FOREIGN TRADE AND INVESTMENT

The U.S. is Singapore's largest market, absorbing 18.4 percent of its exports. Singapore employs careful economic management and skilled public relations to attract U.S.-based multinational corporations. Despite its relatively high-cost operating environment, Singapore continues to attract investment funds on a large scale. The U.S. leads in foreign investment, accounting for 39 percent of new foreign commitments (and 42 percent of all new commitments) to the manufacturing sector in 1996. Cumulative investment by American companies in Singapore is now about $15 billion. The bulk of U.S. investment is in electronics manufacturing, oil refining and storage, and the chemical industry.

Singapore's total trade in 1996 amounted to $296 billion; Singapore imported $151 billion and exported $145 billion worth of merchandise. Japan was Singapore's main import source (21 percent of the market), while the U.S. was Singapore's largest market, absorbing 18.4 percent of Singapore's exports. Singapore's exports to the U.S. consist of computer disk drives, computer parts and peripherals, integrated circuits, microcomputers, telecommunications equipment, and chemical products.

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN SINGAPORE

Singapore, the United States' 10th largest export market, has one of the most developed industrial, commercial, financial and consumer economies in the world. Singapore is an excellent market for U.S. products. Almost any American product can find an interested buyer in Singapore --either for that market or for the larger Southeast Asian market. Many American companies use Singapore as their distribution center for Asia or rely on Singapore companies to market their products in neighboring companies.

Singapore's labor market is very tight, and in order to maintain its competitive edge in the region, Singapore encourages investment in high value-added industries.

FINDING A PARTNER

Many American exporters use agents or distributors to serve the Singapore market and other markets in the rest of Southeast Asia. Finding prospective partners is easy. Singapore firms are aggressive when it comes to representing new products and usually respond enthusiastically to new opportunities. Most American companies that use U.S. & Foreign Commercial Service (CS Singapore) business programs in Singapore find several interested agents or distributors. The commercial service offers a wide range of business programs and has an excellent record of success in introducing U.S. firms to the market.

JOINT VENTURES/LICENSING

Most Singapore companies are open to joint venture proposals, and many are interested in manufacturing under license. The Commercial Service in Singapore is active in matching American and Singapore firms for joint ventures not only in Singapore but also in the rest of Southeast Asia.

STEPS TO ESTABLISHING AN OFFICE

The Singapore Registry of Companies and Businesses publishes an excellent guide that walks the first time registrant through the process of establishing an office. The process takes about one day for a sole proprietorship, while more complex business entities can take up to six weeks and will require the assistance of lawyers and accountants to help with incorporation documents. One point to bear in mind

is that registration of a company does not automatically mean that expatriate staff can be assigned to Singapore. Foreign staff will need to obtain an employment pass from the Immigration Department.

SELLING FACTORS AND TECHNIQUES

Price, quality and service are the main selling factors in Singapore. Prospective exporters to Singapore should be aware that competition is strong and that buyers expect good after-sales service. Selling techniques vary according to the industry or product involved, but are comparable to the techniques used in any other sophisticated market.

ADVERTISING AND TRADE PROMOTION

There are many specialized trade magazines in Singapore and scores of trade fairs that can be used to promote U.S. goods and services. The major English-language daily newspapers are the Straits Times and the Business Times. The leading business magazine is Singapore Business. The major Chinese daily is Lian He Zao Bao. Contact CS Singapore for a list of specialized trade magazines and trade fairs.

SALES SERVICE/CUSTOMER SUPPORT

Good sales and customer support are vital in Singapore. The market is so price competitive that good sales support or customer service can make all the difference. Singapore distributors respond well to training on new products and if properly supported by the U.S. manufacturer will do a good job cultivating old customers and developing new ones.

SELLING TO THE GOVERNMENT

U.S. firms generally find Singapore to be a receptive, open, and lucrative market. The Singaporean government procurement system is considered by most American firms to be fair and transparent. Bidders must meet the specifications set out in the tender and offer the lowest price in order to be successful. Government procurement regulations are available from the Ministry of Finance or through CS Singapore. The Singapore Government also advertises its tenders on their web-site page at http://www.obelisk.nmi.net.sg/gitis/index.html.

PROTECTING YOUR PRODUCT FROM IPR INFRINGEMENT

Enforcement of relevant copyright laws is left largely to private industry, so small U.S. firms are advised to join trade associations to protect their interests if they cannot afford to hire specialized Singaporean IPR firms. Large corporations and business associations such as the Business Software Alliance and the Software Publishers Association spend large sums of money investigating and prosecuting software pirates in Singapore. The software piracy rate in Singapore increased by eleven percentage points in 1996, while the piracy rate in most other Asian markets continued to decrease. Industry organizations estimate that 59 percent of all software in Singapore is pirated.

LOCAL LEGAL REPRESENTATION

U.S. and other foreign law firms are not allowed to practice law in Singapore. Legal matters involving Singapore law must be handled by a local attorney. A list of local law firms is available through CS Singapore.

Doing business with Singaporean importers is open and straightforward. Product quality is important but prices must be competitive. The market dictates that most importers cannot handle single product containers and must depend on consolidators in the United States. Advertising is an important element of marketing in Singapore.

BUSINESS CUSTOMS

Many Singapore business people are ethnic Chinese, and many of them will have English first names (e.g., Albert Lim, Sally Lee). Others will have only their Chinese name on their business card, in which case the family name is listed first. Mr. Lim Siew Fook would be addressed as "Mr. Lim" and Mrs. Tan Lee Yik as "Mrs. Tan". For the sake of politeness and respect, it is wise to address a business person by the last name rather than the first name.

It is important to have business cards. They are exchanged at the beginning of the both business and social meetings. The Chinese practice is to present a business card with both hands. There is no need to have special business cards printed in Chinese.

TRAVEL ADVISORY AND PENALTIES

Penalties for breaking the law sometimes can be more severe than in the United States for similar offenses. Persons violating the law in Singapore, even unknowingly, may be expelled, arrested or imprisoned. Visitors should be aware of Singapore's strict laws and penalties for a variety of offenses that might be considered minor in the United States, including jaywalking, littering and spitting, as well as the importation and sale of chewing gum.

Singapore has a mandatory death penalty for many narcotics offenses. Penalties for possession, use, or trafficking in illegal drugs are strict, and convicted offenders can expect jail sentences and fines. Commercial disputes that may be handled as civil suits in the U.S. can escalate to criminal cases in Singapore and result in heavy fines and prison sentences. There are no jury trials in Singapore. Judges hear cases and decide sentencing. The Singapore Government does not provide legal assistance except in capital cases.

BUSINESS HOURS

Singapore is 12 hours ahead of Eastern Daylight Savings and 13 hours ahead of Eastern Standard Time. Business hours normally are 8:30 AM - 5:30 PM, Monday-Friday, 8:30 AM - 1 PM, Saturday. Shops are open from 10 AM - 7 PM.

TELECOMMUNICATIONS SECTOR OVERVIEW

The Singapore telecommunications market is characterized by rapid liberalization as the regulator, the Telecommunications Authority of Singapore (TAS), works to accelerate the rate deregulation in the face of growing global competition and the desire to strengthen Singapore's role in global markets.

In 1992 TAS was created as a regulatory board to regulate and develop the commercial functions of Singapore Telecom and Singapore Post and to be responsible for the management of the radio spectrum and of Singapore's orbital slots. Singapore enjoys the reputation of having one of the most advanced networks in the world and has served for some time as a regional telecommunications hub.

With the exception of retail telecommunications products and equipment and the Value Added Network Services ("VAN") markets, which are completely open, the Singapore telecommunications industry is dominated by SingTel (Singapore Telecommunications Ltd.) which operates a monopoly of six local and international telecommunications services. Singapore has also recently licensed its first private cellular operation.

KEY PLAYERS

Singapore Telecommunications Ltd. (SingTel) was granted a license by TAS in 1992 to provide basic domestic and international telecommunications services as a monopoly for 15 years. SingTel's original license to provide monopoly mobile services expired this year. SingTel holds its monopoly over basic services until 31 March 2000 when other licensees will be allowed to operate public basic telecommunications services (PBTS). SingTel is 80 percent government-owned but will be sold in tranches to eventually limit the government held shares to 60 percent.

In the view of TAS management, the rapid changes in technology and regulatory policies world-wide as well as significant developments such as the convergence trends towards integrated services and industry cross-overs, cross-border service

provision/operation and globalization of businesses and economies, are making the telecommunication industry increasingly challenging to operate in and to regulate. TAS believes that both service operators and policy makers are faced with a constantly evolving operating environment of increasing complexity. To cope with such a dynamic industry, TAS has formulated a Telecommunication Industry Framework within which to set and review policies that would ensure the continued growth and sustainable development of the industry to support Singapore's economic and socio-political goals as envisioned in TAS's corporate mission:

> *To develop a vibrant info-communication industry which provides first-class infrastructure and competitive services, to enhance Singapore's economic competitiveness and quality of life.*

REGULATORY REGIME AND MARKET ACCESS

THE TAS CONCEPTUALIZATION OF THE TELECOMMUNICATIONS INDUSTRY

The Telecommunication Industry Framework (TIF) is TAS's conceptualization of the present and future info-communication industry. Essentially, this framework outlines the composition of the telecommunication industry by identifying the various levels and segments within the industry and the inter-relationships between them. Currently, TAS licenses players in the industry based on their operations in the various levels and segments of the industry, in accordance with the TIF.

The telecommunication industry is viewed as comprising five competitive segments set broadly on four different levels. The four levels are as follows:

Level 1: The backbone infrastructure level consisting of two segments, the core backbone network segment comprising the cable ducts and cables (copper or optical fiber) and the local access segment comprising the last mile connection between the core network (beginning from the local exchanges) and the end-users by wired or wireless technologies.

Level 2: The network/transport level comprising the switching nodes such as switches and mobile base stations.

Level 3: The service provision level comprising services such as fixed-line telephone services, mobile communication services, Internet access services and broadband multi-media applications.
Level 4: The reseller level comprising service providers re-packaging and reselling services provided by those in Level 3.

A DIAGRAMMATIC REPRESENTATION OF THE TIF		
Level 4	Resellers	
Level 3	Services	
Level 2	Network/Transport	
Level 1	Core	Local Access

Within the diagrammatic representation of the Telecommunication Industry Framework, at each succession of higher level there is increased technology dependency, less national resource utilization, less economic and social costs, increased value-added function and innovation, and increased visibility to end-users. The levels approach implies that there is increasing room for more players and more liberalization at each progressive level, moving upwards from level 1 to level 4.

TAS APPROACH TOWARD LIBERALIZATION

TAS views the approach of granting licenses in waves as more prudent than opening up the market completely at once. TAS will take progressive steps so that they it can monitor the liberalization process as it grants licenses. TAS wants viable competitors with the ultimate aim of completely opening the market rather than ending up with rock bottom prices with casualties from over-saturation.

TAS recognizes that this policy is novel to Singapore and defends it as appropriate to the island nations' special needs. TAS has set the license fee up front. In tender evaluations, TAS does not necessarily want the companies with the most resources to win. It is less interested in who will make the highest bid than in what company has the best system.

TELECOMMUNICATIONS AUTHORITY OF SINGAPORE BOARD		
Member Name	**Title**	**Company**
Mr. Teo Ming Kian Chairman	Permanent Secretary (Communications)	Ministry of Communications
Mr. Leong Keng Thai	Director-General	Telecommunication Authority of Singapore
Mr. Heng Chee How	Assistant Secretary-General	NTUC
Mr. Heng Swee Keat		Office of the Prime Minister
Mr. Lim Hock Chuan	Chief Executive Officer	Singapore Broadcasting Authority
Mr. Colm Martin McCarthy	Executive Vice President & Regional Manager	Bank of America
Prof. Wee Chow Hou	Dean of The Faculty of Business Administration	National University of Singapore
COL (NS) David Wong	Managing Director	Ernst & Young Consultants Pte Ltd
Mr. Stephen Yeo	Chief Executive	National Computer Board

EXISTING NETWORKS

This section provides a more detailed description of technologies currently or prospectively in use in Singapore than provided for other countries. This additional detail is intended both to provide information on Singapore's highly sophisticated network and its needs and to give an indication of where the region is going in the future.

FIXED NETWORK

As of November 1996, Singapore had a Direct Exchange Line penetration of 50 per 100 inhabitants. About 921,000 telephone lines were attributed to residential use while 600,000 telephones were for business subscribers. Since 1994, the network has been fully digitalized at a cost of S$500 million (US$330 million).

SingTel's fully digitized switching and transmission network handled nearly 16.5 million outgoing international calls in 1996.

MOBILE NETWORK

As of March 1996 Singapore had over 300,000 cellular subscribers and over 800,000 paging subscribers. Competition in the cellular mobile market began this year. Penetration has increased by about 10,000 new subscribers per month. In 1998 up to two new mobile licenses will be granted, as well. Service will be expected to start in 2000.

SINGAPORE TELECOM'S PUBLIC TELECOM NETWORK

The Switching Network

The present PSTN is structured as 27 local exchanges with an installed capacity of about 2 million lines as of November 1996. The existing telephone network consists of four hierarchical levels of exchanges. At the highest level is the international gateway, followed by trunk, tandem and local exchanges. The trunk and gateway exchanges provide for communication between Singapore and Malaysia and oversea countries, respectively. The tandem exchanges and local exchanges provide telephone and special service to subscribers in the domestic network.

Two integrated gateway/trunk exchanges ("Gts") will be introduced by and to replace the two trunk exchanges. Besides catering for international traffic growth, the Gts also support all calls with Malaysia and Indonesia border towns. The tandem exchanges are used to carry overflow traffic from one local exchange to another. In addition, there are two interconnect tandems to carry interconnect traffic between the PSTN and the PCMTS / PRPS networks.

The Transmission Network

The Transmission network comprises three segments; namely the terrestrial network, junction network and local access network.

The terrestrial network consists of three international gateway exchanges ("Gws"), two International Transmission Maintenance Centers ("ITMCs") and 6 frontier stations of which there are three satellite earth stations and three submarine cable stations.

Interconnections between the Gws, ITMCs and frontier stations are provided mainly by Synchronous Digital Hierarchy ("SDH") and Plesiochronous Digital Hierarchy ("PDH") systems running on optical fibers.

The junction network is made up of 27 telephone exchanges which are linked by either copper or optical fiber cables. The transmission systems used consist of both PDH and SDH systems.

The local access network links subscribers to the local exchanges via optical fiber and copper cables. The transmission systems used consist of both PDH, SDH systems and 2Mbit/s Digital Loop Carriers ("DLC").

By 1997, V5.1/V5.2 multiplexers will be deployed wherever the exchange is equipped with V5.1/V5.2 interface.

The Signaling Network

Currently both ITU-T Signaling System No.7 ("SS7") and the incumbent's modified version of ITU-T Signalling System R2 ("MFC R2") are deployed in inter-exchange signaling. MFC R2 signaling will be progressively phased out before year 2000.

The SS7 network adopts quasi-associated mode signaling employing Signaling Transfer Points ("STPs") and Signaling Points ("SPs"). Each local SP is connected to two STPs. The networks of the paging and cellular mobile operators interwork with the PSTN in the associated mode signaling using SS7 ISUP.

Packet Switched Public Data Network

The Packet Switched Public Data Network (PSPDN) is based on ITU-T recommendations for packet switching which support X.3, X.25, X.29 and X.75 recommendations. The PSPDN can be accessed via leased circuit network, telex network and the incumbent PSTN. Interworking between existing PSPDN and new operator PSPDN, if any, should be based on all relevant ITU-T X.75 recommendations currently adopted. The interfaces to be used must also conform to the relevant ITU-T recommendations as follows:

1. 64 kbit/s circuits: ITU-T V.35; and
2. 19.2 kbit/s and below circuits: ITU-T V.24

Telex Network

Local and international telex services are currently provided by two linked telex exchanges. By 1997, these two telex exchanges will be consolidated into a single exchange.

New operator telex system, if any, should interwork with the existing telex system based on the following ITU-T recommendations:

3. Transmission: V.21/R20; and
4. Signaling: U.1 Type A or B.

TRENDS AND OPPORTUNITIES

In most countries, this type of statement signals a powerful parastatal intervention to protect its market. In the case of Singapore regulator TAS, the opposite is true. It signals the government's commitment to encouraging existing companies and new entrants to remain on technology's cutting edge.

The TAS liberalization approach is aimed at increasing consumer choice at the most competitive prices and stimulating greater efficiencies in the use of scarce resources in the telecommunication industry. In setting its liberalization policy, TAS states that they recognize that, while there are attractions in an entirely free market, there is a risk that the long term benefits of liberalization to Singapore may not be fully realized if competition is totally unbridled and is introduced too rapidly. The TAS goal is to make competition effective and sustainable. To achieve this, TAS will maintain its policy of a deliberate and phased approach to competition.

Based on this approach, TAS intends to award up to two more licenses for local and international basic telecommunication services by mid - 1998. The licenses, to be effective from 1 April 2000, will include services for voice telephony, international direct dialing (IDD), leased circuits, public switched message and data services. TAS has also licensed one new mobile phone operator, MobileOne, and three new paging operators, Hutchison Intrapage, ST Messaging and MobileOne to compete with Singapore Telecom when its monopoly on mobile telecommunication service expires in April 1997.

To facilitate fair competition in a level playing field, TAS has set ground rules for the industry to pre-empt any anti-competitive practices. This includes setting guidelines on interconnection/ access charges, requiring accounting separation and regular financial reporting. Where there are disputes to be resolved in areas such as the right to access SingTel's public switched network, TAS will arbitrate to resolve these disputes.

TELECOMMUNICATIONS AUTHORITY OF SINGAPORE GBT OFFER

Singapore's final GBT (Group on Basic Telecommunications) commitment did not provide for simple international resale. All providers must be facilities-based as TAS would like to ensure that providers do not "cream skim." Implementing its GBT obligations will be completed in mid 1998 at which time "up to two" licenses will be issued for all basic services as noted above. The mobile license was issued in 1995 while competition, in effect, began in 1997. The original 15-year license for SingTel was revised with the decision to bring competition forward from the year 2007 to 2000. The Government of Singapore argued that the speed of the technology's advances in the industry required that the industry be opened up to international competition sooner. In return, the Government of Singapore will compensate SingTel with a lump sum taxable payment of S$1.5 billion (US$1 billion). These decisions were based on an economic policy assessment not on any need for increased penetration or to roll out the network, for those considerations were already in place. The goal was to make available to the public better technology faster and less expensively.

HISTORY OF SINGAPORE'S TELECOMMUNICATIONS DEVELOPMENT

The GOS began liberalizing the telecom sector in July 1989 by lifting restrictions on the sale of all telecom consumer goods, except for satellite receiving dishes. Telecommunication vendors could import any telecom equipment for the Singapore market provided they are type-approved by the Telecommunication Authority of Singapore.

Although TAS liberalized the operation of VANS, the guiding principle for approval is that a VANS should not compete with SingTel's services, but should provide value-adding functions that are not already provided by SingTel.

Since August 1994, TAS has allowed operators to establish satellite uplink or downlink facilities in Singapore in a move to position the country as a regional broadcasting hub. Uplink/downlink facilities enable broadcasters to send or receive

signals from a satellite. Since the liberalization, at least two operators have been granted licenses to provide uplink/downlink services, i.e., ST Teleport Pte Ltd and Walt Disney Company. The former is a subsidiary of the government-owned Singapore Technologies Group.

In cellular mobile services, TAS awarded in May 1995 a 20-year license to MobileOne Asia (S) Pte Ltd as the second mobile phone network operator in Singapore. MobileOne is a joint venture between Keppel Corporation and Singapore Press Holdings with Hong Kong Telecom and Cable & Wireless. The consortium invested more than S$300 million to launch its handphone network to enable it to begin operations in 1997.

SELECTED EVENTS FROM SINGAPORE'S TELECOMMUNICATIONS LIBERALIZATION TIMELINE

April 2000	Up to two new operators launch basic telecommunication services in competition with SingTel.
	Up to two new operators launch cellular mobile phone service in competition with SingTel Mobile and M1.
April 1997	New handphone operator M1 and paging operators M1, Hutchison Intrapage and ST Messaging launch their services.
Feb 1997	Resale of leased circuit services permitted.
May 1996	TAS advances the expiry of SingTel's exclusive license for basic telecommunication services to year 2000.
Mar 1996	Intelsat direct access up to level 3 permitted for broadcasters and satellite uplink/downlink licensees.
Nov 1995	Licensing of second public trunked radio network operator.
Oct 1995	Resale of services by Internet access service providers permitted.
Sep 1995	Licensing of two Internet public access providers, in competition with SingNet.
Aug 1995	Resale of international telephone services via customer-premises payphones.
	Further opening up of resale of public switched

	telecommunication services, for any company, apart from existing resellers in the hotels and service apartment sector.
July 1995	Further liberalization of the VANs market, allowing VANs-to-VANs interconnection via leased circuits.
May 1995	Licensing of one more public cellular mobile telephone operator and three more public mobile radio paging operators to commence services in April 1997 in competition with Singapore Telecom when its exclusive license for these services expire.
Feb 1995	Opening up of local and international express letters and market.
Dec 1994	Liberalization of resale of public switched telecommunication services for the hotel and service apartment sector.
Nov 1994	Differential Global Positioning System (DGPS) Services market opened.
Aug 1994	Satellite uplink/downlink services: licenses for self-provisioning or for public carriage of broadcast signals.
	Opening up of Audiotex information service provision market.
	Shared use and resale of PABX within same buildings permitted.
	Parallel import of telecommunication equipment by licensed telecommunication equipment dealers permitted.
June 1994	Licensing of second public mobile data services operator.
Aug 1992	Removal of volume-sensitive tariffs for VANS.

COMPETITIVE ENVIRONMENT

With limited indigenous manufacture of telecommunication equipment and no duties on these imports, the Singapore market is very open. As such, many foreign products are already well established and pricing is very competitive. Japanese products are predominant in almost all categories of telecommunication equipment. The Japanese firms with presence here include Fujitsu, Toshiba and NEC. European firms including Alcatel, Thomson Consumer Electronics, and Ericsson have also done well in Singapore.

The TAS sets Singapore's national telecommunications standards, and it also administers type approvals and certifications for all types of terminals and network equipment. Type approvals usually take about four weeks to be performed.

SingTel's procurement procedures meet GATT procurement code standards and require public announcement of all SingTel tenders valued over Singapore dollars 15,000 (US$10,000). The local tendering period is 3-8 weeks, with an international tendering period of three months.

All bidders must register with the government's Central Procurement Office or the Construction Industry Development Board. Following this registration, bidders may submit bids to SingTel. SingTel considers the prospective contractor's product quality, pricing, servicing, and reputation. ST awards the contract within six months and announces the award in the government's gazette.

Intellectual Property Rights

A legal framework that specifically provides for copyright protection of intellectual property has been put in place under the Copyright Act. A bilateral agreement between Singapore and the United States on the protection of intellectual property rights has since been in force. Infringement of copyrights should be referred to the U.S. Embassy for advice and guidance.

MARKET OVERVIEW

With over 3,000 multinational companies in Singapore, a huge demand exists for sophisticated telecommunications services. The Singapore government has invested very heavily to ensure Singapore's telecommunications preeminence in the region. In 1994, for example, SingTel invested US$370 million to enhance and upgrade its infrastructure and services. In 1995 Singapore was estimated to have spent US$607 million on telecommunications construction. A total of S$500 million (US$330 million) has been spent to upgrade the network into a completely digital network.

In the manufacturing sector and in contrast to the procurement situation, U.S. telecom companies dominate Singapore's telecom equipment manufacturing industry. Motorola is a key manufacturer of pagers, employing over 5000 people in Singapore, while Lucent has focused its local production on digital cordless phones.

Singapore's single largest buyer of telecommunications equipment is SingTel, but multinational corporations and local businesses also purchase significant amounts of telecommunications equipment. And in year ending March 31, 1996, international and domestic telephone services contributed more than half of SingTel's net profit of S$1.49 billion (US$993 million).

Industry observers expect that newly constructed office buildings will be equipped with communication lines compatible with the needs of nearly any multinational firm. Thus, building owners may eventually become the primary consumers of these systems.

As SingTel makes increasing and continuous efforts to upgrade and expand Singapore's national and international telecom system, the major development programs are in the areas of Broadband Integrated Services Digital Network (BISDN), broadband switching technology (ATM), cellular mobile telephone, satellite communication, and additional submarine cables.

CONTACTS

GOVERNMENT

H.E. Mr. Mah Bow Tan
Minister
Ministry of Communications
460 Alexandra Road, # 39-00
SINGAPORE 119963

Mr. Leong Keng Thai
Director General
Ms. Valerie D'Costa
Chief, International Affairs Department
Telecommunication Authority of Singapore
35, Robinson Road
TAS Building
SINGAPORE 068876
Tel: (65) 323 3888
Fax: (65) 323 0964

Singapore Technologies Telemedia Pte Ltd.
(ST Telemedia)
3, Lim Teck Kim Road, #10-02
Singapore Technologies Building
SINGAPORE 088934
Tel: (65) 325 1600
Fax: (65) 222 1020

Singapore Telecommunications Limited
(Singapore Telecom)
31 Exeter Road Comcentre
SINGAPORE 239732
Tel: (65) 838 3388
Fax: (65) 737 9531
Mr. Wong Hung Khim, Deputy Chairman

Brigadier-General Lee Hsien Yang,
President and Chief Executive Officer
Ms. Chua Sock Koon, Senior
Vice-President (Corporate Affairs and Finance)
Ms. Ying Lai Chang, Director,
International Affairs & Regulatory Affairs

Mr. Leong Keng Thai
Director-General
Telecommunication Authority of Singapore
35, Robinson Road
TAS Building
Singapore 068876
Tel: (65) 323-3888
Fax: (65) 323-0964

Mr. Lim Toon
Executive Vice President
International Network Directorate
Singapore Telecommunications Ltd
31 Exeter Road
Comcentre
Singapore 239732
Tel: 730-8833 Fax: 737-3691

Mr. Lung Chien Ping
Chief Executive Officer/President
SingTel Mobile Pte Ltd
31 Exeter Road
Singapore 239732
Tel: 838-2580 Fax: 732-6373

Mr. Tan Kee Joo
Chief Operating Officer
SingTel PageLink Pte Ltd
31 Exeter Road
Singapore 239732
Tel: 838-3810 Fax: 735-8902

Ms. Lian Bee Leng
Vice President (National Network)
Singapore Telecommunications Ltd
31 Exeter Road
21st Storey, Comcentre
Singapore 239732
Tel: 838-2406 Fax: 235-3095

Mr. Allen Lew
Chief Operating Officer
Singapore Telecom International Pte Ltd
31 Exeter Road
Comcentre
Singapore 239732
Tel: 838-3843 Fax: 734-2209

Mr. Alan Goh
Chief Executive Officer
Telecom Equipment Pte Ltd
1 Serangoon North Avenue 5
Singapore 554915
Tel: 481-8181 Fax: 481-1630

Mr. Low Chin Nam
Chief Operating Officer
MobileOne (Asia) Pte Ltd
456, Alexandra Road
#12-01 NOL Building
Singapore 119962
Tel: 374-1111 Fax: 275-4288
Remark: The company is providing mobile cellular phone and radio paging services as from April 1997.

Mr. Lee Theng Kiat
Vice President/General Manager
ST Telecommunications Pte Ltd

3 Lim Teck Kim Road #10-02
Singapore Technologies Building
Singapore 088934
Tel: 325-1600 Fax: 222-1020

Mr. Yong Lum Sung
General Manager/Vice President
ST Messaging Pte Ltd
3, Lim Teck Kim Road
#10-02 Singapore Technologies Building
Singapore 088934
Tel: 325-1600 Fax: 222-1020
Remark: The company is providing radio paging service as from April 1997.

Mr. Raphael Goh Kee Hong
Chief Executive Officer
Hutchinson Paging Pte Ltd
230 Victoria Street
#12-00 Bugis Junction Tower
Singapore 188024
Tel: 434-0856 Fax: 337-7270
Remark: The company is providing radio paging service as from April 1997.

Dr. James Kwa
General Manager
Keppel Telecommunications Pte Ltd
4 Aljunied Avenue 1, #02-02
Singapore 389978
Tel: 748-7011 Fax: 747-7968

Mr. Jeffrey Ho
President
First Telecommunications (S) Pte Ltd
298 Tiong Bahru Road
#08-01 Tiong Bahru Plaza
Singapore 168730
Tel: 373-9760 Fax: 278-2977

Mr. Quek Keng Ngak
Group General Manager
Sembawang New Businesses Group
435 Orchard Road
#22-01 Wisma Atria
Singapore 238877
Tel: 733-3415 Fax: 737-7669

Mr. Gregory Wong
Division Manager
Teledata Singapore Ltd
#06-01 Setron Building
10 Dundee Road
Singapore 149455
Tel: 471-1733 Fax: 471-1766

Mr. Edward Teo
General Manager (Technical Sales Division)
O'Connor's Singapore Pte Ltd
O'Connor House
98 Pasir Panjang Road
Singapore 118516
Tel: 473-7944 Fax: 472-4508

Mr. David Ho
Sales Manager
ST Electronic & Engineering Ltd
24 Ang Mo Kio Street 65
Singapore 569061
Tel: 481-8888 Fax: 481-4272

Ms Shae Hung Yee
Singapore Technologies Telemedia
3 Lim Teck Kim Road
#10-01/02
Singapore Technologies Building

Singapore 088934
Tel : 65-3298508
Fax : 65-2205115

Mr Joseph Lim
Hutchison Intrapage
9 Bukit Batok Street 22 #03-01
Singamip Building
Singapore 659585
Tel : 65-5683618
Fax : 65-2754388

Ms Chan Sock Leng
Senior Manager, Corporate Development
MobileOne (Asia) Pte Ltd
456 Alexandra Road
#12-01
Singapore
Tel : 65-3741039
Fax : 65-2754388

Ms Ying Lai Chang
Singapore Telecommunications
31 Exeter Road
Comcentre
Singapore 239732
Tel : 65-8383213
Fax : 65-7379531

Mr Quek Keng Ngak
Group General Manager
Sembawang Media Pte Ltd
435 Orchard Road
22-01 Wisma Atria
Singapore 238877
Tel : 65-7333415
Fax : 65-7377669

Mr Ng Eng Ho
Chief Executive Officer
Keppel Communications
4 Aljunied Avenue #01-01
Singapore 389978
Tel : 65-7487011
Fax: 65-7477968

Mr Thomas Yeoh
Head
Communications & Media
Economic Development Board
Tel : 65-8326970
Fax : 65-3396077

Mr Derrick Wong
President
Association of Telecommunication Equipment Suppliers (ATES)
150 Orchard Road
#08-12 Orchard Plaza
Singapore 238841
Tel : 65-7378526
Fax : 65-7378559

Mr Stephen Yeo
Chief Executive
National Computer Board
71 Science Park Drive
NCB Building
Singapore 118253
Tel : 65-7720202
Fax :65-7789641

Mr Ben Yeo
General Manager
Netrust Pte Ltd
51 Goldhill Plaza #19-10/12
Singapore 308900
Tel : 65-2523581
Fax : 65-3534614

SINGAPORE

TWO CELLULAR MOBILE TELEPHONE SERVICES (PCMTS) OPERATORS

PROJECT DESCRIPTION

The Telecommunication Authority of Singapore (TAS) will license up to two more public cellular mobile telephone services (PCMTS) operators from 1 April 2000. This was announced by Mr. Mah Bow Tan, Minister for Communications, at the opening of the 19th International Computers & Communications (IC&C) Business Summit where he revealed the Government's intention to further liberalize the PCMTS market.

Project Summary

Project Budget: TBD

Project Sponsor: TAS will grant license

Required Technology:
Mobile base stations
Switching equipment
Network management equipment and software

As in the previous exercise in 1995, when TAS selected one more PCMTS operator, the award of these new licence (s) will be by public tender. The actual number of licenses to be awarded will depend on the quality and the attractiveness of the tenderers' proposals. Direct foreign equity participation of up to 49 percent will be accepted.

The PCMTS license (s) will be valid for a period of 17 years from 1 April 2000 and will expire on 31 March 2017. This is the same date as that of the two current operators, SingTel Mobile and MobileOne. The Government will fix the license fees. There will be an initial one-time license fee of US$650,000. In addition, there will be an annual recurrent license fee set at 6 percent for the first US$162 million, 9 percent for the next US$162 million and 12 percent for that which exceeds US$325 million of the licensee's audited gross turn-over (AGTO). The license fee is subject to a minimum of US$300,000 thousand, US$970,000 thousand and US$1.6 million for the first three consecutive years of operations respectively. These terms are similarly applied to the two current operators.

With the license fees set upfront, tenderers can focus their efforts on putting up their best offers in terms of the facilities and services they can provide. The license

fees will not be the determining criterion for selection, which will instead focus on technical excellence, innovation, and strength of commitment to invest.

PROJECT FINANCING

Since the license will be awarded to independent operators, the operators themselves will be required to raise the financing required to pay the licensing fee as well as build out the network.

STATUS OF PROJECT DEVELOPMENT

SCHEDULE FOR TENDER OF PUBLIC CELLULAR MOBILE TELEPHONE SERVICES (PCMTS)	
DATE	**Action**
October/November 1997	TAS opens tender for for new PCMTS operator(s)
February 1998	Interested operators must submit proposal demonstrating ability to compete effectively in Singapore PCMTS market
mid 1998	Results of tender process announced
mid 1998 – April 2000	Licensees build, roll-out and test network
1 April 2000	Commercial services commence
31 March 2017	License expires (same date for two current operators: SingTel Mobile and MobileOne)

TAS will open the public tender exercise for the new PCMTS operators by November 1997. Interested parties will be given three months to prepare their tender proposals which should demonstrate their technical and financial capabilities to compete effectively in the PCMTS market in Singapore. Parties tendering for the public basic telecommunication services (PBTS) licenses can also bid for the PCMTS licenses (s) if they are interested in offering these services. The results of the PCMTS tender are expected to be announced by mid-1998 to provide the successful licensees with at least 18 months to build, roll-out and test their networks and services for the commencement of commercial services from 1 April

2000. The time schedule for the PCMTS tender has been synchronised with that for the PBTS main tender exercise to allow for integrated network roll-out for successful tenderers who hold both licenses or for standalone licensees to coordinate their roll-out. The results of both tenders will be announced at the same time.

U.S. Competitiveness and Export Potential

U.S. firms are well positioned to team with local firms to take an equity position and become the operator for the cellular system. This would allow for the sale of a firms' services and products and provide an excellent opportunity for U.S. suppliers with an established relationship with a consortium member. As TAS takes a technology neutral stance, all forms of wireless equipment technology may be proposed by the bidders. At a minimum there will be a need for wireless base stations and the network management hardware and software required to operate a new mobile network.

Decision Making Process

Singapore is known for having one of the most clear and open bidding processes in the case of public tenders. TAS will seek companies that can bring new elements to Singapore's already well-developed market. It is possible that TAS will accelerate the bidding process to help ensure that licensees can meet network roll-out schedules.

Contacts

Ms. Ng Cher Keng
Director (Policy)
Telecommunication Authority of Singapore
35, Robinson Road
TAS Building
Singapore 068876
Tel: (65) 323 3888
Fax: (65) 323 0964

SINGAPORE

PUBLIC BASIC TELECOMMUNICATIONS SERVICES (PBTS)

PROJECT DESCRIPTION

Project Summary

Project Budget: $660 million

Project Sponsor: TAS to grant license

Required Technology:
Cellular base stations
Network management systems

Early in 1997, The Telecommunications Authority of Singapore (TAS) announced that it would award up to two licenses for local and international telecommunications services by mid-1998. The licenses, effective as of April 1, 2000, would include services for voice telephony, international direct dialing (IDD), leased circuits, public switched messages and data services. Provision of other services such as cellular, paging, Internet and public trunked services may also be granted if these add value to the basic telephone services.

TAS has stated that it will seek companies that can bring new elements to Singapore's already well-developed market. In particular, "preference will be given to tenderers who are willing to invest and extensively establish their own telecommunication infrastructure networks", as well as those who offer more innovative services. TAS will permit the sharing of facilities where it would not make sense to have duplication but new entrants would have to offer services on a nationwide basis and not exploit only lucrative areas in which to operate.

Each PBTS license will be an integrated services license and the licensees must be able to provide domestic and international services including:

- public switched telephone services
- public switched message service
- public switched ISDN services
- leased circuit services
- public switched data services; and
- public radio-communication services.

The license fees for each PBTS license will be comprised of two components:

1) Flat fee one-time license set at S$10 million (US$6.66 million)
2) An annual recurrent license fee at 1 percent of the PBTS licensees audited annual gross turnover subject to a minimum or S$1 million (US$666,000) the first year, S$2 million (US$1.33 million) the second year, and S$3 million (US$2 million) the third year of the license.

Foreign equity is limited so that 51 percent of all shares must be held by either:
1) Singapore citizens or permanent residents
2) Companies registered in Singapore which have at least 51 percent of their share capital controlled by Singaporean citizens or permanent residents

An industry source estimates that successful bidders will have to expend at least US$1 billion to install the island wide network consisting of cables, switches, base stations and exchanges. Therefore, equipment suppliers would be well advised to start targeting the consortia pursuing these licenses immediately.

International experience suggests that service providers negotiate with equipment suppliers during preparation of the bid, with contracts finalized very quickly after award (sometimes only days after award).

Project Financing

Since the license will be awarded to independent operators, the operators themselves will be required to raise the financing required to pay the licensing fee as well as build out the network.

Status of Project Development

The early stages of the bidding process have already been completed with pre-qualified consortia having already been shortlisted (see list below).

On July 25, 1997, TAS announced that all three consortia that submitted proposals for the pre-qualification tender for the Public Basic Telecommunication Services (PBTS) licences in May were shortlisted by TAS to participate in the main tender. The main tender round began August 1, 1997 and will close on 31 December 1997.

This gives the pre-qualified tenderers five months to prepare their main tender proposals in accordance with the requirements stipulated in the main tender document.

PRE-QUALIFIED TENDERERS INVITED TO PARTICIPATE IN THE MAIN PHASE OF THE TENDER EXERCISE FOR THE PUBLIC BASIC TELECOMMUNICATION SERVICE LICENCE(S) TENDERER MEMBERS		
Consortium 1	**Consortium 2**	**Consortium 3**
Working name: TelcomOne Keppel Telecoms Pte Ltd, Singapore Press Holdings Ltd, Cable & Wireless Pte, HongKong Telecom Ltd	Working name: StarHub ST Telecommunications Pte Ltd, Singapore Power Ltd, Nippon Telegraph and Telephone Corporation, British Telecom (BT)	Sembawang Corporation, Singapore MRT Ltd, WorldCom Inc

On August 15, 1997, TAS held a briefing for the three pre-qualified consortia invited to participate in the PBTS main tender exercise. The briefing provided the tenderers with the necessary information for preparation of their main tender submissions. It also gave them an opportunity to seek clarification on the terms of the tender. Tenderers can also submit written inquiries any time before the tender closes on 31 December 1997.

TAS briefed the tenderers on the time schedule and the rationale for its decision to further liberalise the telecommunication market from 2002. TAS explained that with the Government bringing forward the expiration of Singapore Telecom's exclusivity, there is no more restriction after 2000 for TAS to allow competition in any form and at any time to introduce new technologies and innovative services for the benefit of consumers. In view of this, TAS had stated explicitly, in the Information Package released in January this year as well as in the pre-qualification tender document, that TAS reserves the right to license additional operators after this current tender exercise. Further liberalization from 2002 is in line with TAS's phased and managed approach to liberalization. TAS also recognizes that the telecommunication industry worldwide is transforming rapidly; hence, there is a need to ensure that TAS's regulatory framework can respond

quickly enough to market and technological changes to allow more players in the market.

SCHEDULE FOR TENDER OF PUBLIC BASIC TELECOMMUNICATIONS SERVICES (PBTS) LICENSE	
Date	**Action**
1 March 1997	Pre-qualification tender
31 May 1997	Close of pre-qualification tender
1 June 1997	Evaluation of submissions and selection of pre-qualified tenderers
25 July 1997	TAS announces that all three consortia who submitted proposals for the pre-qualification tender for the Public Basic Telecommunication Services (PBTS) licences on 31 May 97 were shortlisted by TAS to participate in the main tender.
1 August 1997	Pre-qualified tenderers announced and invited to submit proposal for main tender within five months time.
31 December 1997	Close of tender
1 February 1998	Tender evaluation and selection of up to two succesful tenders
mid 1998	Award of PBTS License (s)
First quarter 1999	Latest date for binding agreements to be signed between SingTel and newly licenses operators

U.S. Competitiveness and Export Potential

One U.S firm, WorldCom Inc., is part of the third consortium of pre-qualified bidders. During the recent TAS briefing, issues were raised such as interconnection, which include the physical interconnect/access framework (including technical requirements); the charging principles and methodology; the initial benchmark charges and the interconnect negotiation process and time frame.

In line with TAS policy, the focus is on facilities-based competition. U.S. firms wishing to supply this future network will be best positioned if they can support the tenderers proposals to roll out their own core / trunk backbone networks aggressively. To minimize excessive duplication in the local access networks, TAS has mandated Singapore Telecom (SingTel) and Singapore Cable Vision to allow the new operators access to their copper and co-axial local access networks respectively. Furthermore, SingTel has made available to applicants an overview of its overall network configuration and provided additional information on the potential areas for facilities sharing and co-location. The intention is to ensure that tenderers can make the appropriate "build or buy" decisions for their network roll-out plans.

DECISION MAKING PROCESS

Singapore is known for having one of the most clear and open bidding processes in the case of public tenders. TAS will seek companies that can bring new elements to Singapore's already well-developed market. Preference will be given to tenderers who are willing to invest and extensively establish their own telecommunications infrastructure networks as well as those who offer more innovative services.

CONTACTS

MR. LEONG KENG THAI
Director-General
Telecommunication Authority of Singapore
35, Robinson Road
TAS Building
Singapore 068876
Tel: (65) 323-3888
Fax: (65) 323-0964

Contact Regarding Information Package on PBTS tender process:

MS. KENG CHER NG
Deputy Director (Industry)
Telecommunication Authority of Singapore
35, Robinson Road
TAS Building
Singapore 068876
Fax: (65) 323-7622

SINGAPORE

SINGAPORE ONE

PROJECT DESCRIPTION

Launched in June of 1996 by Mr. Mah Bow Tan, the Minister of Communications, Singapore ONE is a national goal to build a pervasive info-communication infrastructure for the nation in preparation for the impending multimedia wave. Singapore ONE is spearheaded by the Telecommunications Authority of Singapore (TAS), the National Computer Board (NCB), and the National Science and Technology Board (NSTB), and is supported by the Economic Development Board (EDB) and the Singapore Broadcasting Authority (SBA).

Project Summary

Project Budget: $20 million (phase I only 1996-2001)

Project Sponsor: Consortium of TAS, NCB, NSTB, EDB, SBA.

Required Technology:
Networking equipment
ATM switches
IT applications software

Singapore One is a vision and a system. It is designed as a specific, broadband, multimedia system which will function as one of the core elements of Singapore's well-known IT2000 initiative, itself designed to transform the nation into an "Intelligent Island." Singapore One will be built around an ADSL/ADM overlay on coaxial cable. A range of applications will be developed and installed around this core. The agencies involved coordinated responsibilities as follows: TAS will oversee the network, the National Computer Board will develop applications and services, and the National Services and Technology Board will be responsible for research and development.

Recognizing the need to quickly launch this early stage development and share in its risk, TAS has exercised its nurturing role by co-investing in the consortium to build the Singapore ONE infrastructure. The Government will also be an anchor tenant to this core network, not only to bring even greater access and convenience of government services to the people, but also to help start it off. Experience elsewhere has demonstrated the value of government providing a core market for broadbased services to help ensure a critical mass of demand and thereby

accelerate build-out. Concurrently, effort is being directed to encourage industry to participate and invest both in the construction of such a broadband infrastructure and in the development of applications, services and content that can be delivered on this network.

OWNERSHIP OF SINGAPORE ONE

The joint-venture Singapore ONE company comprises Singapore Telecom, Singapore Cable Vision and Singapore Communication Investments, the investment arm of TAS. 1-Net will own and run Singapore One. At present, the stakeholder is the Government of Singapore, but the Government is expected to divest this involvement. The consortium is formed with an equity ownership of 30 percent each by Singapore CableVision and Singapore Telecom, and 40 percent by Singapore Communication Investments, a fully owned subsidiary company of TAS.

PROJECT FINANCING

The project is being implemented in two overlapping phases. Phase I (1996-2001) will see the deployment of a core broadband network with a number of services/applications from government agencies. At the end of Phase I, it is intended that virtual government services will be available from several public sites throughout Singapore. Phase II (1999-2004) will see the network grow in capacity and coverage with increased commercial interactive multi-media applications on board. NCB, NSTB, and TAS have set up a Steering Committee to direct development of Singapore ONE. TAS, NCB and NSTB will provide the necessary funding to kick-start this project. This is estimated at US$20 million for Phase I and US$32 million for Phase II.

The Consortium aims for an initial rollout of broadband multimedia services direct to Singapore's homes, businesses and schools before the end of next year. For this, it plans to commit US$13 million over the next two years for network development.

Each of the three stakeholder government agencies will contribute a portion of the funding in accordance to its role in the project. This funding will cover the cost of deploying the broadband core network for Phase I and developing the associated government services/applications riding on the network.

STATUS OF PROJECT DEVELOPMENT

SCHEDULE FOR DEVELOPMENT OF SINGAPORE ONE PROJECT	
Date	**Action**
June 1996	Singapore ONE project announced by H.E. Mr. Mah Bow Tan, the Minister of Communications.
Phase I (1996-2001)	Singapore estimates US$20 million to be spent on Phase I development.
23 September 96	The signing of the agreement to form a consortium to Develop the Singapore ONE core network. The consortium is formed with an equity ownership of 30 percent each by Singapore CableVision and Singapore Telecom, and 40 percent by Singapore Communication Investments, a fully owned subsidiary company of TAS.
March 18, 1997	1-Net Singapore Pte. Ltd. awards a US$3.6 million contract to Alcatel Singapore Pte. Ltd. for the supply of the core network equipment.
June 1997	Singapore ONE trials begin.
Phase II (1999-2004)	Singapore estimates US$32 million to be spent on Phase II development.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

Foreign involvement is encouraged in Singapore ONE. To encourage early participation of service and content providers, a "Pioneers Club" was formed to bring on board innovative application and content providers using Singapore ONE as a roll out platform. These club members enjoy benefits such as preferential rates for broadband usage and access to other firms and users of Singapore ONE. According to the project developers, the tariffs for usage of Singapore ONE are to be made highly affordable to encourage the proliferation of services to the public.

Singapore is promoting the project as an excellent opportunity for foreign multimedia related companies to consider setting up in Singapore, either on their own or for joint venture development of advanced communications software and broadband multimedia products with local partners.

SINGAPORE ONE OPPORTUNITIES AND INCENTIVES		
How to participate in Singapore ONE		**Incentives**
Content providers	Provide or develop high quality content, especially in education or information services, that can be put on Singapore ONE	Available incentives include: • Broadband R&D Grant • Initiatives in New Technology Scheme • Innovation Development Scheme for Information Technology • IT Cluster Development Fund • Tax incentives which include: pioneer status, investment allowance, double deduction on R&D for service project
Service providers	Make content available to public or target groups	
Technology suppliers	Deploy new and emerging technologies for the development of advanced products such as multimedia computers, set-top boxes and broadband equipment, as well as software for interactive services	

TECHNOLOGY PROCUREMENT

On March 18, 1997, 1-Net Singapore Pte. Ltd., the joint-venture company incorporated by the Singapore ONE infrastructural consortium, awarded a US$3.6 million contract to Alcatel Singapore Pte. Ltd. for the supply of the core network equipment for the Singapore ONE project.

Alcatel was selected for the award from 14 submissions from international telecommunication vendors. The network equipment deployment for the initial

development of the Singapore ONE Core Network includes the installation of ATM switches at broadband network access points over the island of Singapore by March 1998. The network will consist of a combination of AX1000 and HSS1100 switches.

DECISION MAKING PROCESS

Singapore is known for having one of the most clear and open bidding processes in the case of public tenders. Singapore ONE offers numerous opportunities for U.S. firms to propose applications or technologies which complement the development of Singapore ONE. Foreign participation is strongly encouraged.

A good starting point for companies interested in this project would be to contact the appropriate Steering Commission. The member organization through 1-Net to seek advice on which local companies are currently developing applications or systems for Singapore ONE, and then to seek contacts with these local partners.

CONTACTS

Mr. Saw Ken Wye
Assistant Chief Executive (Industry)
National Computer Board on behalf of Singapore One
71 Science Park Drive
Singapore 118253
Tel: (65) 772 0320
Fax: (65) 779 5340
E-mail: kenwye@ncb.gov.sg

Contact for 1-Net:

Pak-Lum Mock, CEO
1-Net Singapore Pte Ltd
2D Ayer Rajah Crescent #07-01
Singapore, 139938
Tel: (65) 777 4224
Fax: (65) 779 1912
E-mail: mock@1-net.com.sg

THAILAND

Country Profile & Telecommunications Sector Overview

Projects:

➢ Asynchronous Transfer Mode (ATM) ➢Cable Overlay ➢Copper Pair Treatment Protection and Grounding ➢ Digital Loop Carrier (DLC) Applications ➢Electric Generation Authority of Thailand ➢Network Management Center ➢Rural Fixed Wireless Local Loop ➢Synchronous Digital Hierarchy (SDH) Technology

The boundaries shown do not imply, on the part of U.S. Government, any judgement on the legal status of any territory.

Thailand Profile

As of 1996

Capital - Bangkok
Population - 59.5 million
GDP per Capita - US$2,514

Telephone Density
Overall - 7.41% (1995)
Urban - 34.48% (1995)
Rural - 3.33% (1995)

Waiting List for
Telephone Lines - 1,083,465 (1995)
Cellular Subscribers - 1,259,170 (1995)
Paging Subscribers - 486,487 (1995)
Telex Subscribers - 2,013

International Outgoing
Traffic (million calls) - 72

Network Digitization
Switching - 87%
Transmission - 87%

(Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, bordering the Andaman Sea and the Gulf of Thailand, southeast of Burma **Geographic coordinates**: 15 00 N, 100 00 E **Comparative area**: slightly more than twice the size of Wyoming **Border countries**: Burma, Cambodia, Laos, Malaysia **Climate**: tropical; rainy, warm, cloudy southwest monsoon (mid-May to September); dry, cool northeast monsoon (November to mid-March); southern isthmus always hot and humid **Terrain**: central plain; Khorat Plateau in the east; mountains elsewhere **Geographic note**: controls only land route from Asia to Malaysia and Singapore

COUNTRY PROFILE

PEOPLE

The population of Thailand is approximately 59 million, and is growing at 1.4 percent annually. Almost 90 percent of the people are ethnic Thai. The majority (95 percent) of the country is Buddhist, although the Moslem, Christian, and Hindu faiths are represented among the remaining five percent. Thai is the official language and is spoken most widely. English is viewed as the second language of the elite and is often used for business. A number of regional dialects are also spoken.

THE ECONOMY

Thailand is currently going through a period of economic uncertainty. There is clear evidence that there will be slower growth in GDP. Together with the devaluation of the baht and the fallout from the financial sector crisis, this situation can be expected to have a negative effect on the rate of new demand for telecommunications services. It will also lead to the cancellation, postponement, or reduction in scale of both public and private projects. The government budget will be substantially reduced, reflecting the austerity program. Furthermore, in reaction to recently imposed IMF austerity measures, state owned enterprises within the telecommunications sector are now examining options for privatization. Within the private sector, companies are already showing signs of retrenching in response to tightened money markets and a need in some cases to restructure their own portfolios. Service providers and utilities, particularly those with foreign loans, may now be faced with higher operating costs, leading to project postponements.

Prior to this period, GDP growth had been among the highest in the world, averaging 8.6 percent over the period 1990 - 1996. The Bank of Thailand has now cut its growth forecast to 5.9 percent for 1997. Some private analysts believe it will be less.

Although it is too early to predict how economic hardships will play out, it is likely that the government will give continued emphasis to the telecommunications sector and seek to preserve as much investment capital as possible for the sector. The current crisis is in part a reaction to Thailand's failure to move its economy from a low-wage, assembly economy to one based on higher wages and productivity. The underdevelopment of the telecommunications sector is both a contributing factor and a symptom of the failure to make this transition, a key shift for any emerging market country. The government's recognition of the need to forge ahead in modernizing the economy can be expected to result in a serious effort to sustain or even accelerate progress in telecommunications. However, the scope of the difficulties in doing so must be recognized.

KEY ECONOMIC INDICATORS			
Indicator	**1994**	**1995**	**1996 (e)**
Constant GDP ($ Billion)	18.9	21.5	24.3
GDP Growth (%)	9.5	9.8	9.5
GDP per Capita ($)	255	285	316
Gov. Spending (% GDP)	17.4	N/A	N/A
Inflation (%)	12.7	9.0	8.5
Unemployment (%)	9	N/A	N/A
Foreign Exchange Reserves ($ Billion)	1.1	1.8	2.2
Total Exports ($ Billion)	5.3	6.8	8.8
Total Imports ($ Billion)	7.5	9.7	12.0

POLITICAL OVERVIEW

The political system has a strong impact on the development of every major infrastructure sector in Thailand and especially the telecommunications sector. Business interests often overlap with political interests and this creates an environment that is less than transparent for unsuspecting foreign businesses. Liberalization has been discussed more than enacted and has not occurred as it requires fundamental changes in both Thailand's telecommunications laws and the political machinery which is affected by this sector. Five years ago the MOTC drafted a Telecom Master Plan outlining a privatization plan. This plan has gone through repeated evaluations which has delayed any concrete moves toward implementation. The proposed Master Plan presents a clear plan for separating the

regulator and the regulated and is considered by many to be an honest attempt at liberalizing the industry. Critics argue that the Master Plan is a propaganda piece and is only used to appease advocates of a liberalized industry. Economic austerity measures, WTO, and to a lesser extent APEC, are international forces which bring pressure to bear on Thailand and which are accelerating the liberalization process.

Diplomatic representation in US:

Chief of Mission:
Ambassador Nitya Pibulsonggram
Chancery: 1024 Wisconsin Avenue NW, Washington, DC 20007
Tel: [1] (202) 944-3600, Fax: [1] (202) 944-3611

Consulate(s) general: Chicago, Los Angeles, and New York

US diplomatic representation:

Chief of mission:
Ambassador William H. Itoh
Embassy: 95 Wireless Road, Bangkok
mailing address: APO AP 96546
Tel: [66] (2) 252-5040, Fax: [66] (2) 254-2990

FOREIGN INVESTMENT AND TRADE

A new tax treaty between the United States and Thailand was signed in November 1996. The treaty will enter into force after exchange of instruments of ratification. Smaller American firms, in particular, were disadvantaged by the lack of a reciprocal tax agreement between the two countries. The new treaty will provide for the elimination of double taxation and give American firms tax treatment equivalent to that enjoyed by Thailand's other tax treaty partners.

Thailand ratified the Uruguay Round agreements in December 1994. The government is moving to meet its WTO and ASEAN tariff reduction commitments, with reductions to be completed on 4,000 items by the beginning of 1997. Thailand instituted tariff reductions beginning in January 1995. The latest round of reductions is due to take effect in January 1997.

By the beginning of 1997 the total number of tariff rate categories will be reduced from 39 to 6, with the following spread: 0 percent on such goods as medical equipment and fertilizer, 1 percent for raw materials, electronics components, and vehicles for international transport, 5 percent for primary and capital goods, 10 percent for intermediate goods; 20 percent for finished products, and 30 percent for goods needing "special protection." This last category includes agricultural products, autos and auto parts, alcoholic beverages, and a few other "sensitive" items.

Arbitrary customs valuation procedures sometimes constitute a serious barrier to U.S. goods. The Department of Customs, which enjoys unusual autonomy, uses the highest previously declared invoice value as a benchmark for assessing subsequent shipments from the same country. Customs may disregard the invoice value of a shipment in favor of the benchmark amount. This has a particularly damaging effect upon trade in agricultural products, which often have seasonally fluctuating values.

Foreign air couriers in Thailand must conform to restrictive regulations that require an on-board courier, but prohibit the use of on-board couriers on all-cargo aircraft. This significantly raises the cost of delivering any single shipment. In November 1996 the Thai Customs Department undertook to examine this situation, but has indicated that the requirement will remain in effect for the near future.

Duties are sometimes arbitrary in other ways. For example, import duties on unfinished materials are higher than those upon finished goods in some categories, which is a burden to American firms that manufacture or assemble in Thailand.

Protection of U.S. Intellectual Property

Improving protection for U.S. copyright, patent, trademark and other intellectual property in Thailand has been an important bilateral trade issue for several years. After Thai passage of a revised copyright law in 1994, the United States moved Thailand from the Special 301 "priority watch list" to "watch list" status. The Thai government also agreed to provide "pipeline protection" through administrative means for certain pharmaceutical products not entitled to full patent protection under the 1992 patent law. In recognition of this progress the U.S. restored a number of GSP benefits that had been denied to Thailand under Special 301. Several other bills designed to bring Thailand into compliance with its TRIPs requirements, including an amendment to the Patent Act that would abolish the pharmaceutical patent review board, are currently being drafted.

The Thai government has also made some effort to improve enforcement, making about 6800 arrests and seizing 2.7 million pirated items under its intellectual property laws since 1993. A specialized Intellectual Property Department in the Ministry of Commerce has cooperated with U.S. industry associations to coordinate both legal reforms and enforcement efforts, including raids. Firms representing U.S. video, audio, and software industries report sharply higher sales. In 1996 the Parliament passed legislation establishing a separate intellectual property court that should result in a more efficient judicial system and tougher sentencing.

Piracy remains a serious problem, however. The U.S. pharmaceutical, film, and software industries estimate lost sales at over $200 million annually. Despite new and improved laws, judicial proceedings remain slow and fines actually imposed are light.

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN THAILAND

BUSINESS CUSTOMS

The Thai cultural values of patience, respect for status (age, authority, etc.) and not losing face, are significant factors in business relationships. Thais feel great pride for their country and have deep respect for tradition. Sometimes, however, observance of traditional formalities may seem inconsistent to the tolerant, relaxed nature of living in Thailand. This can be confusing or frustrating to Westerners who are more informal and more time conscious.

Business relationships in Thailand are not as formal as those in Japan, China, Korea or the Middle East, but neither are they as relaxed or impersonal as in the West. Many business relationships have their foundations in personal relationships developed within the social circles of family, friends, classmates and office colleagues. Although Thailand is a relatively open and friendly society, it is advisable to approach potential business contacts with a prior introduction or personal reference. Thais will be more receptive if you arrive with an introduction or letter from a known government official or business contact. Using the Commercial Service's Gold Key Program is also an effective way to gain access.

BUSINESS INFRASTRUCTURE

Transportation

Thailand's road system compares favorably with that of other developing countries in the region. Major inter-city links are being expanded into four or more lane highways. Rural roads are being improved. However, Bangkok metropolitan area traffic is legendary for its congestion--vying for being the worst in the world. New expressways, highways and mass transit infrastructure offer a solution, but during their construction period, the situation worsens. The first phase of the skytrain mass transit system is due to be completed in 1998, and two other mass transit systems are under construction, the Metropolitan Rapid Transit Authority and the Hopewell Blue Line Rail project.

Transport of goods and passenger services by rail, sea, air and road is generally good. The State Railway of Thailand operates 3,800 kms of railway tracks with 623 destinations and four main routes: Bangkok-north to Chiang Mai; northeast to Nongkhai and Ubon Rajathani; east to Prachinburi; and, south to the Thai-Malaysian border. A rail route from Rayong to the Eastern Seaboard Development Project to Bangkok is being built to facilitate the transportation of cargo.

Thailand has coastlines on the Gulf of Thailand and on the Andaman Sea with 58 sea channels, forty operational seaports and ninety fishing trawler piers. Out of 6,000 kilometers of navigable inland waterways, 1,750 kilometers can be used as transportation routes for bulk cargo. Thailand offers the advantages of low-priced handling costs, cheap labor and inexpensive storage costs.

Currently, Thailand has 27 domestic airports, five of which meet international requirements for port of entry. Bangkok International Airport is located about one hour outside of Bangkok city. Handling 27 million passengers per year, the Bangkok International Airport will reach its capacity by 2003.

The Royal Thai Government, due to the delayed completion of the Second Bangkok International Airport (SBIA) project, has decided to expand the existing international airport to accommodate up to 45 million passengers a year. The $478 million budget for this expansion will include new taxiways and aprons, a new pier with six contact gates, control tower construction, monorails and automated baggage handling. The airport s expansion is expected to be completed by the year 2003. The new SBIA is scheduled to be completed by 2003 to handle twenty million passengers.

Language

Thai is the national language. English is the next most commonly spoken language, especially among the business community. Many Sino-Thais also speak Chinese.

Banking Services

A good range of commercial banking services is available in Thailand for both business and retail customers. Deposit accounts, lending facilities, foreign exchange, import/export facilities and other products and services such as credit cards and automatic teller machines (ATM) are offered. Some limitations, such as on mortgage lending to foreigners, do exist, reflecting restrictions on foreign ownership of property. Foreign banks have applied to join the local ATM network. The Hong Kong Shanghai Bank was admitted in December 1996, and Citibank in May 1996. This enables their customers to use their overseas bank ATM card at any ATM within the domestic network. At the end of 1996, there were over 4,000 ATM's in Thailand.

Communication and Utilities

One of the major weaknesses in Thailand's infrastructure has been the inability of telecommunications, water and utilities facilities, to keep up with growing demand. New investments in Thailand's telecommunications infrastructure are coming primarily from the private sector. Private contractors will install 7.1 million new telephone lines by 2001, creating a large market for equipment and services. Water and utilities rates vary with location.

FINDING A PARTNER

Agreements between foreign suppliers and local agents and distributors are governed by the general contract law under the Thailand Civil and Commercial Code. The relationship between the two parties is basically a buyer-seller relationship under a sale of goods contract. Under the Thai Revenue Code, this arrangement avoids any tax liability for the supplier. Importers must obtain licenses for products such as foodstuffs, certain pharmaceuticals and chemicals. It is the responsibility of the local agent or distributor to apply for any necessary licenses.

New market entrants should appoint an established agent/distributor with good local contacts, market expertise and technical know-how. U.S. exporters must invest sufficient time and attention in selecting a qualified agent and providing training for marketing and technical support staff. Frequent contact with local representatives is critical, especially at the outset, in order to build a good working relationship based on shared values and objectives and to make sure there are no misunderstandings or communications problems.

The U.S. Commercial Service at the American Embassy in Bangkok can provide valuable assistance in locating potential representatives and acquiring preliminary market data. Staff there can help companies identify agents and distributors well placed in their industry sectors, and they also know many reputable local consultants who are qualified to design market entry strategies and to identify local business partners.

FRANCHISING

Thailand does not have any special laws to regulate franchising operations. Franchising business falls under the regular commercial laws which apply to every business. The terms and conditions of the franchising agreement should be formalized between the franchisor and the franchisee in writing.

JOINT VENTURES AND LICENSING

Joint ventures and licensing agreements are important market entry strategies for American exporters to Thailand. In many cases, the only way to overcome costly freight charges, import restrictions and competition from cheap local goods is via local production. Thai firms need to become more technologically advanced to offset rising local labor costs in comparison to other parts of Southeast Asia and southern China. Joint venture partnerships with technology transfer and training components are effective mechanisms to achieve this.

Many Thai firms actively seek U.S. joint venture partners who bring technical, marketing and management skills to a business relationship. In turn, Thai firms generally offer sufficient capital, valuable local vendor and government contacts, and established business relationships throughout the region. A number of aggressive U.S. companies have already entered into strategic joint-venture relationships with Thai partners in Indochina and China.

The American Chamber of Commerce in Thailand facilitates joint ventures in the manufacturing and service sectors. The Commercial Service at the U.S. Embassy also provides assistance in locating potential joint venture partners for American companies.

STEPS TO ESTABLISHING AN OFFICE

The primary organizational forms for commercial enterprises are the sole proprietorship, partnership, limited liability company, joint venture and foreign branch. All are similar in nature to those found in the United States. Limited liability companies, however, are more often privately-held rather than public corporations. The majority of foreign corporations operating in Thailand do so through private limited liability companies.

The U.S.-Thai Treaty of Amity and Economic Relations of 1966 allows U.S. majority-owned businesses incorporated either in the United States or in Thailand on a nearly equal footing with Thai corporate entities. Consequently, U.S. corporations may establish wholly-owned subsidiaries or branch offices in Thailand without the constraints that other foreign firms face from the Alien Business Law. However, there are still government restrictions in the communications, transport and banking sectors, the exploitation of land and natural resources and the trade of domestic agricultural products. To register under the Treaty of Amity, a U.S. company needs to file an application with the Department of Commercial Registration at the Thai Ministry of Commerce. The Commercial Service at the U.S. Embassy in Bangkok has further information.

SELLING FACTORS/TECHNIQUES

To differentiate themselves from local and third-country competitors, U.S. firms should emphasize their strengths in quality, innovation, technology enhancements and customer service. Thai customers have come to expect more and better styles and designs, regular product upgrades and updated technology from U.S. companies and will often choose U.S. products and services on the basis of value for money , not solely by cost factors.

ADVERTISING AND TRADE PROMOTION

Advertising and trade promotion are important marketing tools in Thailand. In particular, foodstuffs and consumer products should be promoted heavily via a full range of mass media. In Thailand, many companies rely heavily on the two major

English-language newspapers, "The Bangkok Post" and "The Nation", for advertising, but Thai-language publications should also be considered. The most popular daily newspapers in Thai are "Krung Thep Turrakit" (Bangkok Business News) and "Manager". Special promotional campaigns should be conducted at local shopping centers, hotels and convention halls. To advertise in trade journals and to organize technical seminars it is advisable to translate all product literature and technical specifications into Thai. Successful firms also arrange for Thai agents and major customers to receive specialized training at the U.S. facility. Equipment is often donated to conduct training in Thailand.

PRICING THE PRODUCT

Thai end-users agree that price is a significant factor in selecting which products to purchase. First time buyers in Thailand often tend to buy based on price alone. Less than fifty percent of consumers buy based on brand-name recognition. Detailed market analysis is needed for developing a pricing strategy in Thailand. U.S. firms need to study such factors as the channels of distribution, the necessary sales and promotion techniques and the current pricing practices of key competitors. Buyers are often offered free gifts or extra options with their purchases. Standard credit payments, as in most international trade, apply in Thailand as well.

SALES SERVICE/CUSTOMER SUPPORT

Large U.S. companies often have their own subsidiaries to market their products and to provide customer support in Thailand. Providing before and after sales service to customers is essential. Many U.S. software companies appoint local distributors to market and sell their products as well as to provide service and support. Few retailers contact foreign suppliers directly, preferring to deal with an agent or a distributor. Organizing seminars and holding promotions at trade shows are successful marketing strategies. Trade shows are well attended by the general public as well as by members of the particular industry.

Strong relationships with local distributors are important to maintain a competitive position in the Thai market. Successful firms have a strong understanding of the importance of providing marketing and technical assistance to their consumers. Providing training for technical support staff and end-users is essential. U.S. technicians often accompany local representatives on sales calls.

U.S. firms must develop new methods of extending credit to Thai customers. Europeans and the Japanese often use aggressive financing tactics to garner deals.

SELLING TO THE GOVERNMENT

U.S. exporters actively pursue government procurement opportunities in such key fields as power generation and transmission, petroleum refining and petrochemicals, telecommunications, transportation, the environment, health care and defense. The key to successful bidding on Thai government contracts and supply tenders is to have a reputable local representative with good access to the procuring agency and knowledge of specific requirements. Without this intermediary, it is very difficult to win a government project. Representatives are accepted as legitimate players in the bidding process. Agents often provide an early "heads up" to U.S. firms when they hear of attractive tenders. Before these tenders are even issued, they can sometimes ensure that the principal's product can meet all of the tender specifications.

A specific set of rules, commonly referred to as the "Prime Minister's Procurement Regulations", governs public sector procurement. These regulations require that non-discriminatory treatment be accorded to all potential bidders. They do, however, provide preferential treatment to domestic suppliers who receive an automatic fifteen percent price advantage over foreign bidders in initial round bid evaluations. The specific laws that apply to international tenders are Regulations 87 and 89 which generally adhere to established international procedures. The two envelope system is commonly used, with technical evaluations of bids conducted separately from cost evaluations.

Recently, the Royal Thai Government established a counter trade requirement for government procurement exceeding $20 million. For military sales, the requirement was raised to $40 million. Under newly established regulations, partial payment for goods and services procured by all government agencies and the armed forces must be in the form of barter goods. Bidders on large-scale contracts are required to submit a "Letter of Undertaking" agreeing to accept Thai commodities as partial payment. The amount of such countertrade items is negotiated on a case-by-case basis, but average twenty to thirty percent of the Japanese purchase price. Off-shore soft loan financing programs, such as the World Bank, Asian Development Bank, OECF loans and technology transfer programs are exempt from the countertrade requirements. Thai commodities used in countertrade deals include rubber, rice, tapioca flour and certain kinds of manufacturing goods. In some cases, offers of technology or co-production are

considered in lieu of commodities. There are restrictions on overseas markets where countertrade commodities can be sold in order to limit competition with Thai exporters.

LOCAL LEGAL REPRESENTATION

The services of a local attorney are required for executing distributorship agreements and setting up offices in Thailand. Normally, the paperwork can be completed quickly and easily. Law firms also advise on the various types of business organizations that can be set up, assist in registering firms under the Treaty of Amity, and in obtaining the requisite permits. Lawyers are needed for registering patents and trademarks and for taking other legal measures to protect a product from intellectual property right infringement. The U.S. Commercial Service at the American Embassy in Bangkok has a list of Thai lawyers and American legal consultants who specialize in commercial law.

TELECOMMUNICATIONS SECTOR OVERVIEW

Thailand's telephone system is expanding rapidly, but has not kept pace with the growing demand generated by Thailand's strong economic growth. With an overall telephone density of 10.6 percent in 1996, Thailand has nearly eliminated its waiting list which stood at over 1.5 million lines in 1994. Congestion on the land line system is fueling rapid growth in cellular (764,000 subscribers) and paging services (382,000). The following table provides a recent projection of the growth of telephone density in Thailand over the coming five years.

PROJECTED TELEPHONE DENSITY

	1995	1997	1999	2001
Bangkok area				
No. of telephones	3.5 million	4.3 million	5.0 million	5.5 million
Telephones/100 persons	39	47	52	56
Provinces				
No. of telephones	1.8 million	2.8 million	4.3 million	6.5 million
Telephones/100 persons	3	5	8	12
All Thailand				
No. of telephones	5.2 million	7.1 million	9.3 million	12.0 million
Telephones/100 persons	9	11	15	18

Source: APT Yearbook, 1996

Although private sector participation is growing, the Thai government retains overall control of telephone services. Private providers are limited to concessions from the parastatal telephone agencies and to supplying technology. Reform, while often promised, is slow to materialize.

The rapid growth in the telecommunications sector that Thailand has experienced over the last six years is largely due to the introduction of Build-Transfer-Operate (BTO) programs. Under these programs, the two BTO concessionaires have

installed a switching capacity of nearly 4.5 million fixed lines in Bangkok and the provinces.

KEY PLAYERS (GOVERNMENT AND PRIVATE)

THE VISIBLE HAND: THAI GOVERNMENT ROLE IN TELECOMMUNICATIONS DEVELOPMENT

The Royal Thai Government controls the telecom sector and acts as a planner, coordinator, investor, manager, operator *and* regulator. While efforts have been made to liberalize the industry, it still falls directly under the control of several state agencies. Thailand has yet to finalize a comprehensive plan for reform in the telecommunications sector.

Overall management of the industry rests with the Ministry of Transport and Communications (MOTC). Three agencies falling under MOTC control share responsibility for management of key aspects of the telecommunications sector: the Telephone Organization of Thailand (TOT), the Communications Authority of Thailand (CAT) and the Post and Telegraph Department (PTD).

PUBLIC SECTOR PLAYERS

Although the state agencies were formed with distinct functions (TOT established 1954 and CAT established 1977), changes in technology have blurred the lines of responsibility as evidenced by overlapping concessions granted in paging, mobile phones, and trunked mobile services.

Ministry of Transport and Communications (MOTC)

MOTC works with the National Economic and Social Development Board (NESDB) to formulate policy and also acts as regulator and manager of the state enterprises (TOT, CAT, and PTD) which control Thailand's telecommunications infrastructure.

Telephone Organization of Thailand (TOT)

With a staff of more than 20,000 the TOT is the primary organization responsible for domestic telephone services and neighboring country international services.

The TOT is the governing body which can authorize the private sector to participate in Thailand's domestic telecommunications development.

TOT is currently working on a privatization scheme in which 20 to 25 percent of the organization could be sold by early 1998. Several foreign carriers have shown interest in buying equity in TOT which the government hopes will generate foreign currency. Recently, Singapore Telecom signed a joint-cooperation program designed to help TOT privatize efficiently. TOT's foreign-currency value has declined in a result of the devaluation. Nonetheless, the schedule for privatization is widely expected to be accelerated in response to budgetary and international pressure.

The Communications Authority of Thailand (CAT)

With a telecommunications staff of 7,000 and a postal service staff of 15,000 the CAT controls Thailand's overseas long distance services and operates Thailand's international gateways. Under special arrangement, CAT was allowed to authorize one of Thailand's two mobile phone concessions.

Also under pressure to sell equity, the CAT announced in August 1997 that it has selected two consortia to evaluate its assets in preparation for privatization. The first group includes Goldman Sachs, property consultant Jones Lang Wooton, auditor KPMG and Phatra Thanakit Plc. The second group includes JP Morgan, UK investment bank Barclays de Zoete Wedd, auditor Arthur Andersen and Krungthai Thanakit Plc. Both groups are expected to finish their assessment in November of 1997.

Post and Telegraph Department (PTD)

The primary responsibility of the Post and Telegraph Department is to manage radio frequency although PTD has awarded concessions to private companies to operate data communications. PTD serves as Thailand's regulator.

MAJOR PRIVATE PLAYERS

With the rapid growth of the Thai market and the entry of major Thai industrial groups into the market, the result is the emergence of a highly competitive local telecommunications industry. The following companies are among the leaders in this industry:

Advanced Info Services (AIS)

One of the two concessionaires in Thailand's mobile telephone market, AIS installs and operates both the Digital GSM 900 MHZ and Analog Cellular 900 services in this market. AIS jumped ahead of UCOM (see below) in the early stages of its systems deployment by promoting its analog service in the provinces where existing telephony rates are much lower than in the Bangkok area.

International Engineering Public Company Limited

Traditionally a distributor of internationally made telecommunications and electrical products for companies such as Nokia and Westinghouse, IEC is moving into network operations by assuming responsibility for part of UCOM's mobile phone concession to provide access to UCOM subsidiary TAC's PCN 1800 network through IEC's subsidiary Wireless Communications Service (WCS). In early 1997, IEC announced that it would procure several hundred million dollars worth of Nortel equipment rather than NOKIA equipment for its build out of its cellular system. However, in August of 1997 UCOM acquired the telecommunications assets of IEC and the fate of the fledgling operator WCS remains to be determined.

Jasmine International Group

A company with diverse businesses and numerous concessions within the telecommunications sector, in addition to activities in Thailand, Jasmine is developing projects in Indonesia (trunked mobile radio), the Philippines (paging), India (GSM services) and Nepal (paging) and is one of the investors in AceS, the regional satellite to provide cellular services. Headed by U.S. educated Dr. Adisai Bhotaramik, Jasmine develops and spins off numerous ventures.

United Communication (UCOM)

A closely aligned company with Motorola, UCOM has CAT concessions for cellular operations through its wholly-owned subsidiary Total Access Communications (TAC). UCOM is also a 5 percent investor (along with CAT) in the global CEO Satellite Iridium project and derives half of its revenues from mobile phone operations. UCOM is currently planning to diversify into the rocket launching business UCOM is headed by U.S. educated Boonchai Bencharongkul whose vast personal fortune is attributed to telecommunications. Also, UCOM is rumored to be in talks to form a strategic alliance with SingTel.

Shinawatra Computer and Communications Company (SC&C)

Shinawatra is Thailand's largest and most diverse telecommunications company with leading market share in the mobile phone market, the paging market, and the subscription television market. It is the only concessionaire for the Thai satellite network and is also an equipment trader. Prior to Thailand's economic downturn, Shinawatra was looking to expand regionally and was in extended joint venturing negotiations with Deutsche Telekom. Shinawatra was founded by the current Deputy Prime Minister Dr. Thaksin Shinawatra, another U.S. educated telecommunications "tycoon."

TelecomAsia

TelecomAsia was formed by the joint efforts of Thailand's famed Charoen Phokphand Group (known in Thailand simply by the initials CP) and Bell Atlantic (formerly NYNEX.) Prior to winning an initial concession for 2 million fixed line concession from TOT, CP was a broad based agricultural conglomerate with no experience in the telecom sector but known for its adeptness in managing the Thai political process. CP is also noted by many foreign companies for its particularly aggressive style. CP has investments in many sectors throughout Asia including: telecom, agriculture, fisheries, vehicles, property development, petrochemicals, motorcycles, and breweries. TelecomAsia is expanding into the region and has added subsidiaries including Telecom Holding and the Universal Cable TV network.

Thai Telephone and Telecom (TT&T)

TT&T was formed by the joint efforts and investments of Jasmine, Loxley, NTT and Ital-Thai (a Thai construction company) and the concession holder of 1.5 million fixed lines for the provincial areas. TT&T has suffered severe financial difficulties and as of September 1997, was looking for a financial rescue package to be approved by TOT. TT&T won it bid for the 1.5 million line project by offering an unusually high 43.1 percent royalty payment to TOT. In light of Thailand's economic crisis, TT&T has pushed for TOT to buy 250 million of its shares and cancel its 43.1 percent royalty payment.

TT&T's major shareholder is Jasmine International which is widely known to back the Chat Pattana Party to which H.E. Suwat Liptapanlop, the Minister of Transport and Communications, belongs.

Samart Corporation

Traditionally, Samart's focus has been on satellite communications and satellite equipment manufacturing business. Samart has a 15-year concession from PTD for a satellite-based Data Network System. Samart dominates the domestic market for producing satellite receivers but with a shift in the market toward KU band receivers, has seen increased competition from domestic companies such as Antech. Along with WCS, Samart was approved to be one of TAC's service providers for PCN 1800 cellular and is doing so under a subsidiary called Digital Phone. Samart recently announced a strategic alliance with Telkom Malaysia which gave it a capital infusion at a time when many of Thailand's private operators are struggling.

Loxley Group

Loxley has a very diverse group of businesses and numerous joint ventures with foreign firms. The group's main business units are involved in telecommunications (through its partial ownership of TT&T), computers, broadcast and media, office automation, construction materials and chemicals.

The following table provides an overview of the major operators, public and private, in the Thai telecommunications sector.

OPERATORS OF MAJOR SERVICES IN THAI TELECOMMUNICATIONS SECTOR				
Company	**Primary Ownership**	**International**	**Fixed line**	**Cellular**
CAT	Royal Thai Government	✓		✓
TOT	Royal Thai Government		✓	✓
AIS	Shinawatra			✓
TAC	UCOM			✓
WCS	UCOM			✓
Digital Phone	Samart, Telkom Malaysia			✓
TT&T	Jasmine, Loxley, Ital-Thai, NTT		✓	(PHS)
TelecomAsia	CP Group, Bell Atlantic		✓	(PCT)

REGULATORY REGIME AND MARKET ACCESS

Thailand's telecommunications sector remains among the least liberalized in the region. State-owned firms continue to have a monopoly over both fixed lines and long distance. Private sector entrants have been aggressive in building up paging, cellular, and other systems to compete with the fixed line systems, which, under public sector management, have failed to keep pace with demand.

Currently, foreign ownership in the telecommunications sector is quite limited as the Telegraph & Telephone Act of 1934 gave the government monopoly rights over the telecom sector. Operators were created in 1954 (TOT) and 1976 (CAT) under separate acts and remain under state control. The current policy makers include the NESDB which writes the National Economic and Social Development Policy and Plan (macro level planning), the Ministry of Finance which governs state enterprises policy, the National Frequency Management Board which governs the Radio Spectrum Management Policy, and the MOTC which directly governs transport, telecommunications, and postal policy. The regulators include the Post and Telecommunications Department which controls radio communication and spectrum management as well as TOT and CAT for fixed and mobile services agreements.

The current Master-Plan for Telecommunications covers a telecommunications development policy which covers 12 inter-related objectives. The objectives of the Master-Plan are 1) liberalization, 2) increasing private participation, 3) formation of an independent regulator, 4) privatization of TOT and CAT, 5) separation of postal services from telecommunications services, 6) consumer protection, 7) R&D and industrial development, 8) personnel development, 9) support of IT development, 10) laws revisions, 11) pricing structure, and12) to make Thailand a regional hub.

However, in order to achieve these objectives, Thailand must first liberalize and then privatize in order to meet its WTO commitment to full liberalization by January of 2006. To liberalize this sector, Thailand must abolish it monopoly right by revising the Telegraph and Telephone Act of 1934. The next step will be to create the National Communications Commission (NCC), and independent regulator by issuing the NCC Act. Finally, the TOT and CAT Act must be abolished, the Postal Act revised, and a holding company set up under the Civil and Commercial Act in order to privatize TOT and CAT.

EXISTING NETWORKS

At the end of 1996 Thailand had approximately 4.5 million working fixed lines connected to its network which equates to a teledensity of 7 per 100 (10.5

including cellular). Projections are for a total demand at the end of the Tenth National Economic and Social Development Plan in 2011 of 25 million lines. If planned growth in new main lines meets demand, the national average teledensity will be 35 percent at that time.

The government has announced that it will privatize TOT by October 1998 and that competition will follow. How this will be carried out is not yet known but the broad details are contained in a new Master Plan, which will be submitted to the cabinet for approval later this year. The schedule for CAT privatization and liberalization of this market is also uncertain.

For national dialing, Thailand is divided into five provincial zones plus the Bangkok zone, which is in turn divided into four areas.

The existing four-level network hierarchy is of traditional configuration consisting of Tertiary Centers (TC), Secondary Centers (SC), Primary Centers (PC), and local exchanges. There are three office levels in the Bangkok hierarchy and four office levels in the provinces. Although the domestic network consists of four levels up to the TC, all have access to the International Switching Center owned and operated by the Communications Authority of Thailand (CAT), which can be considered as a fifth level.

There are five tertiary areas divided on a roughly geographic basis in Bangkok, the Central Area, Northern Area, Southern Area, and North-Eastern Area. The Tertiary Areas contain seven Tertiary Switching Centers (TC) all of which are interconnected. Of the seven TCs, four are located in Bangkok, and three in the provinces. Other than Bangkok, the Tertiary Centers are divided into 20 Secondary Centers (SC) which are further sub-divided into 75 Primary Centers (PC).

TOT currently has a mixture of Crossbar and SPC switching machines in the network. The SPC machines are from a variety of manufacturers; NEC - NEAX; Ericsson - AXE 10; Siemens - EWSD; and Lucent Technologies No. 5ESS. An ambitious Crossbar replacement program is being undertaken in 1997 with 34 switches being replaced in the Bangkok Metropolitan area and 84 in the Provinces.

The new digital Stored Program Control (SPC) switches will be installed with ITU Signaling System Seven (SS7) capabilities.

Existing digital offices at the Tertiary, Tandem and Secondary level, now equipped with R2 modified MFS signaling, will be also be upgraded to Signaling System No. 7. Upon completion of this program the TOT network will have Stored Program Control (SPC) switching and modern signaling capability throughout its entire network. This will offer the provision of advanced services and permit the introduction of the new dialing codes necessary for system expansion.

TRENDS AND OPPORTUNITIES

Since 1986, the government has been using an increasing number of concessions to allow for more private sector participation and to address the chronic shortage of telecommunications lines and services. The primary means for allowing private sector participation is through a "Build- Transfer- Operate" arrangements competitively let to private sector companies and consortiums.

In the telecommunications sector, Thailand's BTO follows the standard practice whereby telecommunications concession typically requires the concessionaire to build the telecom system and find appropriate financing. The assets are then transferred to the government (thus following Thai legal requirements that the telecom system be owned by the state) and then the concessionaire operates the system over a fixed period of time. In Thailand, a BTO may include other requirements such as:

1) the concessionaire must be 51 percent locally owned ,
2) the concessionaire must provide a revenue sharing agreement with the state and
3) 50 percent of switching equipment and cable must be locally sourced.

Should the state decide to change the conditions of the agreement, the concession must be revised under consent by both parties. If, for example, the state were to let a new concession that would directly affect the operations of previous

concessionaires, then the previous concessionaires might be allowed to drop part of the revenue sharing agreement with the state.

The state evaluates BTO proposals based on their technical, managerial, and financial components. The fourth and, some would argue, most important component in the evaluation process is political considerations. The complex network of relationships between the bidders and the evaluators along with less than transparent practices means that for U.S. companies looking to get involved in the BTO process, there is a premium on finding the right local partner(s). Many of these local partners have benefited immensely from their concessions with corporate worth growing into the billions of dollars.

MAJOR TOT CONCESSIONS

The most notable of the TOT concessions include 4.1 million fixed lines with 2.6 million going to TelecomAsia (TA, a joint venture of NYNEX and the CP Group) and 1.5 million lines going to Thai Telephone and Telegraph (TT&T). TOT itself is installing at least 800,000 lines. TOT also awarded a mobile phone concession to Advanced Information System (Shinawatra) for the NMT 900 and GSM 900 networks. TOT operates a small NMT470 network. Paging concessions have been given to Loxley and UCOM and Data Communications concessions have gone to AIS, Jasmine and TA, Com-link, and Acumen.

MAJOR CAT CONCESSIONS

The telecommunications operations of CAT are highly profitable and the revenue is used to subsidize national postal services. CAT has been able to provide a sufficient number of international circuits to keep up with demand but has also awarded mobile phone, paging, trunk radio, and VSAT concessions.

In 1986, Pacific Telesis became one of the first concessionaires through a paging service called Paclink. Later a mobile phone concession went to UCOM (TAC) which now operates the AMPS 800B and the PCN 1800 networks. To speed up the expansion of the mobile phone network, CAT approved TAC's request to share its mobile phone concession in the PCN 1800 network with the International

Engineering Public Company Limited (a subsidiary of the M Group) and Samart Corporation.

PRIVATIZATION OF TOT AND CAT

The use of BTO concessions to expand the telecommunications network will likely diminish as economic austerity and the government's need to raise foreign currency force TOT and CAT toward modes of privatization. Although effective in the past, BTO schemes are less likely to attract capital as the regulatory environment changes and as current players entrench. Both TOT and CAT are expected to privatize in 1998. The Transport and Communications Ministry has expressed interest in starting the privatization process of TOT first as its assets are worth as much as 200 billion Baht (roughly US$6-7 billion, at current exchange rates), about four times larger than those of the CAT. CAT has stated that it will begin seeking a strategic partner for the telecom business and that the privatization scheme should be completed before the liberalization of the country's telecom industry, which is scheduled for 1999.

The TOT board announced in August 1997 that the privatization process of TOT will be led by Pisit Lee-atham, Executive Vice President of Bangkok Plc and adviser to the board. However, uncertainties as to the ability of the government to spend money generated from the sale of TOT under IMF austerity measures has cast doubt on whether TOT will indeed be privatized prior to the government's passage of a revised Telecommunications Master-Plan.

COMPETITIVE ENVIRONMENT

With differing numbers of concessions in the varying telecommunications service sectors, the degree of competition varies by sector.

PTD is not an operator but, in its role as regulator, has awarded a paging concession to Samart and awarded VSAT data communications operations concessions to Compunet and Samart Telcoms. Satellite operation concessions were awarded to Shinawatra by MOTC. Paging services in Thailand are highly competitive with small profit margins and a total of five license holders. The low

profitability in this sector and trouble in finding financing has meant that concession holders have been awarded but not used licenses in this sector.

In the fixed line business, the two main concessionaires, TelecomAsia and TT&T, were well financed during build out and met their systems' build out schedules. They were given monopolistic protection until their systems were connected to the users. However, line uptake has been lower than expected as many lines were laid in areas of low population density now (empty office buildings) just to meet the build out requirements. This has resulted in lower than expected financial performance for these companies.

More than 90 percent of Thailand's mobile phones are operated by the two private concessionaires, UCOM and AIS. This has created a duopoly for the two concessionaires whose high margin operations generate more than half of their parent company profits. End users in Thailand pay some of the highest rates in the world for their handsets, which can run upward from a thousand dollars. With the recent addition of WCS and Digital Phone to the market, the total number of licensed operators is up to four. UCOM's recent announcement that it will acquire the telecom holdings of WCS from its parent company has left uncertainty as to what will happen to the new operator.

In the equipment market, there is already a strong presence by foreign equipment suppliers in Thailand's telecommunications market. Siemens of Germany, Fujitsu of Japan, Alcatel of France, Ericsson of Sweden, and Japan's Mitsui all have strongholds in the Thai market. Many of them have opened manufacturing facilities to fulfill domestic sourcing requirements.

CONTACTS

Dr. Thongchai Yongchareon
Senior Executive Vice President
Telephone organization of Thailand
98/2 Chaeng Wattana Road
Bangkok 10210
Tel: (662) 574-8998

Mr. Pichai Wongsri
Vice President
Office of Corporate Policy and Planning
Telephone Organization of Thailand
388 IBM Building
Phahonyothin Road
Bangkok 10400
Tel: (662) 273-0980
Fax: (662) 574-9547, 574-9533

Mr. Sampan Ghooprasert
Director, communications Systems, EGAT
5 Charan Sanit Wong Road
Bang Kruai
Nonthaburi 11000
Tel: (662) 436-2500

Mr. Sethaporn Cusripituck
Deputy Director General
Post and Telegraph Department
101 Chaeng Wattana Road
Donmuang 10002

Tel: (662) 984-8012

TELECOMMUNICATION EQUIPMENT AND SERVICE PROVIDERS

Mr. Wongpat Maninoi
Wireless Communications Services Co., Ltd.
7th Floor, M Building
1043 Phaholyothin Road
Bangkok 10400, Thailand
Phone: (662) 617-0940
Fax: (662) 271-4845

Mr. Charoenrath Vilailuck
Chairman of the Executive Board
Digital Phone Co., Ltd.
C/o Samart Corporation Public Co., Ltd.
37/1 Moo 2, Phaholyothin Road
Klong Luang, Klong 1
Pathumthani 12120, Thailand
Phone: (662) 516-1188
Fax: (662) 516-1594

Mr. Thavatchai Vilailuck
Executive Vice-Chairman
Samart Corporation Public Co., Ltd.
24 Fl., Rasa Tower
555 Phaholyothin Rd.
Chatuchak, Bangkok 10900 Thailand
Tel: 662-937-0131/8
Fax: 662-937-0439

Mr. Somchai Thinawong
Managing Director
Shinawatra Computer and Communications Public Co., Ltd.
414 Phaholyothin Rd.
Phayathai, Bangkok 10400 Thailand
Tel: 662-299-5000
Fax: 662-299-5224

Dr. Amarit Bhumiratana
Executive Director
Lucent Technologies
20 Fl., Silom Complex Bldg.
191 Silom Rd., Bangrak
Bangkok 10500 Thailand
Tel: 662-266-2669
Fax: 662-2638/9

Mr. Somboon Patcharasopak
President
Jasmine International Public Co., Ltd.
333 Laksi Plaza, 6 Fl., Tower 2
Chaengwattana Rd.
Donmuang, Bangkok 10210 Thailand
Tel: 662-576-0200-9
Fax: 662-576-0198/9

Mr. Arthur Troy
CEO
TelecomAsia Corporation Public Co., Ltd.
1 Fortune House Bldg.
Ratchadapisek Rd., Huay Kwang
Bangkok 10310 Thailand
Tel: 662-643-111
Fax: 662-245-2007

Mr. Adisai Bodharimik
Managing Director
Thai Telephone and Telecommunications Public Co., Ltd.
Laksi Plaza, 5Fl., Tower 2
Chaengwattana Rd.
Donmuang, Bangkok 10210 Thailand
Tel: 662-576-0526
Fax: 662-576-0694

Mr. Boonchai Bencharongkul
President
United Communications Industry
Public Co., Ltd. (UCOM)
499 Benchachinda Bldg.
Vipavadee-Rangsit Rd.
Chatuchak, Bangkok 10900 Thailand
Tel: 662-953-1111
Fax: 662-953-1554

Mr. Peter Van Haren
Project Manager
ComLink
1193 Boonpong Tower 21 Fl.
Phaholyotin Rd., Samsen Nai
Phyathai, Bangkok 10400
Tel: 662-271-3001
Fax: 662-617-2089

Mr. Sompong Nakornsri
Bangkok Cable Co., Ltd.
187/1 Rajdamri Rd., Lumpini,
Pathumwan, Bangkok 10300 Thailand
Tel: 662-254-4550/9
Fax: 662-253-6028

Mr. Salvador Sanlley
President
Phelps Dodge Thailand Ltd.
6 Fl., Panunee Bldg.
518/3 Ploenchit Rd.
Bangkok 10330 Thailand
Mailing Address: PO Box 11-58,
Bangkok 10500 Thailand
Tel: 662-251-2572
Fax: 662-253-2451

Mr. Tichan Wongsiridej
Managing Director
Charoong Thai Wire & Cable Co. Ltd.
Rm. 612, 6 Fl., Bangkok Insurance Bldg.
302 Silom Rd.
Bangrak, Bangkok 10500 Thailand
Tel: 662-234-6714
Fax: 662-236-7711

H.E. Mr. Suwat Liptapanlop
Minister of Transport and Communications
Ministry of Transport and Communications
Ratchadamnoen Nok Avenue
BANGKOK 10100
Tel: (662) 2833000
Fax: (662) 2801714

Mr. Kitti Yupho
Director General
Mr. Sethaporn Cusripituck
Deputy Director General
The Director of International Services Division
Post and Telegraph Department
101, Chaengwattbana Road,
Tung Song Hong
Don Muang, Bangkok 10210
Tel: (662) 984 8001-10
Fax: (662) 984 8030

Mr. Aswin Saovaros
President
The Communications Authority of Thailand (CAT)
99 Chaeng Wattana Road
Don Muang, Bangkok 10002
Tel: (662) 5735410
Fax: (662) 5735413 / 5733561

Mr. Satien Pitaganun
President
The Telephone Organization of
Thailand (TOT)
89 Moo-3, Chaeng Wattana Road
Don Muang, Bangkok 10210
Tel: (662) 505 2125
Fax: (662) 574 9535

Mr. Arak Chonlatanon
Vice President
Advanced Info Service Public Co.,
Ltd.
414 Phaholyothin Road
Bangkok 10400, Thailand
Phone: (662) 299-5444
Fax: (662) 280-6316, 280-6317

Mr. Jaturon Himathongkam
Senior Manager for Marketing
Total Access Communication Co.,
487/1 Sri Ayutthaya Road
Bangkok 10400, Thailand
Phone: (662) 248-5959, 248-7240-7
Fax: (662) 248-7272

Mr. Somsak Chinvanthananond
Senior Commercial Specialist
Commercial Service
American Embassy
Third Floor, Diethelm Tower A
93/1 Wireless Road
Bangkok 10330, Thailand
Phone: (662) 255-4365-7
Fax: (662) 255-2915

THAILAND

ASYNCHRONOUS TRANSFER MODE (ATM)

PROJECT DESCRIPTION

This ATM project will enhance TOT's research and development (R&D) skills to develop, test, and document ATM applications for TOT customers. The Thai information industry is growing at a very rapid pace using state-of-the-art information technology (IT). In order to facilitate the introduction of new IT service offerings, appropriate technology is required to handle the transmission of multimedia digital signals. The introduction of the ATM switching platform is the right technology for this project at the right time.

Project Summary

Project Cost: $5.5 million

Project Sponsor:
Telecommunications Organization of Thailand (TOT)

Required Technology:
ATM switching equipment
Nodal switches
Engineering
Installation

An ATM nodal network interconnected with fiber optic high capacity SDH digital transmission links will require research to develop and design efficient network configurations to maximize information through-put. It is proposed that a start-up configuration be conducted to perform research analysis for new applications to ensure economic deployment of the technology, efficient network design, and maximum innovative utilization of the ATM technology. The group performing this work will develop a series of tests, prepare procedures for conducting the tests, and prepare test results forms and documentation, modify ATM standards for the TOT deployment if necessary. A strong marketing effort will support the introduction of ATM services to the public and will price these services to be profitable and sustainable.

The transmission facilities for ATM should be SDH. Once the SDH transmission facility network is available, end-to-end B-ISDN applications can be tested. The project and the expansion of digital services will require the deployment of special applications for ATM in the following technology areas:

- Paperless multimedia information storage and applications for electronic government administration and commercial entities.
- Direct application of Internet Service (ISP) providers by connecting ISPs.

- ATM switching platform instead of routers for routing messages, files, and browsing activities at ISP's Point-of- Presence (POP).
- Direct transiting of Basic Rate ISDN services over the trial link. Trial service of Primary Rate ISDN (2.048 Mb/s) and larger B-ISDN services.
- Telemedicine information center database for electromagnetic imaging, real time centralized health monitoring for remote sensing of vital signs, live video surgery for remote support and educational purposes, and a multitude of other such medical innovations.
- Distance learning using clusters of learning centers to produce world class graduates using interactive video syllabuses.
- Remote manufacturing coordination and engineering support from centralized production management centers.
- Electronic publishing of and multi-lingual information to enhance tourism.
- Financial and investment information and data center applications.
- Multi-purpose smart card implementation for use with superior security features.
- Video on demand - Dial-up video services. Downloading feature films, games, etc.
- Multimedia interactive video telephone service.
- Capturing non-ATM native protocol services by using Frame Relay network transiting the ATM network. Protocols such as ISO HDLS, LUNIX, UNIX, SNA, X.25, DOS, TCP/IP, LAP-D, and FDDI.

A most important part of the tests will be the development of applications to deliver ATM services to the customer premises. This will require such applications as fiber-to-the-curb, combinations of fiber and coaxial cable applications for local distribution and wireless distribution systems.

A tender document for acquisition of the ATM network has been prepared but not issued. This new network will require six Nodal Switches located at TOT's New Sectional Centers and 44 Edge Switches all connected to the Nodal Switches with one STM-1 SDH facility.

PROJECT FINANCING

Costs for this project will vary based on the proposing vendor's technology. The connecting SDH transmission facilities are not included in this cost estimate. Using broad gauge ATM costs, the total project cost are estimated as follows:

ESTIMATED COSTS ($ US MILLION)			
Quantity	**Description**	**Unit Cost**	**Extension**
2	Trial Nodal Switch	$100,000	$200,000
2	Trial Edge Switch	$25,000	$50,000
1 Lot	Trial Customer Premises Equipment	$50,000	$50,000
6	Nodal Switch	$250,000	$1,500,000
44	Edge Switch	$75,000	$3,300,000
1	Engineering	$250,000	$250,000
1	Installation	$150,000	$150,000
Total			$5,500,000

It may be likely that TOT can raise a portion of the funds for this project from internal financing. The prudent deployment of ATM by testing new services first and preparing business cases for each new service will enhance TOT's revenues. Capturing existing private networks will be possible by offering less costly alternatives. The aspect of prudent deployment will enhance the business case for making investment capital easier to secure.

Many European firms have offered finance packages with their bids and usually win with this approach. U.S. firms should do the same.

STATUS OF PROJECT DEVELOPMENT

An RFP for this work should be issued in early 1998, vendor selected by mid-1998, one year implementation starting by early 1998 with final completion and acceptance by mid-1999.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

Lucent, Nortel, Cascade, Cisco, Digital Switch Corporation (DSC) and many other smaller U.S. IT firms are the dominant players in the ATM marketplace. Lucent has a major presence and has an assembly plant providing outside plant facilities and equipment.

FOREIGN COMPETITION

Asian, European, and Canadian vendors are currently large players compared to the U.S. presence in the Thai telecommunications marketplace. Canada's Newbridge Corporation is a large exporter of ATM products.

Should a U.S. vendor win this competitive bid, the entire project would be considered export. The probability that a U.S. company secure this project is better than 75 percent based on our lead deployment of ATM networks.

DECISION MAKING PROCESS

The next step is to issue and modify the existing RFP to include a test bed project to prove the viability of the various ATM services in the Thai market.

TOT intends to build a nationwide SDH fiber optics network and an RFP was issued for this project. However, it has been held in abeyance due to the excessive costs that the bidders submitted to TOT and an economic slowdown.

The Thai market has always been open to U.S. vendors and there seems to be no change in this attitude. U.S. companies have a strong presence in Thailand and will continue to do so.

CONTACTS

Dr . Thonchai Yoncharoen
Senior Executive Vice President
Telephone organization of Thailand
98/2 Chaeng Wattana Road
Bangkok 10210
Tel: (662) 574-8998

Mr. Paiboon Tangroonsanti
Manager, Division of Planning & Information Processing, TOT
ATM/B-ISDN (Cable Overlay Project Director)
Tel: 662-(02)-574-8825

Mr. Kittipong Tameyapradit
Telecommunications Corporate Planning
Corporate Planning Office
Tel: 662-273-0822

THAILAND

COPPER PAIR TREATMENT PROTECTION AND GROUNDING

PROJECT DESCRIPTION

Project Summary

Project Cost: $620 million

Project Sponsor:
Telecommunications Organization of Thailand (TOT)

Required Technology:
Surge Protectors
Neutralizing Transformers
Bonding & Grounding devices (potential local manufacturing JV's)

The underground cable distribution plant in Bangkok and surrounding areas is generally below water. While the PVC insulation and air pressurized cables keep the individual pairs dry, constant submersion of non - undersea designed cables often set up imbalance in electromagnetic fields between the sheath and external paths which create both ground and current induction problems. This often creates a dry-cell action to be set in place by exchanging low voltage current from the pair bundle and sheath's electromagnetic field to ground and other conductors, such as underground electric current induction caused by poorly grounded electric multi-grounded neutral and Delta electric distribution systems. (Bangkok has both.)

This same condition, provides an unprotected path for the introduction of lightning and AC electric surges into the telephone electronic network via the cable plant.

Two programs are being introduced by TOT beginning in 1998 to address, 1) Grounding & Bonding, and 2) Transient Voltage Suppression (Protection).

1. **Induction and electromagnetic field imbalance (Grounding & Bonding)**

The resulting induction and current imbalance is making it difficult to apply compression devices, Digital Loop carriers and even narrow band ISDN services, all of which require stable 64Kb/s transmission speed.

Before any of the newer copper loop technologies can be implemented, a major ground/bond and protection study and a correction program must be undertaken throughout Bangkok and the surrounding delta area.

It is expected that this program will affect over 2 million cable pairs by 2001.

The project will require specialized technical consulting and testing programs, active copper bonding and neutralizing transformer equipment provision and the labor to implement the program

2. Protection

The introduction of electronics into the loop will provide extensive opportunity for surge damage to enter the network. TOT has implemented a surge protection program beginning in 1998 for the protection of its switches and stand by generators located at the CO. It is further recommended by the technical fundamental plan that a Surge Protection (lightning and AC) study and program be introduced immediately that provides for the protection of field located electronics, such as DLC, HDSL, FON's etc., in addition to the switching equipment.

By definition, the term 'Transient Voltage Surge Suppression (TVSS) describes the equipment necessary for the protection of all AC electrical circuits from the effects of lightning induced voltages, utility substation switching transients, and internally generated switching transients resulting from inductive and/or capacitance load switching.

This specification now being redesigned by TOT and will be expanded to include remote located electronics beginning in 1998.

(This programs represents approximately $.50 for each new customer loop added to the telephone network.)

PROJECT FINANCING

The following table shows the estimated costs assuming full implementation through 2001, (beginning in 1998). In $ US million.

ESTIMATED COSTS ($ US MILLION)				
Year	**Consulting**	**Material**	**Labor**	**Total**
1998	$2.4	$3.0	$6.6	$12 m
1999	$11.6	$13.0	$33.4	$58 m
2000	$1.0	$45.0	$104.0	$150 m
2001	$1.0	$99.0	$300.0	$400 m

The project is not currently financed by a specific agency. Accounting will be divided between operational (expense) and capital additions and will be funded by annual budget items within the Telephone Organization of Thailand. (TOT).

Opportunities for US supplier financing for product and consulting for the years 1998 and 1999 are attractive.

STATUS OF PROJECT DEVELOPMENT

The completion of the 15 year technical fundamental plan in September of 1997 plans the introduction of a series of local loop new technologies. Most of them require a stable 64 Kb/s circuit before the technology can be applied to existing copper cables. The plan provides for a five year introduction into the existing cable plant of the following technologies, all requiring stable copper:

- High Data bit stream Loop Carrier (HDSL) through 2001 and ADSL beyond.
- Digital Loop Carrier (DLC) for B-ISDN spectrum.
- Wireless in The Loop (WITL) using DLC carriers.
- Introduction of miscellaneous broad band services over copper pairs.

To implement the introduction of the 900,000 plus broadband and carrier grade services into the network by the year 2001 as planned, over 1.5 million existing

pairs must be treated by bonding, grounding and protection will be required.

U.S. Competitiveness and Export Potential

The US manufacturers have an edge over other countries because of the practices of the US telecommunications operating companies. US operating companies make it a common practice to use a common bond and AC protection system and are well educated in the coordination of such programs.

Export potential exists for the following types of equipment and service:

- **Equipment**

  Surge Protectors
  Neutralizing Transformers
  Bonding & Grounding devices (potential local manufacturing JV's)

- **Services**

  Engineering, Testing and Design services associated with induced current voltages (DC) and AC surge protection.

- **Construction**

  Cable splicer sheath-bonding crews (local crews - US consultant trained.)
  TVSS installation crews - US

Decision Making Process

It is critical that interested firms begin to contact local TOT, Telecom Asia and TT&T management and engineering personnel to establish follow up projects beginning in 1998. It is further recommended that contacts within the EGAT (Electric) organization be established by the potential suppliers of equipment and services.

In 1996, the USTDA funded a review and update of the TOT Master Plan at which time the project was identified. In 1997, USTDA funded a further grant to the TOT

for the preparation of a technical fundamental plan which further expanded the need and description of this project. A total of over $700,000 has been provided in support of the TOT plans for expansion of existing services since 1995.

CONTACTS

Dr. Thongchai Yongchareon
Executive Vice President, TOT
TOT - Chairman of Corporate Planning Office fundamental plan steering committee.
Tel: 662-574-9494

Mr. Paiboon Tangroonsanti
Manager, Division of Planning & Information Processing, TOT
ATM/B-ISDN (Cable Overlay Project Director)
Tel: 662-(02)-574-8825

Mr. Sa-nguan Poolsupaya
Senior Director, TOT
Sector of Outside Plant Engineering
Tel: 662-(02)-574-9183

Mr. Kittipong Tameyapradit
Telecommunications Corporate Planning
Corporate Planning Office
Tel: 662-273-0822

Sakchai Hantanasiri
Division of Planning and Information Processing
Department of ISDN Services Development
Tel: 662 (02)-574-8689

THAILAND

DIGITAL LOOP CARRIER (DLC) APPLICATIONS

PROJECT DESCRIPTION

There are two models of a DLC application for TOT exchanges scheduled for 1998. These models will be closely coordinated with the re-conditioning of existing copper plant in the city of Bangkok's Ploenchit exchange and with the extension of Wireless In The Loop for rural exchanges.

This program provides for a percentage of new Urban loop additions over the next five years to be provided in selected cabinet areas using 120 channel Digital Loop Carrier (DLC) in 1998 and New Generation (240 channel) DLC (NGDLC) beginning in 1999.

Project Summary

Project Cost: US$278.4 million

Project Sponsor:
Telecommunications Organization of Thailand (TOT)

Required Technology:
Powering equipment
Office terminating equipment
Cabinet Terminal equipment
Repeaters

In several rural cabinet areas, the PSTN will be extended beyond the copper cable by a combination of DLC/Fiber and copper cable/WITL methods at the edge of villages.

In addition to the expanded circuit provision provided by DLC, the increasing demand for an assortment of special broadband services has made it necessary to condition the local copper cable loop to support these services.

The first phase of this project will require the services of a capable consulting expert in the application of Digital Loop Carriers and compression devices. The initial introduction of DLC using E-1 protocol will be applied to model applications as described above beginning in 1998. As part of phase 2 of the project the consultant will develop tender documents for the provision of DLC technologies for the models.

Phase 3, beginning in late 1998 will require the provision and installation of approximately 15,000 channels of DLC . Installation will begin in the last quarter of 1998.

STATUS OF PROJECT DEVELOPMENT

The urgency of this trial period, (1998-2001) is described best by the statistical growth presented by the NESDB eighth plan in which subscriber growth will attempt to be added exceeding 100 percent (25 percent/year), without adding new switch facilities. This is due to the over-provision of switch facilities outside of Bangkok, and the under-building of copper distribution cables. (Quote from the Minister of Communications on March 17th, 1997). The initial trials will begin in the 2nd quarter of 1998 and continue through 2001.

PROJECT FINANCING

The project funding is a part of the 1998 construction budgets for all three providers (TOT, TA and TT&T) as 'cable extension'. It will be up to the consultant and supplier to allocate the costs away from copper and into DLC in all but field trials.

ESTIMATED COST (IN US $ MILLIONS)				
Year	**Consulting**	**Material**	**Labor**	**Total**
1998	$0.6	$ 6.0	$ 1.0	$ 7.6
1999	$0*	$ 22.1	$ 2.5	$ 24.6
2000	$0*	$ 64.0	$ 6.2	$ 70.2
2001	$0*	$160.0	$16.0	$176.0

(Included in engineering costs as part of installation labor from manufacturer).

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

US suppliers and consultants are the most experienced group in the world in the use of this technology, both for circuit provision and broadband uses. It is estimated that 85 percent of new circuits added to the network in the USA today

utilizes some form of DLC. This is for all three communications services, voice video, and data.

Interested suppliers should team with a strong local firm to leverage both language and presence strengths (i.e. understanding the changing organization structure in Thailand.)

Export potential for suppliers and consulting firms specializing in the DLC and broadband technology fields.

EQUIPMENT

- Powering equipment
- Office DLC terminating equipment
- Cabinet Terminal equipment
- Repeaters
- Subscriber Interface Units (SIU)

CONSULTING

- Engineering
- CAD/CAM
- Project Management

DECISION MAKING PROCESS

US venders providing E-1 DLC and High bit Digital Loop Carriers (HDLC) that conform to Thailand standards (E-1) should be positioning themselves with the policy makers within TOT and the Communications Ministry to offer their products and services.

In 1996, the USTDA funded a review and update of the TOT Master Plan at which time the project was identified. In 1997, USTDA funded a further grant to the TOT for the preparation of a Fundamental Technical Plan, which will be completed by the U.S. consultants in September 1997.

CONTACTS

Dr. Thongchai Yongchareon
Executive Vice President, TOT
TOT - Chairman of Corporate Planning Office fundamental plan steering Committee.
Tel: 662-574-9494

Mr. Paiboon Tangroonsanti
Manager, Division of Planning & Information Processing, TOT
ATM/B-ISDN (Cable Overlay Project Director)
Tel: 662-(02)-574-8825

Mr. Sa-nguan Poolsupaya
Senior Director, TOT
Sector of Outside Plant Engineering
Tel: 662-(02)-574-9183

Mr. Kittipong Tameyapradit
Telecommunications Corporate Planning
Corporate Planning Office
Tel: 662-273-0822

Mr. Jim Daily
Telecom Asia
Sr. Vice President
Network Engineering & Management
662-643-0544

THAILAND

ELECTRIC GENERATION AUTHORITY OF THAILAND (EGAT)

PROJECT DESCRIPTION

Project Summary

Project Cost: $60 million

Project Sponsor: EGAT to announce sponsor

Required Technology:
Fiber optic transmission systems
Fiber Optic Cable

EGAT is the public authority responsible for generation and transmission of electric power in Thailand. It owns its transmission line network. EGAT presently operates a nation-wide fixed network of ultra high frequency (UHF) microwave links, and an extensive mobile radio system. EGAT must replace major parts of the fixed radio systems due to capacity limitation, regulatory changes, and equipment lifetime. The UHF systems using the 900 Megahertz (MHz) frequency band are experiencing interference from other radio equipment operating in adjacent frequency bands, mainly cellular telephone networks. Within the next few years, EGAT intends to replace these systems.

EGAT operates more than 50 microwave links, with an approximate total length of 1,700 Kilometer. These links (of different manufactures) are equipped with frequency division modulation (FDM) multiplexes of varying capacity used for voice communications and supervisory control and data acquisition (SCADA) requirements. Approximately 90 percent of the microwave links in operation are digital pulse code modulation (PCM) multiplexes at operating at 2 Mbit/s. All of the point-to-point links operate in the 2 GHz frequency band. EGAT also has three digital point-to-multi point systems in the 1.5 GHz frequency band. In the Bangkok metropolitan area, two microwave links using 7 GHz frequency are in use. The frequency authorities are not expected to provide EGAT with any more frequency permits in the 7 GHz frequency band.

The project includes installation of fiber optic network on existing high voltage transmission towers. The proposed project includes replacement of the existing 50 microwave links with fiber optic transmission systems. The estimated length for this network is 1,700 kilometers. The proposed fiber optic cables would have 12 cores, which EGAT and the telecom operator would share.

STATUS OF PROJECT DEVELOPMENT

The RFP for this work should be issued in early 1998, vendor selected by mid 1998, one year implementation to start by mid 1998 and be ongoing until removal of all microwave routes, final completion, and acceptance by 2008.

PROJECT FINANCING

The estimated project cost is $60 million. EGAT is planning to fund this project as a BOT agreement. If EGATS offers low rates for the lease of its new fiber optics facilities, telecommunications operators would use this transmission line network to supplement its own fiber optic networks.

EGAT seeks an eligible operator to invest in the project and to share a number of fiber cores plus a portion from revenues. EGAT plans to replace the existing regular power ground wire with Optical Fiber with Groundwire (OPGW). EGAT already has specifications for the cables and all associated equipment, only the system engineering has to be developed by the partner. EGAT must consider the legal, technical, and cash flow implications of this project.

A business plan must be prepared to seek funds for this microwave replacement project with the OPGW system. Financing may be somewhat difficult to obtain because the business plan will reveal that there may be an over abundance of PDH and SDH fiber routes in Thailand due the competition between existing operators and TOT's extensive SDH fundamental plan.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

The company that will be awarded this work will decide and select equipment according to its own criteria. The estimated cost for the fiber optic is $24 million. It is estimated that U.S. export potential for the cable equipment will be $9.6 million. This estimate is based on a previous procurement record in Thailand. The proposed assistance is not expected to promote U.S. exports beyond this figure.

DECISION MAKING PROCESS

According to the Thai law EGAT cannot form a joint venture in the telecom business; however, it can lease its facilities. Therefore, EGAT will call for an open

tender to the eligible operators and select an operator who offers the most beneficial package. EGAT will specify the routes they require for power transmission and the operators may want to add other routes to serve their communication clients. EGAT is planning to fund this project as a BOT agreement.

International plans for future use of the radio frequency spectrum, the frequency bands around 1.5 and 2 GHz frequency will soon be allocated for other communication services. In Thailand, the international plans will guide the change of this frequency usage on a long-term basis. This means that the EGATS owned microwave links in these bands can remain in operation only for a limited amount of time. Frequency re-use plans will dominate the future as more cellular, low orbital satellite, and local loop wireless systems emerge.

THAI ACCEPTANCE

The Thai market has always been open to U.S. vendors and there seems to be no change in their attitude towards us. U.S. companies have a strong presence in Thailand and will continue to do so.

CONTACTS

Kuhn Sampan Ghooprasert,
Director Communications Systems
EGAT
Tel. 662-436-2502
Fax. 662-436-2548

THAILAND

CABLE OVERLAY

PROJECT DESCRIPTION

Thailand's local loop cable network is still operating below the overall 64 Kb/s operating standards, especially in the cities. This is particularly noticed in the Bangkok Metro Areas where narrow-band ISDN cannot be provided due to bandwidth restrictions caused by poor plant performance.

To avoid this problem on an interim basis TOT has approved an 'OSP Overlay Project' to bypass this condition by selectively improving local copper loops for 72 Narrow Band ISDN locations in 1997 and to provide HFC installations for 92 B-ISDN locations beginning in 1998.

Project Summary

Project Cost: $1 million (projected for 1998 only)

Project Sponsor: Telecommunications Organization of Thailand (TOT)

Required Technology: Fiber Cable, Coaxial Cable Twin copper & coaxial drop wire Electronics, Video Servers (via ATM), Subscriber Interface Units, Powering equipment

In addition to this program, TOT and TT&T are studying field trial locations, especially in the Eastern Seaboard Development Program at an industrial complex near Rayong. (Ban Khai exchange).

Since the US is leading in this technology, (multimedia/broadband - HFC), the opportunity to establish standards and field trial based on the technical fundamental plan will be very practical and desired by TOT in 1998. Planners and US suppliers can participate in the provision of automated (CAD/CAM) design, supply and installation of these 'Overlay Projects' to establish US standards in the early installation of multimedia technologies.

This design method presents only one of the technologies that will address this emerging need. No single solution is appearing for all possible applications, however HFC technologies are, in the near future, the ones that have been selected. While ADSL and HDSL will also be used, they are more specific to existing copper plant, rather than new applications.

This cable method will be used in approximately 8 percent of new cable loop extensions from 1998- 2001 and an increasing percentage beyond 2001.

The 1998 project will serve approximately 92 sites with an average of 500 initial customers at each site, or a total of 45-50,000 users.

PROJECT FINANCING

The 1998 TOT 'Cable Overlay Project' is a part of the TOT capital budget. Opportunity for supplier participation in the development of field trial installations, particularly at Rojana Industrial Park in Ban Khai, should be attractive to serious US suppliers. The Ban Khai Rojana Industrial Park is estimated to cost approximately $1.2 million in 1998, consisting of 60 percent cable and electronics, 30 percent labor and overhead, and 10 percent engineering. The total budget for 1998 for all 92 sites could reach $100 million.

The TOT 'Cable Overlay Project' provides seed financing. Shared financing should be negotiated between the ESDP, TOT, the supplier and the Rojana Industrial Park Public Co. Ltd.

STATUS OF PROJECT DEVELOPMENT

The Eastern Seaboard Development Project (ESDP) is sponsoring the development of a large industrial complex just North of the city of Rayong at the village of Ban Khai. It is scheduled for conversion to full service as part of Phase 1 (550 sites) in 1998. The owner and developer, Rojana Industrial Park Public Co. Ltd. has set aside land and right of way for a cable and switching program for 1998. The technical fundamental plan provides for a field trial using HFC and Digital Loop Carrier (DLC).

This field trial should be coordinated in late 1997 and prior to the first quarter of 1998.

Further, direct coordination with the office of ISDN services development to coordinate the design and installation of the other 91 locations scheduled for 1998 should be initiated prior to the end of 1997.

U.S. Competitiveness and Export Potential

US broadband suppliers are leaders in two-way video and data communications using fiber and coaxial carriers and electronics. Also, the US suppliers have developed the only fully computerized mapping and design systems used to support broadband cable networks. An aggressive marketing and sales approach, possibly in partnership with a Thai local company should be undertaken. It should be noticed that the UTV (a Thai CATV company) has already introduced this concept in a field trial of their own to compete with the telephone providers.

Equipment

Fiber Cable
Coaxial Cable
Twin copper & coaxial drop wire
Electronics
Video Servers (via ATM)
Subscriber Interface Units
Powering equipment

Services

Engineering & CAD/CAM software & hardware
Project Management

Construction

RF installation
Training
cable placement (local)
Records, & Costs control (CAD/CAM)

DECISION MAKING PROCESS

A joint venture with a Thai partner should be undertaken by a US supplier to develop the design and installation expertise required to support the Thai telecommunications industry. Perhaps with an existing cable manufacturer.

A close working relationship with the TOT ISDN services department should be established to assure participation in the field trial and tender process for 1998.

CONTACTS

Dr. Thongchai Yongchareon
Executive Vice President, TOT
TOT - Chairman of Corporate Planning Office fundamental plan steering committee.
Tel: 662-574-9494

Mr. Paiboon Tangroonsanti
Manager, Division of Planning & Information Processing, TOT
ATM/B-ISDN (Cable Overlay Project Director)
Tel: 662-(02)-574-8825

Mr. Sa-nguan Poolsupaya
Senior Director, TOT
Sector of Outside Plant Engineering
Tel: 662-(02)-574-9183

Mr. Kittipong Tameyapradit
Telecommunications Corporate Planning
Corporate Planning Office
Tel: 662-273-0822

Sakchai Hantanasiri
Division of Planning and Information Processing
Department of ISDN Services Development
Tel: 662 (02)-574-8689

THAILAND

NETWORK MANAGEMENT CENTER

PROJECT DESCRIPTION

Project Summary

Project Cost: $32 million

Project Sponsor:
Telecommunications Organization of Thailand (TOT)

Required Technology:
Computer hardware,
software suppliers for switch surveillance,
traffic management,
data communications systems

The Telecommunications Organization of Thailand (TOT) is completing plans to establish a new network management center to provide performance monitoring data, fault management, configuration management, and other capabilities required by Thailand's expanding system.

The provision of a national switching surveillance and traffic management center is required by the Telephone Organization of Thailand (TOT) for switching network maintenance and traffic control. The establishment of a National Transmission Network Management center will provide performance monitoring data, fault management, configuration management, restoration capabilities, and centralized end-to-end testing capabilities.

All functions will be combined into one National TMN Center that must comply with Telecommunications Management Network (TMN) standards. Initial implementation will be focused on the surveillance of all the Ericsson, Siemens, NEC, and Lucent Technologies switching systems that are now in service, under construction, and planned to be implemented. The configuration must support up to 260 main switching machines and must support remote access workstations for each of the remote six regional Operations Support System Centers (OSS). Data connectivity to the national control processor will be through either direct digital connection or the implementation of a new data communications network with dial back-up data communications at each remote central office and/or transmission node.

The system will include data capture and query capability from each of the currently installed and ordered digital exchange switches and transmission systems. The vendor provided switching surveillance system will be installed with specialized

software to support the rapid logging and manipulation of switch generated status information. Through the vendor TMN software, switch status output data is configured to the surveillance system standard presentation regardless of the native language and terminology of the connected switch. Vendor software will also support the access to addition detail through "windowing" including query and control access into each served switch and transmission system by an authorized operator. This capability, at a minimum, will provide the same functionality that can be accessed via a vendor specific switch management operations system or local switch access terminal.

It is envisioned that one multi-purpose large panoramic cubic color video wall display will be used by these systems on full screen and split screen basis. Also included will be multi-purpose color video status monitors for viewing of critical data during abnormal conditions. The application of multi-video tube, multi-windowing technology is the most futuristic method of displaying data and will propel TOT into the next century as a technology leader. Console video terminals will be positioned and designed in a floor plan layout in one large panoramic auditorium setting.

PROJECT FINANCING

USTDA has provided a $63,000 grant for a U.S. consultancy firm to assist TOT with the preparation of the specifications and to develop an RFP for the TMN center. The total cost of the project is estimated to be in excess of $34 million and is expected to be completed by 1999. TOT plans to finance this project from its own budget.

STATUS OF PROJECT DEVELOPMENT

This project is urgently needed to give TOT the degree of control it needs to ensure system performance going forward. It is therefore expected to move ahead, despite the difficulties encountered at the macro level.

USTDA has provided grant to assist TOT with the preparation of the specifications and to develop an RFP for the TMN center. The total cost of the project is estimated to be in excess of $30 million and is expected to be completed by 1999. TOT plans to finance this project from its own budget.

U.S. Competitiveness and Export Potential

The system to be developed is essentially similar to network management centers in any major telephone system. A number of U.S. companies have experience in designing and installing these centers, both in the U.S. and internationally.

In addition to the opportunity to supply components to the system itself, which will probably be implemented on a turnkey basis, the project may also open up opportunities for smaller or midsize companies that offer systems to enhance network monitoring and management. Many of these opportunities will depend on the specific supplier and implementation plan chosen for the project, decisions that are expected in the coming months.

U.S. companies interested in this project should position themselves by establishing an in-country presence, including a strong local partner that is familiar with TOT. In-country service and support, including training, will be key to a company's competitive position. The change in Thailand's macroeconomic situation will also result in an increased price sensitivity.

Several U.S. companies are in a position to provide all aspects of a TMN system hardware and software with an export potential of $20 million. An important aspect of this project is the ability of the Network Management Center to supervise network conditions in a multi-vendor environment. U.S corporations are able to provide this capability.

Systems in the TOT network provided by Siemens, N.E.C, Ericsson, and Alcatel have their own Operations and Maintenance Centers (OMC), but are closed systems only capable of working in their own switching environment.

Export potential exists for computer hardware and software suppliers for switch surveillance, traffic management, data communications, and transmission testing systems. There is also an opportunity for manufacturers of DAMA VSAT systems as VSAT. The latter systems were recommended as back-up LAN/WAN interconnections to the Network Management Center.

DECISION MAKING PROCESS

Recent events in the Thai economy may impact the implementation timetable but it is important for interested vendors to establish contact with TOT and local businesses who may be involved with this project. It is also important to obtain a copy of the consultant's report from the USTDA funded technical assistance program to develop technical specifications for the TMN.

CONTACTS

Dr. Thongchai Yongchareon
Senior Executive Vice President
Telephone organization of Thailand
98/2 Chaeng Wattana Road
Bangkok 10210
Tel: (662) 574-8998

Mr. Pichai Vongsri
Vice President
Office of Corporate Policy and Planning
Telephone Organization of Thailand
388 IBM Building
Phahonyothin Road
Bangkok 10400
Tel: (662) 273-0980

THAILAND

RURAL FIXED WIRELESS LOCAL LOOP

PROJECT DESCRIPTION

Project Summary

Project Cost: $1 billion

Project Sponsor: Telecommunications Organization of Thailand (TOT)

Required Technology: Antennas, Transceivers, Power Amplifiers, Multiplexers

It was announced in August of 1997 that one of Thailand's major telephone concessionaires has selected a US supplier of CDMA/PCS systems for the provision of wireless local loop equipment over the next five years. This will be used in both fixed land based (rural) and mobile environments throughout Thailand.

TOT on the other hand has announced in March of 1997 that they intend to begin conversion of their existing Time Division Multiple Access (TDMA) supported wireless rural project (RTS) which serves approximately 3 telephones in 1500 villages to Code Division Multiple Access (CDMA). This will begin in 1998 and will expand the system to serve over 5800 villages and resort locations throughout Thailand.

The most likely model configuration (for CDMA/PCS technology to be utilized to serve Provincial loops) will be in the following order of magnitude for rural coverage.

RURAL WIRELESS LOOP CAPACITIES

	1996	1997*	1998	1999	2000	2001
Total Subscribers	6000	198,000	396,000	594,000	792,000	990,000
Total Erlangs Load	0	1,584	5,346	11,227	19,325	29,700
Total BHCA's	0	59,400	166,320	297,000	443,520	594,000
Total Cells	0	75	150	225	300	375
Total MSCs	0	1	2	3	4	4

*(Currently behind schedule)

PROJECT FINANCING

The existing RTS project is funded by the Telephone Organization of Thailand. The expanded CDMA/PHS program described by this overview has not been funded beyond the limits of the RTS project for 1998.

The opportunity for establishing strategic partnerships, perhaps with TOT itself, provides the best opportunity for US entry into this market. A combination of supplier/concessionaire financing is the normal methods used by US competition in Asian communications programs of this scale.

At an approximate cost of $600 per customer added for the five (5) year market for the rural TOT expansion of $1 billion US for the rural fixed based wireless local loop.

STATUS OF PROJECT DEVELOPMENT

Based on the findings of a recent on-site study, it was found that 600,000 new circuits are required in the Provinces just to service existing held orders. The objectives of Thailand's 7th NESDB plan sets an objective of 4.2 million customers in the Provinces by 2001.

ESTIMATED SUBSCRIBER INCREASE					
	1997	1998	1999	2000	2001
Bangkok	2854380	3212591	3639493	4096694	4635052
Provinces	2041836	2431258	2902060	3447728	4136770
Total	4896216	5643849	6541553	7544422	8771822

It is anticipated that at least 50 percent of the above growth in the Provinces will be provided by either Wireless In The Loop or Wireless Local Loop, using a CDMA platform.

While this program schedule may be affected by recent economic downturns in the Thai economy, US firms who wish to participate in this program should use the hiatus to establish local partnerships and identify niche markets before this program becomes aggressive again. This is likely to become a critical component of the TOT privatization scheduled in 1998.

U.S. Competitiveness and Export Potential

A decision on the selection of a US vender to supply a system of standard (CDMA/PCS) by a TOT concessionaire that primarily serves urban markets, will likely establish this platform in the communications industry in Thailand. With both TOT and one of it's major concessionaires having made the policy decision to expand the CDMA platform, it is most favored to survive in the Thai communications industry.

The above growth in the Provinces will be shared by TOT and one of it's concessionaires for rural area development, TT&T. TT&T will be strongly influenced by Japanese technology, specifically PHS, for fixed land based service. However, TOT and Telecom Asia, it's other concessionaire will likely continue to favor US technology in this area.

With the US leadership in the upcoming PACS platform (early 2000), US firms are in an excellent position to develop niche markets as well as supply of equipment.

- **Equipment**

Antennas
Transceivers
Power Amplifiers
Multiplexers
Handsets
Interface hardware

- **Services**

Design & Survey
CAD/CAM mapping & Design Systems
Project Management
Installation

DECISION MAKING PROCESS

Interested suppliers and consultants should establish local strategic partnerships as quickly as possible. Marketing and sales of the US concept should be done at the policy making levels rather than technical and purchasing levels.

In 1996, the USTDA funded a review and update of the TOT Master Plan at which time the project was identified. In 1997, USTDA funded a further grant to the TOT for the preparation of a technical fundamental plan which will further expand the need and description of this project. A total of over $700,000 has been provided in support of the TOT plans for expansion of existing services since 1995.

CONTACTS

Dr. Thongchai Yongchareon
Executive Vice President, TOT
662-574-9494

Mr. Kittipong Tameyapradit
Telecommunications Corporate Planning
Corporate Planning Office
662-273-0822

THAILAND

SYNCHRONOUS DIGITAL HIERARCHY (SDH) TECHNOLOGY

PROJECT DESCRIPTION

In June 1996, TOT issued an RFP for the supply and installation of a number of fiber optic rings using Synchronous Digital Hierarchy (SDH) technology. The plan called for the deployment of eleven inter-city rings and ten rings in the Bangkok Metropolitan Area

TOT's initial efforts to procure this system have been suspended due to irregularities in the bidding process, but it is expected that this important element of Thailand's system will be re-bid in the coming months, possibly specifying a less expensive technology.

Project Summary

Project Cost: $450-$600 million

Project Sponsor: Telecommunications Organization of Thailand (TOT)

Required Technology: SDH fiber equipment
SDH transmission equipment

PROJECT FINANCING

The cost of the project would come primarily from TOT's budget and be financed over a number of years. Especially in view of delays experienced to date. This is a high priority project. It is therefore expected to remain on the books, despite current austerity moves.

STATUS OF PROJECT DEVELOPMENT

The time frame for the rebidding remains uncertain, as the entire procedure has been plagued with irregularities and changes of course since its inception. To date, there have been three rounds of bidding with no final award at present, it appears that rebidding will go forward in 1998, but the project may undergo substantial changes in form and substance as part of the process.

In the first round, all bids came in considerably higher than anticipated by TOT and there were suggestions of collusion among the vendors. Therefore, no awards were made and it is uncertain when the project will be re-bid.

Communications General International Inc., a U.S. consultancy firm preparing long range technical plans for TOT under a USTDA grant, has proposed that a less ambitious plan be considered. The CGII plan recommends four major inter-city rings connecting the four new sectional centers in Bangkok, the deployment of SDH transmission facilities between every sectional center with implementation based on capacity requirements and only on routes where the PDH capacity has reached its practical limit.

The plan is designed to handle all domestic traffic bypassing Bangkok and to offer a secondary relief path for periods of high traffic. It will also offer a direct route to the new TOT International Service Toll Center (ISTC) being recommended for Laksi. The plan recommends using the same Bangkok 10 ring configuration as originally proposed, but also includes the deployment of SDH microwave systems in the lineal links connecting the major inter-city rings.

If TOT were to proceed with the CGII plan, it is estimated that the project cost would be $467 million in contrast to the original plan which exceeds $600 million.

The following timeline provides a succinct account of this project's progress, or lack thereof.

July 1996 TOT invites firms to bid on SDH Project but comes under fire as TOR for project limits participation to major firms such as Ital-Thai, Nihphie Ltd., Ericsson, NEC, Siemens, TelecomAsia, TT&T, Alcatel, and Furukawa.

Sept 1996 Loxley joins Furukuwa and Yazaki to establish Thailand's first fiber optic plant.

Oct 1996 Bids are called and fourteen firms participate. ComLink, Nissho Iwai Corporation, and UUSB&PT are disqualified on technical grounds.

March 1997 Bidders begin lobbying hard to ensure a place on the short list.

April 1997 Thailand's *Nation* reports that the bid evaluation committee for the project comes under intense pressure as SDH bidders call upon their

connections to the Chat Pattana Party in their battle against one another.

June 1997 TOT vice-president Tongchai Yongcharoen, responsible for overseeing the bid process, vows to drive a hard bargain with the six companies alleging that the companies colluded in the bid. The six proposed a minimum price of 10.7 billion baht to install the system in six set zones. The price was 3.5-billion-baht higher than the central median price of 7.2 billion baht set by the TOT. Under the bid Ericsson proposed spending 1.248 billion baht to install the synchronous digital hierarchy (SDH) network in Zone 1; Tomen proposed 1.499 billion baht for Zone 2; Siemens 1.331 billion baht for Zone 3; Jasmine 1.364 billion baht for Zone 4; Mitsui 2.628 billion baht for Zone 5; and Loxley 2.626 billion baht for Zone 6.

H.E. Minister Suwat Liptapallop designates TOT chairman Sumet Tantivejakul to look into the collusion alegations.

June 1997 TOT vice-president Tongchai Yongcharoen, regarded in the press as "Mr. Clean and Fair" submits his letter of resignation which is not accepted by TOT president Satien Pitaganun.

Aug 1997 Third round of bidding is opened for SDH program. Prices were higher than those offered by six bidders in the second round. TOT does not award the project to any of the bidders.

TOT considers this project to be important and that it needs to be completed by 1998 yet has not designated the best means for moving forward.

U.S. Competitiveness and Export Potential

To date, European and Japanese firms have tracked the project through each round. U.S. sourced equipment is competitive for this project but few firms have established the strategic relationships with Thai partners in order to be well positioned.

Assuming that this project moves ahead as originally planned, the equipment requirements include: SDH fiber systems for the fiber rings, digital SDH radio

systems, SDH transmission equipment and SDH augmenting tools such as multiplexing equipment and digital cross connections.

The program, once implemented, would be phased in. For the fiber systems and SDH equipment, even a scaled down program would include equipment sales to a magnitude of US$72 million in 1998, $42 million for 1999, $46 million in 2000, and $23 million in 2001 with continued sales into the year 2011.

DECISION MAKING PROCESS

As indicated before, the size and scope of this project means that numerous entities may have an impact on the decision making process. Because of the high bids, TOT has proposed that it will consider several options moving forward including:

1. TOT will reduce the scope of work, or

2. TOT will cancel the third-round bidding and call a fourth round bidding,

3. TOT will request a larger budget from the Royal Thai Government to accommodate the increased costs.

Firms interested in this project may want to approach one of the well positioned local companies as well as make the positive attributes of their equipment known to TOT. A successful bidder must understand the interplay between major project awards and the political process and the implications this has for choosing the right local partner.

The experience of this project demonstrates the need to make a sustained and long-term commitment in order to be positioned for success.

CONTACTS

Mr. Satien Pitaganun
President
Telephone Organization of Thailand
89/2 Chang Wattana Road
Bangkok 10210, Thailand
Tel: (662) 505-1111

Fax: (662) 574-9999

Ms. Barbara Buranasilpin
Senior Vice President
Business Development Division
Loxley Public Co., Ltd.
304 Suapah Road, Bangkok 10100, Thailand
Tel: 662-224- 4499
Fax: 662-225-9727

Dr. Varakorn Samakoses
Senior Vice President
Office of the CEO
Jasmine International
333/104 Laksi Plaza 6th Floor, Tower 2
Chaeng Wattana Road, Don Muang
Bangkok 10210, Thailand
Tel: (662) 576-0200-9
Fax: (662) 576-0198-9

VIETNAM

Country Profile
Telecommunications Sector Overview
Projects:
➢Hanoi Satellite Information Technical Center ➢IT Master Plan: IT Development and Procurement
➢Saigon Postel Network Development ➢Military Electronic and Telecommunications Company

The boundaries shown do not imply, on the part of U.S. Government, any judgement on the legal status of any territory.

Vietnam Profile

As of 1996

Capital - Hanoi
Population - 76.0 million
20% urban population
GDP per Capita - US$260

Telephone Density
Overall - 1.5%
Rural -

Waiting List for
Telephone Lines -
Cellular Subscribers - 64,000
Paging Subscribers - 100,000
Telex Subscribers - 1,200

International Outgoing
Traffic (million calls) - 44.5

Network Digitization
Switching - 100%
Transmission - 95%

(Source: APT YearBook 1997)

GEOGRAPHY:

Location: Southeastern Asia, bordering the Gulf of Thailand, Gulf of Tonkin, and South China Sea, between China and Cambodia **Geographic coordinates**: 16 00 N, 106 00 E **Comparative area**: slightly larger than New Mexico **Border countries**: Cambodia, China, Laos **Terrain**: low, flat delta in south and north; central highlands; hilly, mountainous in far north and northwest

COUNTRY PROFILE

THE PEOPLE

Vietnam has a population of about 76 million that is divided among 54 nationalities, of which women account for 51 percent. The Viet (Kinh), account for 88 percent of the population and mainly live in the Red River delta, the coastal plains of Central Vietnam and the Mekong delta and large cities. The ethnic minorities live mainly in mountainous areas stretching from North to South over two third of the area of the country.

Of the ethnic minorities the largest are the Tay, Thai, Muong, Hoa, Khmer, and Nung with about one million and the smallest are the Brau, Romam, and Odu only numbering about some hundreds.

The material and spiritual life differs among the nationalities. However, in the history of national development, the nationalities in Vietnam have always had a tradition of solidarity and mutual assistance, particularly in the struggle against foreign aggressors. The Government of the Democratic Republic of Vietnam in the past and that of the Socialist Republic of Vietnam at present have constantly developed concrete policies and granted special privileges to help the various highlands nationalities keep pace with those on the lowlands, and have simultaneously assisted the development and preservation of the traditional cultural characteristics of each nationality. To date, different programs are being successfully carried out such as programs to bring iodized salt to remote villages, build dispensaries for each village, control malaria, construct free tuition boarding schools for children from ethnic minorities, end the nomadic life and farming, and study the written language and traditional culture of each nationality.

The Economy

Vietnam has been undergoing a process of market reform since 1986 called "Doi Moi" ("renewal"), and the process is aimed at structuring Vietnam's regulatory,

legal, administrative, business, investment, and foreign trade apparatus and policies to create a market economy which is constrained by Socialist principles.

After years of nearly stagnant economic growth, the reforms have helped Vietnam's economy to grow close to 9 percent per year for the past five years while the industrial sector has been growing at 15 percent per year. Trade has also grown significantly and bilateral trade with the United States now exceeds $500 million a year. Overseas Development Assistance (ODA) is important to the economy and Japan has been the largest contributor, averaging $800 million for the past few years. EXIM, OPIC, and the U.S. Agency for International Development do not have a presence in Vietnam.

Vietnam has primarily a rural based economy and per capita income averages less than $300 per year. Economic growth and foreign investment is concentrated in Hanoi and Ho Chi Minh City (HCMC) and in the provinces directly to the north of HCMC. The important growth areas in Vietnam's economy are services, hotels, restaurants, construction, and telecommunications; mining and manufacturing; oil and gas exploration; and power generation.

Vietnam is engaged in negotiations with the United States to conclude a bilateral trade agreement which will lead to Most-Favored Nation (MFN) status for Vietnam.

VIETNAM'S "OPEN DOOR" POLICY

Vietnam has adopted an "open-door" policy of cultivating friendly relations with all nations in support of its economic development and attempts to attract foreign investment. In July 1995, Vietnam normalized diplomatic relations with the United States, became a member of the Association of Southeast Asian Nations (ASEAN) and, thereby, of the ASEAN Free Trade Area (AFTA), and signed a memorandum of understanding for commercial cooperation with the European Union. Vietnam aspires to membership in Asia Pacific Economic Cooperation (APEC) and World Trade Organization (WTO).

RECENT ECONOMIC DEVELOPMENTS

Vietnam's program of reform, stabilization, and liberalization has yielded growth rates of 9.3 percent Gross Domestic Product (GDP) in 1996, boosted industrial output growth by 15.6 percent, and increased exports by 25.6 percent. National savings rose from 7.4 percent in 1990 to 16.6 percent in 1996, while investment

rose to 27.8 percent of GDP in 1996 from 27.1 percent in 1995. Inflation has been dramatically reduced from close to 400 percent in 1988, to 19 percent in 1995, to about 5 percent in 1996—due to tight fiscal and monetary policies, as well as to falling food prices. Because of the impact of falling food prices, however, inflation is unlikely to be sustained at such a low level in the future.

While agriculture initially responded most rapidly to the changed incentive system arising from reforms, industry has been the real engine of growth, averaging 13.8 percent a year since 1992. Trade has flourished as merchandise exports expanded from $5.2 billion in 1995 to $7.3 billion in 1996, and imports grew from $7.5 billion in 1995 to $10.5 billion in 1996.

Under doi moi, Vietnam began its transition from a centrally planned system toward a market economy by implementing a wide range of macroeconomic and structural reforms to create a vibrant economy with several features of a free-market system.

REFORMS TARGETED

Fiscal and Monetary Policies. A comprehensive budget law clarifying government responsibilities in the budget process was adopted, and a Public Expenditure Review and multi-year public investment program were completed. New tax laws were enacted in 1997 that will help improve the tax regime.

Trade Reform. Initial reforms were made toward establishing an open and neutral trade regime, as trade barriers were removed. Tariffs were reduced and decisions on foreign trade were shifted from the state to the enterprise level, and an increasing number of enterprises are now allowed to engage directly in export and import activities. With the widening trade deficit in 1996, the government has imposed some additional controls on imports, which partially reverse earlier reforms. The government is reconsidering these changes in light of their effect on the balance of payments on growth.

The State Enterprise Sector. Reforms have increased autonomy, imposed a hard budget constraint, and established clear profit motives. The number of state enterprises was reduced from over 12,000 to under 7,000, and the number of employees from about 2.5 million to 1.7 million. A process of "equitization" is being implemented on a limited basis, which allows for the transformation of selected state enterprises into joint-stock companies whose sale of shares will go to Vietnamese individuals and organizations.

The Banking Sector. A two-tier banking system has been established, delineating the role of the central and commercial banks. Moreover, the financial sector was opened to shareholding and cooperative banks. Joint ventures with foreign banks are now allowed, and foreign banks can operate within the country. Interbank foreign exchange and money markets were created in 1995 and treasury bill auctions were introduced. Deposit rates were unified for businesses and individuals, and audits of the four state-owned commercial banks are either completed or under way.

KEY ECONOMIC INDICATORS			
Indicator	**1994**	**1995**	**1996 (e)**
Constant GDP ($ Billion)	18.9	21.5	24.3
GDP Growth (%)	9.5	9.8	9.5
GDP per Capita ($)	255	285	316
Gov. Spending (% GDP)	17.4	N/A	N/A
Inflation (%)	12.7	9.0	8.5
Unemployment (%)	9	N/A	N/A
Foreign Exchange Reserves ($ Billion)	1.1	1.8	2.2
Total Exports ($ Billion)	5.3	6.8	8.8
Total Imports ($ Billion)	7.5	9.7	12.0

POLITICAL OVERVIEW

Vietnam gained its independence from France on September, 2 1945. It then became a socialist country under the leadership of the Communist Party. The constitution was adopted April 15, 1992. The Party holds a national congress every five years to outline the country's overall direction and future course as well as to formalize policies.

The National Assembly, which includes 450 members and is open to non-Party members, is the supreme organ of state and the only body with constitutional and legislative power. The President of the State and the Prime Minister are elected by the National Assembly. General elections took place on July 20th, 1997 to elect deputies to the 10th legislature of the National Assembly. The first session is scheduled to be held September 18,1997. At this session, the National Assembly will elect leading organs of the National Assembly, President and Vice- President

of State, Prime Minister, Head of the People's Supreme Inspectorate, Head of the People's Supreme Court, and approve the members of the Cabinet.

The President has the right to nominate candidates for a number of key positions including the Chief Justice of the Supreme People's Court and the Procurator-General of the People's Office of Supervision and Control. Nominees are then approved by the National Assembly.

The Prime Minister, who is charged with the day-to-day handling of the Government, has the right to nominate and dismiss the members of his cabinet, though only with the approval of the National Assembly. He also has at his disposal the power to cancel or suspend decisions or directives issued by the ministries.

Vietnam's legal system is based on communist legal theory and the French civil law system.

Diplomatic representation in US:

Chief of Mission:
Le Van Bang
Chancery: 1233 20th Street NW,
Washington, DC 20036, Suite 501
Telephone: [1] (202) 861-0737
FAX: [1] (202) 861-0917

US diplomatic representation:

Chief of Mission:
Ambassador Douglas "Pete" Peterson
American Embassy
7 Lang Ha
Hanoi
Tel. 844-843-1500
Fax. 844-843-1510

Note: The U.S. announced normalization of diplomatic relations with Vietnam on July 11, 1995. The liaison offices in both countries were upgraded to full embassies on August 5, 1995.

FOREIGN INVESTMENT AND TRADE

Foreign investment in Vietnam has soared in recent years. As of December 1995, 1,604 projects valued at US$ 18,834 million have been licensed. The investment comes from more than 50 countries and territories, among which Asian countries and territories rank at the top.

The annual value of foreign investment has increased dramatically, from US$ 366 million in 1988 to more than US$ 7 billion in 1995. The average size of a foreign-invested project (except in the area of petroleum) has also risen. During the initial years of foreign investment, capital was invested primarily in areas of petroleum extraction and hotels. In recent years, investment has expanded to the manufacturing sector.

The use of various investment forms has also changed. As of August 1995, joint venture enterprises accounted for 63.7 percent of all projects, down from 80 percent in the early years of Doi Moi, and 100 percent foreign-owned companies made up 28.9 percent of investment licenses, up from 6 percent in the years 1988-91. Vietnamese partners to joint ventures are mainly state-owned companies. Joint ventures involving state-owned companies currently account for 98 percent of projects and 99 percent of capital. Another noteworthy factor is the recent arrival of large, multinational companies in Vietnam, in contrast to the early years when foreign investors were mainly
medium and small companies (except in oil and gas industry).

PRIVATE SECTOR DEVELOPMENT

Vietnam presents an attractive yet challenging environment for foreign investors. With doi moi allowing private ownership and activity, the private sector has grown rapidly, largely through the creation of small-scale household enterprises, but also as a result of some incorporated private enterprises. In 1994, over half of the 25,912 registered enterprises in the formal sector were private—a figure that does not reflect the estimated 350,000 unregistered household enterprises engaged in trade and manufacturing.

Private businesses have generated the most jobs in recent years, absorbing new job-market entrants, demobilized armed forces personnel, and labor shed by state enterprises. Despite constraints, private sector employment has risen rapidly.

Private sector growth has been helped by Vietnam's well-educated and low-cost labor force, its strategic location, strong macroeconomic management, and the opening of the economy under doi moi.

While impressive, private sector growth has lagged behind overall growth of the economy, and the growth of the state enterprise sector, particularly in the industrial subsectors such as oil, gas, steel, cement, and fertilizer. Furthermore, private sector development is still largely confined to small enterprises concentrated in specific industrial subsectors such as food, food processing, garments, and some consumer goods. Finally, while the expansion of foreign investment and trade has been important for overall growth during the reform period, it has not yet directly involved private enterprises, most of which are oriented to the domestic market and rarely become partners of foreign investors.

These limitations of private enterprise development indicate that much remains to be done to establish a policy framework under which private enterprises can contribute more fully to growth, income, and employment. Key constraints include lengthy and complicated business registration and investment approval processes, and an uneven playing field between private companies and state-owned enterprises, especially in the areas of trade and access to land and credit.

The government recognizes that the impetus for industrialization and growth will need to come primarily from an efficient and internationally competitive manufacturing sector and therefore plans further regulatory and legal reforms in its policy framework to encourage growth and diversification of the sector.

LEGAL ENVIRONMENT

The People's Supreme Court serves as the highest court in Vietnam. The Chief Justice, who is nominated by the President and approved by the National Assembly, serves a five-year term. Regional People's courts, military courts and special tribunals act as subordinate courts.

A 1990 Ordinance on Economic Arbitration created a rudimentary system of commercial arbitration. This was augmented by a number of nominally non-government arbitration organizations. Many arbiters have little formal legal training and it has proven difficult to enforce awards. Foreign arbitrator's awards were not enforceable in Vietnam until October 1995, when Vietnam joined the New York Convention of 1958.

In 1994, the National Assembly officially sanctioned the establishment of economic courts, which replaced the state economic arbitration system and began dealing with matters of bankruptcy, fraud and embezzlement in July of that year. Contractual disputes remain largely in the hands of the arbiters. Most investment disputes are settled through negotiation, although some companies prefer to use foreign arbitration. Others choose to go to the MPI for settlement, but investors should realize that the MPI has no legal jurisdiction for arbitration.

One of the major legal problems in Vietnam is the lack of a coherent body of laws covering commercial areas. The passage of a bankruptcy law in 1994 and the adoption of a Civil Code in 1995 were seen as major steps towards redressing this problem. The new Civil Code, which was passed by the National Assembly in October of 1995, recognizes four categories of legal entities and seven kinds of individual ownership. The code confirms the principle that the land is owned by the people and administered by the State. Under the code, only a legal entity is entitled to land use rights, but it can transfer, lease, exchange or mortgage the right. The Civil Code also includes sections relating to civil contracts and the transfer of technology.

In an effort to keep pace with rapid economic changes, Vietnam's judiciary and civil service have undergone nearly continuous reform since the economy was opened in 1987. Despite the significant advances the country has made towards establishing a more sophisticated legal framework, many problems remain. Legislation is sometimes vague, and because it is interpreted and enforced locally, it is subject to a wide array of interpretations. Compounding the problem, circulars which guide implementation are often issued long after a given law has passed.

Although the country's legal shortcomings pose challenges for investors, they are not insurmountable obstacles. The Law on Foreign Investment and government investment guarantees gives some guidance and reassurance to foreign investors. Nevertheless, the combination of a lack of experience and a rapidly evolving legal system means that contracts should be as self-contained and cover as many contingencies as possible.

TIPS FOR INVESTORS

The lack of clear legislation and a proper legal frame for a market economy can leave critical areas including certain aspects of taxation and dispute resolution uncertain. Vietnam remains years away from developing the full legal framework necessary for a smoothly functioning market economy. Nevertheless, the potential

investor can take a number of steps to avoid the problems that might result from this situation. Careful research into existing laws, ordinances, regulation circulars can identify the gaps in existing rules. This research should include meetings with the relevant officials prior to the investment. The investor should also seek legal advice on the project to uncover any potentially "hidden taxes," and other loopholes.

Meticulous documentation in the investment license, which receives the MPI stamp of approval, provides some security as well, since it can bridge gaps left by legislation. In terms of potential disputes between joint venture partners, some investors choose to designate a third country, such as Singapore, for arbitration. Foreign arbitration awards are now enforceable in Vietnam. However, a better approach is to try to anticipate potential problems and agree on their solutions (including the bearing of costs, etc.) during the joint-venture negotiation process, Then carefully negotiate and set out the procedures for settling disputes in the joint venture contract. This in turn will be presented to and approved by MPI in the license application.

SPECIAL CONSIDERATIONS FOR DOING BUSINESS IN VIETNAM

Since the trade embargo with Vietnam was lifted in February 1994, trade volume with this dynamic market has seen steady growth. All products introduced to Vietnam are subject to an import licensing regime. Import-export activity is reserved for local companies, which must be licensed by Vietnam's Ministry of Trade. The United States is the 6th largest investor in Vietnam with a total of $1.1 billion invested in 68 projects. The U.S share of foreign investment is approximately 4 percent.

US-VIETNAM BILATERAL RELATIONS ADVANCE

The Secretaries of State and the Treasury visited Vietnam earlier this year to further advance bilateral relations. The Director of the U.S. Trade and Development Agency (TDA) visited in July to initiate TDA's program activities on behalf of U.S. business interests in the Vietnam market. The U.S. Commercial Service expects to open offices in Ho Chi Minh City the fall of 1997 and Export-Import Bank and OPIC activities could begin in the near future.

The American Chamber of Commerce branches in Hanoi and Ho Chi Minh City already have more than five hundred corporate participants, among which can be counted some of the largest multinational corporations in the world. Bilateral trade surpassed one billion dollars last year and is showing comparable gains in 1997. Direct foreign investment from the U.S. has also increased rapidly to the one billion dollar range, placing the U.S. among Vietnam's top foreign investors.

As with most market entry in the region, the potential for success increases in Vietnam with the development of long-term strategic planning to take advantage of Vietnam's promising potential.

Differences in culture, particularly the reliance among the Vietnamese on strong personal bonds rather than on the legal arrangements favored by Westerners, influence business practices. As a result, companies with on-site corporate representation usually succeed more readily than those who send representatives on an occasional, or even regular, basis.

FOREIGN COMPETITION

Regarding the telecommunications and information industries, Vietnamese commonly say that "the United States is late," which is to say that Asian and European competition has gained entry -- or reentry -- into the market before the lifting of the US-Vietnam trade embargo in 1994. Despite the head start of competitors, Vietnamese telecommunications officials welcome US technology into the market because they see U.S. technology as high quality and extremely durable.

U.S. Government sources report that Vietnam realizes that its ability to meet its development objectives in a timely manner depends on having strong commercial ties with the U.S.

BEST PROSPECTS FOR EXPORT

Telecommunications and information technology are included in the range of infrastructure-related equipment, supplies and services that are seen as the best U.S. export prospects by the U.S. Department of Commerce.

MFN AND GSP RAMIFICATIONS

Potential suppliers of telecommunications equipment and services should recognize that Vietnam does not have Most Favored Nation (MFN) status or Generalized System of Preference (GSP) treatment. The lack of MFN status means that exports from Vietnam must pay a higher rate of duty in the United States than exports from other countries. If Vietnam were granted GSP, then it would have minimum tariff treatment as do the exports from most developing countries.

Vietnam's MFN and GSP status is important for U.S. firms intending to manufacture telephone equipment for the local market and for export. These companies might be affected by these conditions if their interest lies in exporting from Vietnam. These conditions do not, however, diminish Vietnam's demonstrated interest in attracting investment.

EXPORT CONTROL

In this post-embargo phase, the Bureau of Export Administration (BXA) in the U.S. Department of Commerce, has amended the Export Administration Regulations, moving Vietnam from Country Group Z (embargoed) to less restrictive Country Group Y, and then Country Group D, easing export controls greatly. Further information on export licensing can be obtained from the Exporter Marketing Staff at BXA at 202-482-4811. Information is also available from the Office of Technology and Policy Analysis in the Department of Commerce at 202-482-4252.

FOREIGN OWNERSHIP RESTRICTION

Vietnam's Foreign Investment Code, one of Asia's most liberal, was first introduced in 1987 and is frequently revised. Foreign companies are allowed 100 percent ownership in some sectors. There is no ceiling to the foreign partner's equity in joint ventures. Other forms of investment include Production Sharing Contracts (PSC) in the petroleum sector, Build-Operate-Transfer (BOT) Contracts for infrastructure projects, and Export Processing Zones (EPZ).

OBSTACLES TO DOING BUSINESS

Several conditions are obstacles to doing business in Vietnam. Unfamiliarity with international business practices, international isolation, bureaucratic intervention,

corruption, lack of capital, along with a weak legal, financial, and physical infrastructure are the foremost obstacles to successful implementation of the Vietnamese foreign investment regime.

POSITIVE ASPECTS OF DOING BUSINESS IN VIETNAM

On the other hand Vietnam has many assets to attract foreign investors Some are natural resources such as coal, rubber, and oil. There is also a wealth of human resources; a disciplined labor force; and a consumer market of over 75 million people. Tax incentives are available for projects which generate exports, employment, hard-currency earnings or technology transfers, or which harness Vietnam's natural resources.

PRACTICAL ASPECTS OF DOING BUSINESS

Names

Vietnamese names begin with the family name, followed by the middle name and ending with the given name. For example, in Nguyen Anh Quang, Nguyen is the family name. He would be addressed as Mr. Quang. In many cases with Vietnamese males and females, the person may use both the middle and given name. For example, in Le Ngoc Anh, she would be addressed as Miss Ngoc Anh. If unsure how to address someone, one should ask. Nguyen is the most common name in Vietnam, as is Smith in the U.S. This name is particularly difficult for foreigners to pronounce. The "ng" sound is pronounced with the back of the tongue touching the roof of the middle mouth as in "nga" or a strong "na" sound. The name is then pronounced "nga..win", as one word.

Protocol

Protocol is extremely important in Vietnamese business relations. The Vietnamese culture places high value on politeness, discretion and respect for age and position. Name-card exchange and tea drinking prior to discussing business are typical business rituals. First meetings tend to be formal and are viewed as solely introductory. Visitors should avoid rushing into discussion (say 5 to 10 minutes) and allow enough time for each party to become acquainted. After this introductory period, it is appropriate for the visitor or raise the topics that the meeting was intended to cover. Generally, the visitor is expected to initiate or signal the close of the meeting.

The Vietnamese conduct as much, or more, business over drinks and lunch/dinner, as they do in their office. If the occasion is appropriate, one should invite the host and her/his staff to lunch or dinner. Dinner is more common. As in the U.S., a less formal atmosphere tends to develop relationships faster.

A reliable translator is essential, as many business and official meetings are conducted in Vietnamese with translators present. Visitors should not assume nor rely on the Vietnamese party to supply a translator. Also, while many Vietnamese now speak English, they may not be proficient enough to conduct a business meeting. In order to convey all of the business concepts in detail, an interpreter should be present. Interpreters should be viewed as insurance policies; one is always safe in having one. It has happened on many occasions that an American travels all the way to Vietnam, obtains a precious meeting and has no way to adequately communicate with the host. As the meetings establish the foundation of a good business relationship, missteps can be avoided if proper etiquette, courtesy and respect are the guiding principles, as well as the ability to communicate.

Business Agendas

Vietnamese require adequate time to prepare for meetings. It is, therefore, helpful, when ever possible, to submit by fax in advance of the meeting, an agenda and the issues to be discussed. Visitors should avoid wasting the Vietnamese party's time but should make the effort to inform the Vietnamese party concerning any uncommon terminology, and the processes and technology relevant to their products.

Meetings should last no more than an hour. Vietnamese counter-parts have had adequate experience in discussions with foreigners to know when their time is being wasted. Prolonging a meeting to have greater time with the party is unwise and impolite. Vietnamese officials' willingness to participate in subsequent meetings depends, in part, on the visitors understanding of the value of their time. In the countryside or provinces, as in most rural places throughout the world, the perception of time is somewhat slower and one may take more time with one's host.

Business Attire

Normal business attire consists of a suit and tie for men and suit or dress for women. During the hotter months, formal dress for men is a shirt and tie. The trend in the South is to be more casual, as suit jackets are worn only on

very formal occasions and first meetings.

Maintaining and Saving "face"

Saving "face" is extremely important to the Vietnamese. This characteristic can surface in any interaction between two or more persons and should be understood if one is to be effective in business negotiations, management and problem-solving. Public criticism or displays of anger are considered severe, are taken very seriously in Vietnam and are likely to cause offense.

In others' presence, Vietnamese may also be reluctant to admit that they do not understand something or have made an error -- which is one reason meeting agendas are preferred in advance. Often a Vietnamese will respond to an uncomfortable or unpleasant situation with a smile or no expression, which should not be interpreted as a flippant or condescending attitude. Tact, sensitivity and discretion are considered the most effective approach in such situations.

In many cases, a Vietnamese counterpart will also be concerned with having the foreign party not lose "face." Therefore, the Vietnamese parties will act as if they are approving the proposal or business idea, while in fact they have not decided to pursue

Hours

Business hours for government offices are generally Monday through Saturday between 7:30 a.m. and 4:30 p.m., with a lunch hour between 12:00 noon and 1:00 p.m. The official work time in commercial offices hours are typically 8:00 a.m. to 5:00 p.m. with a one-hour lunch break, during the weekdays, and 8:00 a.m. to 11:30 a.m. on Saturday. Banks are generally open until 3:00 p.m. or 4:00 p.m. from Monday to Friday and until 11:30 am on Saturdays. Shops are usually open into the evenings and on Sundays, and restaurants stay open at late as 10:00 p.m. to 12:00 midnight.

Vietnam lies in one time zone and is 12 hours ahead of Eastern Standard time (EST) and 11 hours ahead of Eastern Daylight time (EDT).

Holidays

The most important holiday in Vietnam is TET, the Lunar New Year, which typically falls between the end of January to mid-February. TET is officially

celebrated for four days, but business generally slows down for one week before and one week after the celebration. The other official holidays are 1 January (New Year's Day), 30 April (Liberation Day or Reunification Anniversary), 1 May (Labor Day), and 2 September (National Day commemorating the founding of the Democratic Republic of Vietnam).

Currency

Vietnam's currency is the dong, which for years has maintained a relatively stable exchange rate between 11,100 -11,700 dong to 1 U.S. dollar. Large denominations ($50 and $100) receive a better exchange rate. Foreign exchange laws prohibit the use of dollars for daily transactions, but dollars are accepted in most hotels, restaurants and other establishments. Credit cards are also accepted at most major hotels, many restaurants and at some shops. Credit card cash advances are available at most banks.

U.S. Commercial Representation

The Senior U.S. Commercial Officer in Vietnam is:

Kenneth P. Moorefield
Commercial Service Office
Central Building, 4th floor
31 Hai Ba Trung
Hanoi,
Tel. 844-824-2422
Fax. 844-824-2421.

A variety of services are available to U.S business representatives at the Commercial Service Office in Hanoi. U.S. Department of Commercial representation is also expected to be located soon in Ho Chi Minh City.

Information sources

Commercial information on Vietnam is available through the Trade Information Center at the U.S. Department of Commerce by telephoning 1-800-USA-TRADE, through Export Assistance Centers (EAC) around the country, from the National Technical Information Service (NTIS) at 1-800-553-NTIS, and on the Internet at WWW.DOC.GOV.

TELECOMMUNICATIONS SECTOR OVERVIEW

The Vietnamese telecom industry has long been government owned and monopolistic. New entrants are being licensed to provide telecommunications services, but these groups remain interconnected with and heavily influenced by the telecommunications state-owned enterprise. Prior to 1995, regulation and operation of the country's small network were handled by a state entity, the Department General of Posts and Telecommunications (DGPT). The responsibilities of DGPT have been split so that the Vietnam National Post and Telecommunications Corporation (VNPT) now serves as the operating entity which procures equipment and works with technology suppliers while DGPT is responsible for establishing telecom and postal policy and regulatory matters. Although responsibilities are distinct, VNPT still reports directly to DGPT.

Since 1990 DGPT has accelerated the modernization of Vietnam's telecommunications technology. Between 1990 and 1995, DGPT oversaw the replacement of all analog equipment with digital equipment and introduced optic fiber cable as well as digital microwave facilities.

The International Telecommunications Union (ITU) has ranked Vietnam's telecommunications market as the world's second-fastest growing market. The market for telecommunications equipment in Vietnam is estimated to be $710 million for 1997 and $860 million for 1998. The market is expected to grow at an annual rate of 20 percent for the following three years. Foreign imports will account for $625 million in 1997 (88 percent) and will reach $767 million in 1998 (89 percent). The U.S. share of the telecom equipment import market is expected to be 9 percent for 1997 and 11 percent for 1998.

SECTOR STATISTICS

STATISTICAL DATA GROWTH/YEAR				
Sector	**1996**	**1997**	**1998**	**Expected (next 3 years)**
Total Market	629	710	860	20%
Local products	75	85	93	11%
Imports	554	625	767	15%
U.S. Imports	25.3	55	85	40%
Note: The above statistics are in $ millions and are unofficial estimates (US-FCS, Vietnam)				

KEY PLAYERS (GOVERNMENT AND PRIVATE)

VIETNAM POSTS AND TELECOMMUNICATIONS CORPORATION (VNPT)

Vietnam Posts and Telecommunications Corporation (VNPT) is a state owned enterprise and monopolistic operator of domestic and international telecommunications services in Vietnam. VNPT is responsible for the following functions:

1. Establishing plans for the development, investment and sourcing of investment capital; developing and managing the operation of the national public post and telecom (P&T) network.

2. Conducting the survey, researching, designing and construction of P&T projects.

3. Industrial production and consultation for P&T; import-export and providing P&T materials and equipment.

VNPT is the largest buyer of equipment in Vietnam. Total 1997 revenue for the company is expected to be $750 million. In general, various operating units have the responsibility to purchase telecom systems within their area of control but in

practice, large procurements must receive the blessing of VNPT. This means that when an operating sub-unit of VNPT wishes to minimize the bureaucracy or direct oversight of VNPT, a project procurement may be split into several smaller stages.

The operating units of VNPT include:

VTN:	Vietnam Telecom National Company
VTI:	Vietnam Telecom International Company
VDC:	Vietnam Data Communications Company
VMS:	Vietnam Mobile Services Company
VPS:	Vietnam Postal Service Company

The network of provincial Post & Telecom Companies is comprised of sixty-one operating companies that provide local operating and interconnecting services.

VNPT often joint ventures with foreign firms to create domestic manufacturing operations and attract foreign capital and technology. About thirteen joint-ventures has been established in Vietnam to manufacture telecom equipment, with a total investment exceeding $80 million.

VNPT STRUCTURE

Within VNPT, the primary customers for telecom equipment are the sub-operating units VTN, VTI, VDC, VMS, and the larger of the Provincial P&Ts. At present, the most active local P&Ts include Hanoi, Ho Chi Minh City, Hai Phong and Danang, of which, the Ho Chi Minh City P&T is the largest.

VNPT focuses most of its efforts on with national level policy and administrative duties. This is probably reinforced by the political environment in Hanoi. Western telecom companies characterize the

VNPT MANAGEMENT BOARD

Chairman	Do Trung Ta
Vice Chairman	Nguyen Huu Ban
Member	Mai Liem Truc
Member	Vu Ngoc Nhat
Member	Hoang Xuan Nguyen
Member	Tran Du Lich

Board of Directors

Director General	Dang Dinh Lam
Deputy Director General	Vu Van Luan
Deputy Director General	Tran Thi Xuan Nhat

Hanoi based P&T as fairly reserved in its dealings with foreigners and their technology while the Ho Chi Minh City branch is characterized as being more entrepreneurial and enthusiastic to deploy leading technologies.

Manufacturing Ventures and Business Cooperation Contracts (BCCs)

Vietnam's government stresses local partnering, encouraging joint ventures for manufacturing and, for operators, a Vietnamese variant on BTD called Basinin Corporation contracts on BCC. This structure is discussed in more detail in the trends and Opportunities section.

Alcatel, Siemens, LG Group, and Daewoo have established joint ventures with VNPT for the assembly of digital switches. Other manufacturers or BCC agreements with VNPT in the telecom sector now in operation include:

3M VIETNAM COMPANY LTD
Foreign side: Minnesota Mining & Manufacturing Co. (United States) - 100 percent
Total Investment: $2.1 million
20-year license to produce cable components

BCC FOR IMPROVEMENT AND EXPANSION OF INTERNATIONAL TELECOM SERVICE
Foreign side: Telstra International Ltd. (Australia) - 10%
Vietnam side: DGPT - 90%
Total investment: $287 million
10-year license to construct two uplink stations and expand a television system

BCC FOR PAGING SERVICE SUPPLY
Foreign side: Voice International
(Australia) - 52%
Vietnam side: International Informatics Service Development - 48%
Total investment: $70,000
9-year license to establish paging centers

BCC FOR MOBILE PHONE SYSTEM
Foreign side: Industriforvaltinings AB Kinnevik
(Sweden) - 50%
Vietnam side: Vietnam Mobile Telecom Services Co.
Total investment: $341 million
10-year license to develop mobile phone network

BCC FOR PUBLIC TELEPHONES
Foreign side: Sapura Holdings Sdn Bhd
(Malaysia) - 62%

Vietnam side: Ho Chi Minh City P&T - 38%
Total investment: $5.2 million
8-year license to provide public phones

BCC TO DEVELOP INTERNAL PHONE NETWORK
Foreign side: Korea Telecom (South Korea) - 32%
Vietnam side: VNPT - 68%
Total investment: $40 million
10-year license to develop internal phone network

SWITCHBOARD COMPONENT JV CO.
Foreign side: Goldstar Information and Communication Ltd (South Korea) - 50%
Vietnam side: VNPT - 50%
Total investment: $7 million
10-year license to manufacture and assemble hardware and software of electronic switchboards

TELECOM EQUIPMENT MANUF. JV FACTORY
Foreign side: Yeebo Development Co Ltd (Hong Kong) - 60%
Vietnam side: Ho Chi Minh city P&T - 40%
Total investment: $9 million
10-year license to produce telephones

TELECOM EQUIPMENT CO LTD
Foreign side: Siemens Aktiengesellschaft (Germany) - 51%
Vietnam side: VNPT - 49%
Total investment: $5 million
15-year license to manufacture switchboards

TELECOM EQUIPMENT JV CO
Foreign side: Alcatel France (France) - 51.2%
Vietnam side: DGPT - 48.8%
Total investment: $4.7 million
10-year license to provide Alcatel 1000E10 service

TELECOM ELECTRONIC EQUIPMENT MANUF. CO
Foreign side: Newtel Ltd (United States) - 70%
Vietnam side: Sigelco - 30%
Total investment: $20 million
40-year license to produce electronics and telephone equipment

VINADAESUNG OPTICAL CABLE CO
Foreign side: Daesung electric Wire Co Ltd (south Korea) - 54.8%
Vietnam side: DGPT - 45.2%
Total investment: $7.2 million
15-year license to produce cable

VINA-GSC OPTICAL CABLE MANUF. JV CO
Foreign side: Goldstar Cable Co Ltd and Lucky Goldstar (South Korea) - 50%
Vietnam side: VNPT - 50%
Total investment: $8.1 million
20-year license to produce optical cable, services

VNPT - SIEMENS AG OPTICAL CABLE AND COMPONENT MANUFACTURING JV
Foreign side: Siemens Aktiengesellschaft (Germany) - 51%
Vietnam side: DGPT - 49%
Total investment: $15 million
20-year license to produce optical cable, services

New BCCs were signed in mid-1997 as discussed below in the section on the competitive environment.

REGULATORY REGIME AND MARKET ACCESS

DEPARTMENT GENERAL OF POSTS AND TELECOMMUNICATIONS (DGPT)

The Department General of Posts and Telecommunications (DGPT) reports directly to the Prime Minister and is the government administration in charge of policy-making and regulatory matters on Posts and Telecommunications (P&T) and Radio Frequency (RF) management nationwide.

The DGPT's main responsibilities are to:

1. Establish the laws, policies, and types of activity on P&T and RF management and to issue, within its jurisdiction, decisions, orders, and circulars on inspection and guidance for the implementation of laws and regulations of the government on P&T and RF management.
2. Issue, within its jurisdiction, standards, regulations on technical and economic, technology standards, networks, services, P&T equipment, transponders and RF management, as well as regulate the range of tariffs and fees for P&T services.
3. Establish the strategy, plans and projects on master development of P&T and RF.
4. Participate in the appraisal of joint venture projects with foreign companies in the field of P&T.
5. Issue and withdraw licenses and certificates in the field of P&T as specified:

- Operation licenses for enterprises providing P&T services, manufacturing transmitters and electronic switches, agents providing P&T services for foreign organizations.

- Licenses for the establishment of P&T networks, use of broadcasting and radio frequency equipment.

- Licenses for import-export of electronic exchanges, radio transmitter equipment and postage stamps.

- Licenses for installation and adjustment of P&T equipment.

6. Regulate the telephone number allocation for telecom networks. Make decisions on the opening and closing of inter-provincial and international links, international mail routes. Manage the operation of the national backbone telecommunication systems.
7. Make decisions on and announcements of the opening and closing of national and international P&T services.
8. Inspect and give guidance to non-governmental organizations in the field of P&T and RF to operate under Vietnamese laws; inspect the execution of policies and laws on P&T and RF; settle administrative breaches under the regulations of Vietnamese laws.
9. Settle and resolve disputes on RF and P&T network services.
10. Take part in the signing, approval and access to international treaties and agreements on P&T and RF.

The DGPT is a government-controlled organization that until 1995 held the monopoly on all post and telecom activities in Vietnam. DGPT now acts as the regulator yet continues to guide both VNPT and the provincial Post and Telecom offices. The organizational structure of DGPT follows:

Department General of Posts and Telecommunications Organizational Structure	
Prime Minister	
DGPT Secretary General Mai Liem Truc	
DGPT Deputy Secretary General Nguyen Huy Luan	DGPT Deputy Secretary General Nguyen Que Huong
Headquarters	
ADMINISTRATIVE BUREAU Director: Mr. Pham Dao Deputy Director: Mr. Pham Hong Hai tel: 844-8255602 fax: 844-8263477	• Set up and organize working schedule, regulation on activities of DGPT. • Prepare documents for DGPT's leaders to work with national & international organizations, delegations. • Regulate DGPT's legislation. • Regulate the Regional Posts and Telecommunications Department No.1
P&T POLICY DEPT. Director: Mr. Tran Van Khoa Deputy Director: Mr. Nguyen Huu Minh Deputy Director: Mr. Nguyen Ngoc Canh tel: 844-8226625 fax: 844-8226954	• Establish laws, policies, regulations in the field of P&T and RF • Issue licenses and certificates on P&T networks, services, import -export P&T equipment and postage stamps.
SCIENCE TECH & INT'L COOP. DEPT. Director: Mr. Tran Duc Lai Deputy Director: Mr. Tran Duc Tru Deputy Director: Mr. Nguyen Thanh Hung tel: 844-8226622 fax: 844-8226954	• Establish policies, standards on science, technology and international cooperation in the field of P&T and RF. • Regulate matters concerning science, technology, environment protection and international cooperation. • Take part in P&T international organizations.
ECONOMIC & PLANNING DEPT. Director: Mr. Nguyen Kien Cuong Deputy Director: Mr. Tran Manh Dung Deputy Director: Mr. Nguyen Minh son tel: 844-8226606 fax: 844-8228869	• Establish strategies and master plans for the development of national P&T • Regulate the investment and construction in the field of P&T • Regulate the price, tariffs, fees and economic-technical plans.
PERSONNEL DEPT. Director: Mr. Nguyen Ta Luu Deputy Director: Mr. Vu Duong Hung tel: 844-8256393	• Assist the Secretary General in terms of organizing, personnel management and training in the field of P&T and RF.
P&T INSPECTION Director: Mr. Nguyen Thi Them Deputy Director: Mr. Luu Duc Van tel: 844-8256245	• Monitor the implementation of laws on P&T and RF • Settle breaches of laws and regulations in the field of P&T and RF • Conduct the inspection, investigation and settlement of complaints and the prosecution under the jurisdiction of DGPT.

Organizations also part of DGPT but not at Headquarters	
RADIO FREQUENCY MANAGEMENT DEPT. Director: Mr. Luu van Luong Deputy Director: Mr. Vu Thi Bich tel: 844-8226930 fax: 844-8226910	• Compile law projects, statutory documentation on frequency, radio transmitters, strategic projects; plan and allocate frequency bands, satellite orbits; register international frequencies. • Assign and allocate RF, issue licenses for the use of frequency and radio transmitters. • Regulate and control the receipt and transmission of radio waves; inspect and settle administrative breaches on the use of frequency and radio transmitters. • Collect fees for the allocation and use of radio frequency.
REGIONAL P&T DEPT. NO. 2 Director: Ms. Tran Ngoc Binh Deputy Director: Mr. Chu Mai Hong tel: 84-8-8241824 fax: 84-8-8222988	• Regulate P&T and RF under the regulations of DGPT in Ho Chi Minh city and provinces on Ninh Thuan, Binh Thuan, Lam Dong, Dong Nai, Song Be, Tay Ninh, Long An, Ben Tre, Dong Thap, An Giang, Tien Giang, Soc Trang, Vinh Long, Tra Vinh, Kien Giang, Can Tho, Ba Ria-Vung Tau, Minh Hai.
REGIONAL P&T DEPT. NO.3 Director: Mr. Nguyen Nhi tram Deputy Director: Mr. Nguyen Ba Duc tel: 84-51-821216 fax: 84-8-826071	• Regulate P&T and RF under the regulations of DGPT in provinces of Quang Binh, Quang Tri, Quang Nam-Da Nang, Quang Ngai, Thua Thien-Hue, Khanh Hoa, Phu Yen, Binh Dinh, Kontum, Dac Lac, Gia Lai.
P&T INFORMATIONS & PUBLISHING CENTER Director: Mr. Nguyen Doan Deputy Director: Mrs. Hoan Thi Phuong Thao	• Regulate information and publishing activities.

DGPT Future Plans

DGPT's future plans for the country are ambitious. As of 1997, 60 percent of all rural areas have been served by digital systems, DGPT plans to serve 80 percent of all rural areas by the year 2000. DGPT is also planning for the introduction of an Integrated Service Digital Network (ISDN). DGPT is planning to achieve a 5-6 percent penetration rate by the year 2000. Vietnam has already achieved rapid growth in the network considering that in 1990, only one telephone was available per 1000 people (0.01 percent teledensity rate). In 1995 the penetration rate reached one telephone per 100 people (1- percent teledensity).

The future goal of the Vietnamese government is to reach a teledensity rate of 5 lines per 100 of the total population by the year 2000. This translates into a total of 4 million telephone lines. Therefore, an additional 2,700,000 lines will be needed

and at an average per line cost of $1,000 per line, Vietnam will need to install $2.7 billion of wireline and wireless telecom equipment to reach the goal.

Under DGPT the operating entity responsible for procuring equipment and making technology decisions is Vietnam Post and Telecommunications (VNPT).

MARKET ACCESS

This section discusses the standards and approval process in more detail than provided for the other countries profiled in the briefing book. As a relatively new market for U.S. firms and a highly regulated one, Vietnam offers opportunities but substantial barriers to success as well.

To prevent obsolete equipment from being dumped into Vietnam, only new telecom equipment may be imported. The majority of the imported telecom equipment is sold to VNPT, or one of its subsidiaries and is therefore not subjected to import duties. The VNPT import agents are Cokyvina, Potmasco II and Kasati. The sale of telecom equipment can be conducted through an outright sale or through foreign investment in the form of the BCC. An attractive financing package is necessary for the Vietnamese and may be through vendor financing or via a third party. At the time of publication for this document, U.S. EXIM financing is not available for Vietnam.

STANDARDS AND CERTIFICATION PROCEDURES FOR TELECOMMUNICATION EQUIPMENT

National standards regarding telecommunications equipment (STAMEQ) has published numerous national standards governing telecommunications devices in Vietnam. The Vietnam Standards Catalogue 1997 lists the following categories of telecommunications-related standards:

33.040	Telephone and telegraph communications
33.040.50	Lines, connections and circuits
33.040.60	Telephone equipment
33.060	Radiocommunications
33.060.30	Radio relay and fixed satellite communications systems
33.120	Components and accessories for telecommunication equipment
33.120.40	Aerials
33.160	Equipment/systems in the field of audio and/or video engineering
33.160.10	Amplifiers

33.160.20 Radio and television receivers
33.160.30 Sound recording systems
33.160.40 Video recording systems
33.160.50 Accessories
33.200 Telecontrol, telemetering

Since many of these standards are based on analog technology, they are outdated for the digital network in Vietnam. Therefore, U.S. firms seeking to export telecommunications equipment to Vietnam should refer to the branch standards.

BRANCH STANDARDS (TCNS) REGARDING TELECOMMUNICATIONS EQUIPMENT AND THE DEVELOPMENT STRATEGY FOR THE TELECOMMUNICATIONS SECTOR

The Department of Science Technology and International Cooperation (DSTIC) of the DGPT publishes branch standards regarding telecommunications equipment. DSTIC is charged with publishing branch standards in the telecommunications field. Vietnam has based its telecommunications system on European rather than North American or Japanese standards. All telecommunications standards published by DSTIC are adopted or adapted from standards developed by the International Telecommunications Union (ITU).

The procedure to develop a new TCN in the telecommunications field is as follows: a committee of experts under DSTIC prepares a draft standard based on the relevant ITU standard; the Sector Evaluation Committee of DGPT evaluates the draft standard; based on the recommendations of the Sector Evaluation Committee, DSTIC prepares the standard; and finally, the standard is submitted to the Secretary General of DGPT for his approval. Each year DSTIC publishes about 10 new telecommunications standards; 30 TCNs are currently in publication and may be requested from DSTIC.

Certification of telecommunications equipment

The Ministry of Trade regulates the importation of telecommunications equipment. Each year the Ministry of Trade publishes a "List of Telecommunications Equipment Subject to Government Control" and is available from the Policy Department of the DGPT. U.S. companies seeking to export articles included on the List must seek approval from the Policy Department. In the case of equipment destined for use in the national network, the importer must also seek approval from the Department of Science Technology and International Cooperation (DSTIC) of the DGPT.

The approval procedure follows:

1. The US exporter should provide a Certificate of Compliance with the relevant ITU standard to the Director, Policy Department, DGPT.

2. If the Certificate of Compliance is in order, the Director of the Policy Department will grant an Import Certificate that provides the permission to import the telecommunications equipment.

3. If the telecommunications equipment is destined for use in the national telecommunications network, the equipment must undergo a physical examination. DSTIC is charged with conducting the physical examination of the equipment. After a positive review, DSTIC will issue a Certificate of Compliance for Use in National Network.

EXISTING NETWORKS

The Vietnamese are firmly committed to deploying state of the art technologies in the hope of leapfrogging the antiquated systems and technologies deployed in other countries. Although limited in size, Vietnam has a fully modern international network, which includes a 3,367 kilometer (2,020 mile) T-V-H submarine optical fiber cable system linking Vietnam to Thailand and Hong Kong. This cable has reduced Vietnam's dependence on satellite transmission for its international links. Vietnam also has a 2.5 gigabits-per-second (Gbps) Synchronous Digital Hierarchy (SDH) optical fiber backbone trunk that deploys some of the most modern amplification technology in the world

As of 1993, all 63 provinces and municipal centers had digital telecom systems. During this time, over 5,000 kilometers (km) of fiber optic cable were laid in Vietnam. When the Vietnamese government installed the 1,800 km North-South electric transmission line, they included a parallel fiber optic cable/microwave transmission system, which became the national telecom backbone.

TELECOMMUNICATIONS SERVICES AND PENETRATION: SUBSCRIBERS IN VARIOUS SECTORS

Vietnam's Telecommunications Services Growth
(1992-1998, thousands of subscribers)

	1992	1993	1994	1995	1996 (est.)	1997 (projected)	1998 (projected)
Main Lines	173	259	472	775	1,128	1,588	2,972
Cellular	0.8	4.1	8.3	29.5	57	103	186
Paging	3.9	13.8	36.5	63.3	109.8	190.4	330.3
Fax/ Telex	2.7	5.6	8.2	12.1	18.1	25.7	36.6
Datacom	0.0	0.1	0.2	0.3	0.6	1.1	2.1

NOTE: Data Communications subscribers include X.25 frame relay network subscribers; digital data network subscribers; and leased data lines.

Source: Statistics come from the Vietnam Business Journal, October 1996

VALUE ADDED SERVICES

The demand for value-added services is somewhat limited at this time as Vietnam focuses on the rapid buildout of its network. However, some companies have experienced success in selling value-added services in Vietnam. In March of 1996, Unisys Corporation signed a $1.25-million agreement with the Ho Chi Minh City Post and Telecom (HCMC P&T) Department to provide voice messaging, call answer, audiotex and virtual (phoneless) telephone services to both residential and commercial customers in Ho Chi Minh City and to other cities throughout Vietnam. According to Unisys, the agreement was the first major information technology contract concluded after the normalization of diplomatic relations between the United States and Vietnam. The agreement called for Unisys to provide a complete range of installation and implementation services to HCMC P&T, including training the organization's personnel on marketing the services to their customers.

IT SERVICES

As the distinction between the telecommunications and information technology fields continue to blur, many U.S. firms may find an increased acceptance for their products under Vietnamese government IT and computerization projects. The Vietnamese government has drafted a plan to develop its information technology sector by the year 2010. The first phase until the year 2000 requires an investment of US$900 million to develop electronic accessories, computer software and personnel training. The next phase (2001-2005) will focus on updating technologies imported earlier and improving infrastructure facilities for microprocessors and computers with local trademarks. The last phase will focus on the creation of original information technology. The Vietnamese have been cautious to license Internet service providers but announced plans to open two closely monitored gateways in September of 1997.

TRENDS AND OPPORTUNITIES

Vietnam's telecom master plan for 1996-2000 stipulates that 40-50 percent of the domestic requirements be met by the country's telecom production capacity, thus creating possibilities for future joint ventures. Currently there are twelve joint ventures with investments exceeding $81 million. In addition to joint ventures, VNPT has established six Business Cooperation Contracts (BCC) for the development of the national telecom network. Three new large BCCs were approved in August with one more still under negotiation. The total foreign investment for these BCCs is expected to exceed $850 million.

Although network operations remain controlled by VNPT, numerous foreign operators have spent over two years negotiating Business Cooperation Contracts (BCC) to build and oversee telephone network development with VNPT. BCCs allow for foreign companies to share in the revenues of a new operation, but prohibits the foreign company from participating in the management and operation of telecom systems. The foreign company pays for 100 percent of the equipment and training and then receives approximately 50 percent of the profits annually over a period of 5 to 15 years. Equipment procurement is conducted by the foreign partner with some input from VNPT.

In terms of technology preferences, VNPT has been purchasing and installing Very Small Aperture Terminals (VSAT), fiber optic cables, earth stations, CT-2

technology, trunk mobile radio equipment, and submarine fiber optic cables. Fixed wireline, fixed wireless, mobile cellular, digital microwave, and digital switchgear are also in demand. Fixed wireless trials are underway and demand may increase if the current trials are successful. Both the telecom authorities and businesses will also make additional purchases of VSAT technology, public telephones, PBX systems and POTS.

The first mobile cellular system was installed in 1992 in Ho Chi Minh City by Ericsson and Singapore Telecom. Called "Call Link" and based on an analog AMPS (US standard), it was installed initially on a trial basis. It has since been converted into a digital AMPS system. The company presently has 10,000 subscribers, but is having system capacity problems. "Call Link" is now in the process of applying for a Business Cooperation Contract (BCC) to continue the expansion of the network.

Following the introduction of the AMPS system in Ho Chi Minh City, DGPT adopted the European digital standard for mobile cellular telecom, GSM. The decision was based on the predominant standard in this region. Thus, any subscriber in Vietnam could have the capability to roam throughout Asia.

The second mobile cellular system installed in Vietnam was the MobiFone GSM network, a $341 million BCC between the Vietnam Mobil Telecom Service Company (VMS) and Comvik (Sweden). Now in its third year of operation, the MobiFone nationwide system has over 65,000 subscribers and expects to have over 110,000 subscribers by the end of 1997. MobiFone will provide service to customers in 48 provinces by the end of 1997. Mobifone purchased $70 million of Ericsson cellular base station equipment for the south and central regions of Vietnam, and $30 million of similar equipment from Alcatel for the northern region.

The latest mobile cellular system was introduced in 1996 by VNPT as a 100 percent local investment. This nationwide GSM system, called VinaPhone, is expected to challenge the other two competitors, as the system is completely owned by the national telecom operator.

Beginning in June 1996, the company attracted over 10,000 subscribers within the first nine months of operation. Siemens has supplied $25 million of cellular base station equipment for the first 18 cities, while Motorola recently announced an order for $15 million of similar equipment (capacity for 60,000 subscribers). This

has been one of the largest orders for American telecom equipment from an American company to date.

In addition, VNPT is now reviewing the possibility of introducing CDMA cellular technology, Personal Communications Services/Networks (PCS/PCN), Asynchronous Transfer Mode (ATM), Frame Relay, Signal 7 (SS7), private networks, virtual networks and other state-of-the-art telecom services. Eventually, Vietnam is expected to have a multi-service Integrated Service Digital Network (ISDN) telecom system available to customers.

COMPETITIVE ENVIRONMENT

European, Asian, and North American companies who serve as suppliers share the telecom equipment market. Due to financial constraints, VNPT technology choices have often been influenced by those companies willing to provide competitive pricing and concessionary financing. Therefore, VNPT has purchased digital switching equipment from as many as eleven different international vendors, including Siemens, Alcatel, Daewoo, Goldstar, NEC, and Ericsson. American equipment suppliers whose products are also on the market include Hughes (VSAT and fixed wireless equipment), Motorola, Nortel and AT&T. U.S. companies have captured only 7 percent of the Vietnamese equipment market yet remain technologically well positioned as U.S. equipment is generally seen as leading edge and high quality.

Korea Telecom was the first foreign company to sign a BCC for the installation of fixed wireline networks. The $53.2 million contract will allow Korea Telecom to install 160,000 telephone lines and supporting equipment in several northern provinces. The summer of 1997 saw the announcement of several of these BCCs which should help the Vietnamese to accelerate the development of their network. From the European competitors, Cable and Wireless signed a 15-year, $900 million business cooperation contract for installation and operation of a telephone network in Hanoi while France Telecom signed a $500 million agreement to develop 540,000 lines in Ho Chi Minh City. The Japanese Nippon Telegraph and Telephone Corporation announced that it will set up a phone network with 240,000 lines in northern Hanoi by 2000 which requires NTT to invest $194 million. The NTT investment furthers an NTT project to expand in three areas (Gia Lam, Soc Son and Dong Anh) in the east and northern parts of Hanoi. The former project was designed to construct lines with switching capacity for 25,000 subscribers. At the time of publication for this document, Telstra was still under negotiation with VNPT for an additional BCC.

The build-out by these BCC partners may present unique opportunities to U.S. firms as equipment and technology procurement will take place primarily by the foreign partner and not by VNPT. U.S. companies interested in exploring possible collaboration may want to contact the in country representatives for each of these companies.

Chief in-country contact for newly signed BCC holders with VNPT

Mr. Marcellen Kwanhu, Chief Representative
France Telecom, Tel: (844) 825-2757

Mr. Tsuneo Hoshi, Chief Representative
NTT, Tel: (844) 825-9258

Ms. Mara Moustafine, General Manager
Telstra, Tel: (844) 822-6180

Mr. Roger Barlow, Representative Director
Cable and Wireless, Tel: (844) 824-5283

SELECTED HIGHLIGHTS IN VIETNAM'S TELECOMMUNICATIONS DEVELOPMENT

1986	Vietnam has only 9 international lines out of the country with most connections to Russia.
1988	Telstra becomes the first Western telecom company to provide equipment to the S.R. of Vietnam with the introduction of new international connection points (earth stations) valued at $9 million under the first BCC signed in the telecom sector.
1993	Telstra signs a $197 million contract to supply equipment for Thailand- Vietnam- Hong Kong (TVH) submarine fiber optic telecom cable. This project has replaced the direct Vietnam-Australia link and now gives Vietnam the capability of introducing large bandwidth telecom applications, such as video conferencing, video-on-demand, and other ISDN services.
1993	Alcatel installs Vietnam's first GSM network in Hanoi.
1994	Indonesian firm Bakrie & Brothers announces that it has signed an MOU with VNPT to provide a fixed cellular network for 50,000 lines

in Hanoi and Da Nang for 1995 and 220,000 in the following five years.

March 1995 Siemens of Germany announces a contract from VNPT to provide a GSM mobile network which would stretch from Hanoi to HCM City.

May 1995 VNPT grants Sweden's Comvik International a BCC agreement with VMS for $341 million investment over a ten year period. Vietnam Investment review reports that DGPT will provide USD$181 million in offices, land, wages and staff. Comvik's parent company Kinnevik, is expected to invest $160 million of which USD $125 million would be for equipment. Ericsson is named as equipment supplier.

May 1995 VNPT and DGPT policies are revised and new alliances are formed with foreign partners as leadership changes are made within VNPT.

June 1995 Hughes Network Systems (USA) signs an agreement with the Ho Chi Minh City Post & Telecom (P&T) to install the first fixed wireless system in Vietnam. The $21 million agreement supplied 20,000 lines of the Hughes GMH 2000 system (and is expandable to 100,000 lines.) Kanematsu of Japan financed the Hughes system.

July 1995 Trial operator Singapore Telecom International and Steamers Telecommunications are denied BCCs to provide telecoms service along with Thai companies Shiniwatra International, UCOM, and Loxley.

Aug 1995 Nortel announces two projects including a USD$6 million contract with VNPT to provide switching equipment for the Northern city of Haiphong and a USD$4.6 million, 2.5 Gbit/s SDH transmission network to form the backbone of Vietnam's 3,000 km fiber optic network by prime contractor Telstra.

March 1996 Unisys Corporation announces a $1.25 million agreement with the Ho Chi Minh City Post and Telecom (HCMC P&T) for value added voice messaging, call answer, audiotex and virtual (phoneless) telephone services.

March 1996 Northern Telecom signs a $20 million contract with Ho Chi Minh City P&T to supply a 20,000 line fixed wireless system (expandable to 100,000 lines.)

June 1996 Hughes supplies a $20 million fixed wireless system to Hanoi Post & Telecom.

July 1996 A three-country teleconference call between Dr Mai Liem Truc of DGPT in Da Nang, Mr Peter Shore, Telstra's Managing Director, in Australia, and Mr Rolf Nordstrom, Vice-President of Ericsson Telecom AB, in Sweden marks the opening of a new international

	gateway exchange, using Ericsson AXE10 equipment, between central Vietnam and Europe and North America.
Aug 1996	VNPT connects its one-millionth-telephone customer.
Aug 1996	Korea Telecom signs $53.2 million BCC license with VNPT for to add 160,000 fixed lines in the Hai Phong, Hai Hung and Quang Ninh areas.
Oct 1996	Alcatel obtains an order for 100,000 new Alcatel 1000 switching lines from VNPT. Alcatel also signs a contract with the operator Comvik in co-operation with VMS to equip the northern part of Vietnam with cellular telephone networks based on the GSM standard. The two contracts are worth around USD$50 million.
Oct 1996	Telstra celebrates 10 years of operations in Vietnam under BCC with VNPT and commits to invest USD$197 million
June 1997	Japan's Posts and Telecommunications Minister Hisao Horinouchi tells General Secretary Do Muoi, the chief of the Vietnamese Communist Party, that Japan will send NTT telecom specialists to VNPT over five years beginning April 1998.
Aug 1997	Cable and Wireless, NTT, and France Telecom sign major Business Cooperation Contracts with VNPT.

MARKET SEGMENTS (FIXED, CELLULAR, PAGING, SUBMARINE, SATELLITE)

Switching Equipment

Digital switching equipment is an integral part of the fixed wireline networks. Vietnam has at least 12 international suppliers of switches. Ericsson (Sweden) has sold AXE-10 local telephone exchanges for Hanoi, Ho Chi Minh City, Danang, and three provincial capitals in central Vietnam. These systems have a total of 50,000 lines. Other vendors include Alcatel of France (E10B, System 12), Siemens of Germany (ESWD), Northern Telecom of Canada (DMS), NEC of Japan, Goldstar of South Korea (TDX), Fujitsu of Japan, and Italtel of Italy (Linea-Ut). The diverse technologies employed by all of the above vendors have created numerous problems for VNPT. Connection problems, communications protocol, and system compatibility issues have slowed the overall integration of the national network.

In July 1993, Alcatel signed an $4.1 million agreement with VNPT to assemble digital switches and to develop switch software. In January 1994, Goldstar signed a $4 million agreement to assemble the VKX digital switch. And finally, in May

1995, Siemens signed a $5 million agreement with VNPT to assemble EWSV digital switches.

Fixed Wireless Equipment

The Vietnam Telecom Master Plan for 1996-2000 displays a bias for the development and installation of wireless systems. Fixed wireless telecom systems are the latest solution to meeting the national goal of 4 million lines by the year 2000. Experts believe that fixed wireless systems will grow rapidly, as the installation method for this technology does not require the tearing-up of the major cities.

All of the fixed wireless systems are now undergoing trials. VNPT is expected to purchase several additional systems, as the installation time is quicker than the fixed wireline systems and the costs are comparable or lower.

Digital Microwave Systems

Digital microwave systems are being purchased by VNPT as the national network is expanded. Microwave systems are used throughout the network to expand communications in inaccessible areas and for large trunk systems, especially for interprovincial connections. Today, all 63 provinces are connected via digital microwave systems.

The national telecom backbone, connecting the north and the south, includes a digital microwave system. Siemens, Alcatel, Fujitsu, Ericsson, Harris Faricon (Canada), Andrews (USA), and other suppliers have been active in the market. In addition, the Ministry of Defense and the Ministry of Interior are purchasing digital microwave systems, in order to build a nationwide private communications system.

Ericsson has been particularly active in supplying digital microwave systems to the mobile cellular systems, both Call-Link and MobiFone. In addition, they have supplied digital microwave systems to the Ministry of Interior. Siemens has supplied the microwave system for the national backbone system, and along with Alcatel, has supplied numerous systems for interprovincial links. Fujitsu has supplied a 1,000-line digital microwave system. Harris Faricon has supplied $20 million worth of microwave systems to VNPT, and Andrews has supplied numerous antenna systems throughout Vietnam.

The market for digital microwave systems will continue to grow along with the expansion of the national telecom network. In general, the buyers need fully integrated communications packages and not individual components.

Vendors wishing to pursue this segment may need to form a team, which will represent the entire system, as several of the established competitors offer a full range of equipment.

Mobile Cellular Equipment

The mobile cellular equipment market is rapidly developing in Vietnam. As in other Asian countries, the convenience, portability and prestige attached to mobile phone ownership is driving the growth of this market. The majority of the subscribers (60 percent) are employees of state-owned enterprises and ministries, who are offered mobile phones as an employment perk. The balance of the subscribers are private Vietnamese businesspeople and foreign companies.

Cellular offers an excellent opportunity for U.S. firms. Recent developments have therefor been discussed in detail in Trends and Opportunities above.

Handsets are now being offered by Motorola (USA), Siemens, Ericsson, NEC, Panasonic (Japan), and other international suppliers. In 1997, it is expected that over 60,000 mobile cellular handsets will be sold for total of $30 million. The current consumer preference is for small, hi-tech handsets, with the philosophy "the smaller, the better." Today, over 80 percent of the mobile cellular subscriber market is in Ho Chi Minh City. The people of Saigon are particularly brand and status conscious, and, thus, will continue to drive the expansion of the mobile cellular networks.

Industry experts believe that the Vietnamese mobile cellular market will have 190,000 subscribers by the end of 1998 and over 500,000 subscribers by the year 2005.

A potential new mobile cellular system operator is Saigon Postel. The company has announced that it is considering a nationwide mobile cellular system. The company's shareholders, all State-owned enterprises, have significant land holdings, which can be used as cell sites. As these networks continue to expand and as possible new competitors enter the market, additional mobile cellular infrastructure equipment will be needed.

Other Cellular

In July of 1997 the official Vietnam News Agency reported that the number of mobile phone users nationwide stood at 115,000 as of the end of June. In early 1996, the figure was close to 20,000. By the end of the year it stood at 63,000. VNA said two national mobile networks, VMS and Vinaphone, which accounted for around 100,000 users, while a Ho Chi Minh City-based service, Call Link, had 15,000 subscribers. A report issued in May said 60 percent of users were state employees or workers at government ministries, while the balance belonged to private business and foreign firms. Industry estimates say the number of users is expected to approach 150,000 by the end of this year and reach half a million by 2005.

Other telecommunications companies are beginning to jump on the bandwagon. France's Alcatel and Ericsson from Sweden will supply the equipment for the US$100 million expansion, which will begin in October. Ericsson will provide US$70 million worth of technology to expand services in the south country. Vietnam currently has two other mobile systems -- Call Link, a Singaporean project that operates in Ho Chi Minh City, and Vinaphone headed by VNPT will begin operations earlier this year.

Pager Systems

There are five paging services operating in Vietnam, serving 110,000 subscribers. Each service is operating under the BCC form of investment. The first paging network was introduced in February 1994 by ADX of Hong Kong. The network, called ABC Paging was rolled out on a nationwide basis in late 1995, although the majority of the customer base is located in Ho Chi Minh City and Hanoi. The current paging services are shown below:

Leading Paging Companies

Operator	City	Standard	Customers
ABC	Hanoi/HCMC	POCSAG	35,000
MCC	Ho Chi Minh City	POCSAG	15,000
Phone Link	Ho Chi Minh City	POCSAG	40,000
Polink	Ho Chi Minh City	POCSAG	5,000
Saigon EPRO	Ho Chi Minh City	POCSAG	15,000
Total:			110,000

In addition to the above systems, VNPT is considering further expanding the market in 1997 by adding more systems. Experts believe that total paging systems subscribers will number 190,000 by the end of 1997, 330,000 by the end of 1998 and over 500,000 by the year 2000.

As in other Asian markets, Vietnam will continue to experience a rapid growth in personal communications services, especially paging systems. In addition to the existing and contemplated paging systems at VNPT, Saigon Postel, Vietel and the Ministry of Interior have expressed interest in developing separate nationwide paging systems.

Very Small Aperture Terminal Systems (VSAT)

Telstra and Mitsui (Japan) signed a $2-million contract with VNPT in 1995 to supply 45 VSATs and a VSAT management system. The terminals have been installed in remote villages and difficult-to-reach commercial sites, such as oil rigs, to allow for communications with the rest of Vietnam, via satellite. The manufacturer of the VSATs was Hughes Network Systems (USA).

In early 1997, Hughes Network Systems (USA) received a $1.5 million order to supply eleven VSAT terminals to the Vietnam Civil Aviation Administration. The system will allow for air traffic information to be shared with several flight control stations throughout Vietnam.

There are numerous applications for VSAT technology in a country such as Vietnam, with remote regions and a long, narrow geographic profile.

Handsets (POTS)

Plain old telephone systems (POTS) are a rapidly expanding market segment. The influx of foreign investors, who have established representative offices, factories and other forms of operations, along with the continued construction of residential, commercial, and hotel properties has driven the demand for international quality telephone equipment. In addition, private local firms and the larger of the state-owned enterprises are also purchasing POTS.

Public Pay Phones

In June 1993, the Sapura Holding Company of Malaysia signed a BCC with the Saigon Post and Telecom Company (Saigon P&T) for $5.2 million to install

public debit card telephones. The debit card concept has been introduced, because the Vietnamese currency does not have metal coins, unlike many other countries with public telephones.

There are 670 debit card phones in the south (613 in HCMC, 22 in Song Be, and 35 in Vung Tau). To date, over 250,000 debit cards have been sold and 4 million calls have been placed (35,000 international calls). The system has since been expanded to Hanoi, where 100 debit card phones have been installed. To date, Hanoi has accounted for 36,000 debit cards being sold for $100,000.

This has been a new service concept for Vietnam, as the current practice is to pay cash to use a telephone within a store or shop. The storeowner has received a license from VNPT to operate as a VNPT agent and charge for public use of the telephone. This practice is very convenient, relatively inexpensive and these public phones are ubiquitous. Thus, while the debit card public phones have become popular, they continue to meet resistance from the consumer, as the Vietnamese are unfamiliar with the practice of pre-paying for services. But based on experience in other developing countries, debit cards will eventually become an accepted communications practice.

As the market matures, additional public phones systems will be needed, in order to meet the growing demand for instant communications. The government would like to have this service available in all 63 provinces by the year 2000.

Submarine Fiber Optic Cables

In September 1993, Telstra signed a $197-million contract to supply equipment for Thailand-Vietnam-Hong Kong (TVH) submarine fiber optic telecom cable. This project has replaced the direct Vietnam-Australia link and now gives Vietnam the capability of introducing large bandwidth telecom applications, such as video conferencing, video-on-demand, and other ISDN services. VNPT is now in the process of planning for a national undersea fiber optic cable that will be laid along the entire coast of Vietnam. This cable will augment the current national telecom backbone system.

Fiber Optic Cable

The government's master plan for 1996-2000 presents a bias for fiber optic-based systems. Fiber optic cable has become the preferred point-to-point connecting medium, with hundreds of thousands of kilometers being laid. The demand has

been so great that some vendors have invested in manufacturing operations in Vietnam. In 1993, Goldstar (LG Group) invested $8.1 million in a fiber optic cable production joint venture, while in 1994, Siemens invested $14.9 million in a similar venture.

Additional fiber optic projects include the participation in the Trans-Continental Fiber Optic Cable, which is shared by six countries (China, Vietnam, Laos, Thailand, Malaysia, and Singapore), as well as, the SEA-ME-WE Fiber Optic Cable. The current plan for the period following the year 2000 is to move to 100 percent reliance on fiber optic cables.

Earth Stations

Telstra was the first international telecom company to sell international connection equipment to Vietnam. In 1988, Telsta sold $9 million of international telecom links. In 1990, Telstar signed a follow-on agreement to supply $287 million of equipment to link Vietnam with the Intelsat satellite.

CT-2 Technology

The only operating service for this technology is in Ho Chi Minh City. The system, called CityNet-CT2 is a trial system and has not been granted a BCC license, as of yet. It is unclear as to the need or application of additional CT-2 systems in Vietnam.

Trunk Mobile Radio

The first and only service operating in Vietnam was established in Ho Chi Minh City in 1992. The target market of this trunk mobile radio system , a foreign investment, has been the transportation sector. In particular, the growing taxi business has been a good opportunity, providing 1,300 customers.

The business is still operated as a trial system and to date has not been offered a BCC license for sustained operation. It is unclear if additional systems are needed in the near-term, but as with other growing markets, additional applications of trunk mobile radio systems will, undoubtedly, be introduced.

Future Prospects

The market for telecom equipment will continue to be an excellent prospect for the next ten years at minimum. The government has called for $4 billion of investment into the national telecom network by the year 2000. The growth of the national network, the expansion of the rural telecom system and the ongoing introduction of value-added services will continue to drive the demand for telecom equipment in Vietnam.

Fixed wireline, fixed wireless, mobile cellular, paging, digital microwave, and digital switchgear will be in demand for the foreseeable future. Fixed wireless will be in particular demand if the current trials are successful. Both the telecom authorities and businesses will also make additional purchases of VSAT technology, public telephones, PBX systems and POTS.

In addition, VNPT is now reviewing the possibility of introducing CDMA cellular technology, Personal Communications Services/Networks (PCS/PCN), Asynchronous Transfer Mode (ATM), Frame Relay, Signal 7 (SS7), Private Networks, Virtual Networks and other state-of-the-art telecom services. Eventually, Vietnam is expected to have a multi-service Integrated Service Digital Network (ISDN) telecom system available to customers.

Three fixed wireless telephone systems are under-going trials in Hanoi and Ho Chi Minh City. Experts believe that the trials will result in a series of new installations of this technology within these two cities. Fixed wireless technology is viewed as a cost effective solution to Vietnam's need for 2.7 million new telephone lines by the year 2000.

Public debit card phones have installed in Hanoi and Ho Chi Minh City, totaling 770 units. This system is expected to be expanded, as the need for out-of-home/office communications grows.

Vietnam has installed their respective communications links with the Thailand-Vietnam-Hong Kong (TVH) submarine fiber optic cable. Telstra installed the system, which cost $197 million. The TVH cable gave Vietnam increased access to the international communications networks.

Two Very Small Aperture Terminal Systems (VSAT) have been installed for the purpose of expanding the telephone coverage for VNPT and to provide flight

information within Vietnam to various flight centers for the Civil Aviation Administration of Vietnam (CAAV).

Key contacts:

H.E. Dr. Mai Liem Truc
Secretary-General, DGPT
Mrs. Nguyen Que Huong
Deputy Secretary-General, DGPT
Mr. Luu Van Luong
Director, Frequency Management Department, DGPT
Mr. Nguyen Huy Luan
Deputy Secretary-General, DGPT
Mr. Tran Duc Lai
Director, Science-Technology and International Cooperations Dept., DGPT
Department General of Posts and Telecommunications (DGPT)
18 Nguyen Du Street
Hanoi, Vietnam
Tel: (844) 822-6580 / 6610
Fax: (844) 822-6590

Dr. Dang Dinh Lam
General Director, VNPT
Prof. Do Trung Ta
Chairman, VNPT
Mr. Vu Van Luan
Deputy General Director, VNPT
Mrs. Tran Thi Xuan Nhat
Deputy General Director, VNPT
Mr. Nguyen Huu Ban
Vice Chairman, VNPT
Mr. Phung Van Van
Director, International Relations Department
Ms. Doan Viet Nga
Expert, International Cooperation Department
Viet Nam Posts and Telecommunications Corporation (VNPT)
18 Nguyen Du Street
Hanoi, Vietnam
Tel: (844) 825-6936
Fax: (844) 825-5851

Mr. Hoang Kim Thanh
Director, International Relations Department
Hanoi Post & Telecom Company
75 Dinh Tien Hoang Street
Hanoi, Vietnam
Tel: (844) 825-8219
Fax: (844) 825-8220

Mr. Nguyen Hong Hanh
Director, International Relations Department
Ho Chi Minh City Post & Telecom Company
125 Hai Ba Trung Street, District 1
Ho Chi Minh City, Vietnam
Tel: (848) 822-5941/829-7902
Fax: (848) 829-2557

Mr. Le Nguyen Kim
Director, International Relations Department
Hai Phong Post & Telecom Company
5 Nguyen Tri Phuong Street
Hai Phong, Vietnam
Tel: (84-31) 847-559
Fax: (84-31) 842-510/823-888

Mr. Nguyen Ba Thuc
Director, International Relations Department
COKYVINA
(Post & Telecom Equipment Import-Export Service Company)
18 Nguyen Du Street
Hanoi, Vietnam
Tel: (844) 825-7934/826-5894
Fax: (844) 825-9634

Mr. Vo Duc Tam
Director, International Relations Department
POTMASCO II
(Post & Telecom Material Supply Company, Zone II)
270 Ly Thuong Kiet Street, District 10
Ho Chi Minh City, Vietnam

Tel: (848) 864-2864
Fax: (848) 864-1021

Mr. Duong Duc Ung
International Relations Dept.
Ministry of Planning and Investment
2 Hoang Van Thu Street
Hanoi, Vietnam
Tel: (844) 843-5148
Fax: (844) 823-0161

Mr. Kenneth Moorefield
Senior Commercial Officer
U.S. Embassy, Foreign Commercial Service
31 Hai Ba Trung Street, 4th Floor
Hanoi, Vietnam
Tel: (844) 824-2422
Fax: (844) 824-2421

KEY CONTACTS IN THE INFORMATION TECHNOLOGY SECTOR:

Norris L. Hickerson
Country Manager
Digital Equipment Corporation International
Hanoi Representative Office
14 Thuy Khue St., Ba Dinh District
Hanoi, Vietnam
Tel: (844) 823 0322
Fax: (844) 823 5956

Ms. Elaine Nguyen
IT Division Manager
Hoan My Company
(Sun Microsystems Distributor)
455 Nguyen Dinh Chieu Street
District 3, Ho Chi Minh City, Vietnam
Tel: (848) 839-6227, (848) 839-6232
Fax: (848) 839-6235
E-mail: hoan.my@bdvn.vnmail.vnd.net

Samuel A. Williamson
General Director
IBM Vietnam Company
14 Thuy Khue St., Tay Ho District
Hanoi, Vietnam
Tel: (844) 843-4559
Fax: (844) 842-6320

OTHER

Mr. Nguyen Duc Khanh
General Manager
General Trading & Consultancy Department
Chamber of Commerce and Industry of Vietnam
Trade Service Company (TSC)
79 Ba Trieu Street
Hanoi, Vietnam
Tel: (844) 826-5667
Fax: (844) 826-6649

Note: TSC is a branch of the Chamber of Commerce of Vietnam and for nominal fees can assist American firms schedule appointments, identify possible trading and joint venture partners, and conduct other related services.

VIETNAM

HANOI SATELLITE INFORMATION TECHNICAL CENTER

PROJECT DESCRIPTION

Project Summary

Project Cost: $10 million

Project Sponsor: VNPT/ VTI

Required Technology:
Satellite Earth Stations
Antennas
Satellite Controlling Station

VTI is one operating unit within VNPT which handles most activities related to establishing international communications linkages. Through VNPT the government is now developing the pre-feasibility study for the launch of a national satellite. The total project cost for the procurement of the satellite ranges from $250 to $300 million and current plans are to have a launch by the year 2000. Due to the large scale and importance of the national satellite project, vendors are carefully nurturing relationships with the key Vietnamese decision makers to make sure that they are aware of their technologies and the associated benefits.

Apart from this large scale procurement, VNPT is currently forging ahead in developing the infrastructure required to support satellite communications. There exists one "Standard A" satellite station and there are plans to have more B Standard stations located in Ho Chi Minh City, two located in Hanoi and one located in Da Nang.

The Hanoi satellite information technical center (at Dai Mo C1) will be designed to:

- Develop a new earth station serving international telecommunications in the North of Vietnam.
- Move the existing station HAN-01A at the C2 area away from the city which has a high population density.

- Make preparations for construction of a satellite information technical center based in the North of Vietnam which meets the needs of operation management and long term development.

- Create the infrastructure necessary for the Vietnamese owned satellite project.

PROJECT FINANCING

VNPT has proposed to fund part of the project from its budget but most of the project through a BCC agreement with a foreign entity. BCCs allow for foreign companies to share in the revenues of a new operation, but prohibits the foreign company from participating in the management and operation of telecom system. The foreign company pays for 100 percent of the equipment and training and then receives approximately 50 percent of the profits annually over a period of 5 to 15 years.

STATUS OF PROJECT DEVELOPMENT

VNPT is currently studying project plans and evaluating project options for this project. A feasibility plan is currently being developed which means that U.S. company information provided to the Vietnamese could possibly be incorporated into the final project plans.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

The project will include the following items which may provide opportunities for U.S. involvement.

- Construction of the physical infrastructure required to support the technical center such as the buildings, electrical supply and transportation infrastructure.

- Building of a new earth station HAN-02A equipped with a 10 meter antenna and HPA 3KW to replace station HAN-01A in working with satellite IOR 60 degrees E.

- Moving earth station HAN-01A to a new area and upgrading this station into HAN-03A working with satellite POR 177 degrees E.

- The construction of a new earth station meeting B standards to replace the HOA SEN station.

Along with the construction of this new Hanoi satellite information technical project in Dao Mo c1, the existing earth stations in the North will be relocated and reconstructed. International communication directions will mainly be connected from satellite INTELSAT area IOR and POR using digital technology IDR. Satellite INTERSPUTNIK is used for communication with Eastern European countries and for television coverage. System VSAT/DAMA uses satellite ASIASAT-2 to provide information services for remote areas.

Earth stations, digital and other telecommunications equipment will be required and VNPT will carry this project out on a BCC basis.

The earth stations to be constructed at Hanoi Satellite Information Technical Center include:

- HAN-02A (Antenna: 18 m; satellite: Intelsat 60E; capacity: 20E1 + 2TV)

- HAN-03A (Antenna: 18 m; satellite: Intelsat 177E; capacity: 20E1 + 1TV)

- HAN-04B (Antenna: 11m; satellite: Intersputnik 80E, capacity: 3E1 +TV)

- HAN-05F1 (Antenna : 4.5 m, satellite: Asiasat 100.5E; VSAT G/W)

- Domestic satellite controlling station

DECISION MAKING PROCESS

In general, various operating units of VNPT, such as VTI, have the responsibility to purchase telecom systems within their area of control but in practice, large procurements must receive the blessing of VNPT. This means that when an

operating sub-unit of VNPT wishes to minimize the bureaucracy or direct oversight of VNPT, a project's procurement may be split into several smaller stages. At US$10 million, the VTI procured project may be solely handled by this operating entity with minimal oversight from VNPT.

CONTACTS

Mr. Le Nam Thong
Deputy Director
International Telecommunication Company
VTI/VNPT
12 Lang Trung Street
Hanoi, Vietnam
Tel: (844) 841-0042
Fax: (844) 835-7393

VIETNAM

IT MASTERPLAN: IT DEVELOPMENT AND PROCUREMENT

PROJECT DESCRIPTION

Vietnam believes that information technology will help Vietnam to accelerate the flow of information necessary for a developed economy. The IT Policy and Master plan which was released in 1997 outlined eight broad policies for the promotion of IT development in Vietnam. These policies include:

- Information generation and standardization of information generated in society
- Standardization of imported equipment in the field of IT
- Information exchange and protection
- Technology transfer and international cooperation
- Utilization of foreign consultants and the expertise of Vietnamese living abroad
- Support and mobilization of funds for IT development
- Privileges in the utilization of telecommunications facilities for research and education activities
- Protection of Intellectual property and author's right

Project Summary

Project Cost: $900 million

Project Sponsor: MOSTE and State-owned Enterprises

Required Technology:
Database systems
Network Servers
Hub, bridges, routers, and other networking technologies
Software

Of these broad policies, "Support and mobilization of funds for IT development" may be of immediate interest to U.S. firms as the Vietnamese government has stated that:

> "The Government will, without reimbursement of funds, take over responsibility for investment in implementing plans to introduce the use of IT in Government management and National security, plan for education,

training and dissemination of knowledge IT. The Government will organize business and investment for the creation of an IT infrastructure including computer telecommunications facilities and the IT industrial base."

According to experts, the draft plan to develop its information technology sector by the year 2010 includes the first phase from now till 2000 which requires an investment of US$900 million to develop electronic accessories, computer software and personnel training. The next phase (2001-2005) will focus on updating technologies imported earlier and improving infrastructure facilities for micro-processors and computers with local trademarks. The last phase will focus on the creation of original information technology. Of the funding expected to be allocated for IT projects, approximately 25 percent would go for the purchase of IT related hardware.

Internet access is also on the horizon for the Vietnamese. The Vietnamese have been cautious to license internet service providers but have plans to open two closely monitored gateways in late 1997. The introduction of internet services will drive the demand for high speed data lines and interconnecting hardware. As government agencies and state owned enterprises add computerization projects, immediate sales opportunities should be expanded for suppliers of servers, routers, hubs, and other networking technologies.

PROJECT FINANCING

Vietnam expects to leverage Overseas Development Assistance (ODA) funds as well as government finances to fund the computerization and development of the IT sector throughout the country. The Ministry of Finance and the Prime Minister's office play important roles in determining the allocation of funds for capital equipment expenditures.

STATUS OF PROJECT DEVELOPMENT

The IT Master plan is being implemented by a steering committee which consists of the Ministry of Planning and Investment, the Ministry of Finance, the Ministry of Science Technology and Environment, and various state owned ministries or government departments that would serve as users. Since each of these ministries reports directly to the Prime Minister's office, the priorities under the Master plan moving forward may not be firmly established until the final selection of

Vietnam's new leadership (including the Prime Minister and President) expected to take place at the end of September 1997.

The, current projects moving forward (at varying rates) under the Master plan are designed to build a national database and computerized state management system. These projects include:

1. Overall Design of Management Information Systems at the Government's Office

This project will be sponsored by the Prime Minister's office in close cooperation with the National IT Program Steering Committee and will be designed to achieve two tasks:

- Investigate, analyze and design the national database system defining the general structure of the whole information system and the links to create the system and make it vertically integrated.

- Build an integrated database linking together various databases of Ministries, branches and local areas (firstly with 11 Ministries and 10 provinces and cities of primary importance) in an attempt to provide in right time the major information on the economy, society, legislation, defense, security, foreign affairs and others to serve the management of the Prime Minister and the Government.

2. Project for building socio-economic information systems serving economic planning and management.

This project will be sponsored by State Planning Committee and aimed at building an information computerization system to serve the planning and economic management of the Government. The systems will consists of sub-systems on: analysis and elaboration of policies, economic management, debt management, resource mobilization, and a data bank of investment projects.

The technology and equipment requirements, if any, for this system are unclear.

3. Project for the Financial Information Systems Sector

This project is sponsored by the Ministry of Finance and is aimed chiefly at building a modern financial information system, establishing a unified financial database system of the whole country to meet the following requirements:

- Provide the management of the Ministry and authorities at all levels with accurate, sufficient and timely information as backgrounds for making decision on management of national finances.

- The review and output of quick and periodical information under the most important indicators for the financial branch to provide the management of the Government and the National Assembly.

- The rapid and convenient exchange and supply of information to various branches of the State, such as the State Bank, State Planning Committee, State Committee for Cooperation and Investment among others.

4. Project for the Modernization of the Banking System

This project will be managed by the State bank with the participation of the State Bank and various Commercial Banks. The main objectives of the project are to:

- Complete the regulations and procedures for standardization of information, technical standards, and operational instructions of payment in the direction of modernization and computerization.

- Enlarging the area of non in-cash payment among the population, especially in the private sector.

- Building a modern national payment systems under modern service requirements of the Bank.

- Improving the Banking database systems, providing the services of information in a rapid and accurate manner for the determination of state policies on monetary stabilization.

5. Project for State Statistics Information System

This project is hosted by the General Statistics office by developing databases on population, labor, industrial and agricultural production as well as on natural resources and the environment.

This project will become the principal systems for collecting and indexing information on all major information categories for the country.

At this time, the technology and equipment requirements for this system are unclear.

U.S. Competitiveness and Export Potential

Of the various elements outlined under the Master plan, it is the State Bank of Vietnam and the Ministry finance that have made the greatest strides to introduce IT systems into their operations.

The State Bank of Vietnam (SBV) is developing a project to improve payment services in the economy in order to reduce float, speed up circulation of funds and increase efficiency of funds transmission; and strengthen the institutional capabilities of participating banks in order to stimulate commercial bank initiatives to improve internal management and customer service. The procurement for this project is expected to take place during 1997-1998 with construction taking place in 1998 and he initial pilot in 1999.

In May of 1997, the Vietnam News Agency reported that thirty computer companies from the US, Japan, France, South Korea and Germany will bid for the US$53 million project on banking computerization in Vietnam. As this is a World Bank funded project, it is drawing considerable interest from the international community. The World Bank will provide Vietnam with a soft loan of US$49 million for the project. The balance will be borrowed from local commercial banks. This project was featured during a TDA funded Opportunities conference in early 1997.

The Ministry of Finance Modernization has also received funding from the World Bank for a $100 million project to set up a system which will automate key operational activities of the financial management system from central to local

level. Provide timely, accurate, and sufficient information based on the most important financial criteria to the Ministry leadership and other higher ranking bodies such as Government Office, National Assembly, serving as a basis of making decisions for conducting the national financial system.

DECISION MAKING PROCESS

World Bank projects follow a well defined project cycle and interested suppliers must contact the Vietnamese government agency responsible for implementing the project. For other projects that are less defined, the Vietnamese often rely on unsolicited proposals by equipment suppliers. These proposals should clearly explain the benefits of a technology as the Vietnamese are unfamiliar with the merits of many technologies and their applications.

CONTACTS

Dr. Dao Quang Thong
Director
Banking Project Management Unit
Tel: 844-824-0786, 844-824-0787
Fax: 844-824-1097
State Bank of Vietnam
47-49 Ly Thai To Street
Hanoi, Vietnam

Mr. Pham Van Thuan
Chairman, Information Technology Management and Application Committee
Ministry of Finance
Socialist Republic of Vietnam
8 Phan Huy Chu
Hanoi, Vietnam
Tel: 844-826-2109 - 844-826-3468
Fax: 844-824-8259 - 844-824-2503

For IT Master plan:

Mr. Dang Vanh Thien
Deputy Director
Department of International Relations
Ministry of Science, Technology & Environment
39 Tran Hung Dao
Hanoi, Vietnam
Tel: (844) 826-6688
Fax: (844) 825-2733

Dr. Bui Thien Dzu
Director
Department for Technology Management
Ministry of Science, Technology & Environment
39 Tran Hung Dao
Hanoi, Vietnam
Tel: (844) 826-3262
Fax: (844) 825-2733

Steering Committee for the National Programme on Information Technology (SC-NPIT)
14 Le Hong Phong Street
Hanoi, Vietnam
Tel: (844) 843-2032, (844) 843-7079
Fax: (844) 843-2136, (844) 843-9856
E-mail: vea@netnam.org.vn

VIETNAM

SAIGON POSTEL NETWORK DEVELOPMENT

Project Description

In July 1996, the Vietnamese government launched the second National Telecommunications company by forming the Saigon Postel Corporation. The Saigon Post and Telecommunication Service Joint-stock Corporation was licensed by the Ho Chi Minh City People's committee and was granted trading registration by the Ho Chi Minh City Department of Planning and Investment. The company was organized as a joint-stock company with eleven shareholders, including VNPT and the Ben Thanh tourist service Company, each owning approximately 20 percent. Vietnamese law dictates that a joint-stock company must have at least seven shareholders. Together, the shareholders contributed $4.5 million. The shareholders include several influential Ho Chi Minh City local enterprises, VNPT, and the People's Army Region 7 manufacturing company.

Project Summary

Project Cost: $450 million (By the year 2000)

Project Sponsor: License granted by the HCM City People's Committee

Required Technology:
All forms of fixed and mobile switching equipment
Network management equipment and software

The initial plan will utilize the assets of each company to develop the business, such as land, manufacturing expertise and retail outlets. Other shareholders include the Ministry of Defense. The Ministry of Interior was an initial shareholder but withdrew due to disputes concerning their role in a proposed national paging network. The company falls under the authority of the Ho Chi Ming City peoples committee. Saigon Postel is a separate entity from VNPT's Ho Chi Minh City Posts & Telecommunications company.

While the company appears to be a VNPT competitor, in fact it will be operating in cooperation with VNPT, as the Chairwoman of Saigon Postel, Madame Tran Ngoc Binh, is the Director of Region II of DGPT. This region covers all of southern

Vietnam. Thus, with VNPT ownership and DGPT leadership, the company will be a sister company of its regulator and shareholder.

Saigon Postel will initially focus on providing post and telecom services to the southern region but will eventually target telecommunications services projects throughout the country. In order to provide wider telephone access to southern provinces, Saigon Postel will expand wireless telephone services and mobile phone networks in the economically key Mekong delta provinces, such as Tay Ninh, Dong Nai and Vung Tau. The new corporation will also be responsible for upgrading the telecom networks which connect the southern Song Be and Tay Ninh provinces to Quang Nam - Danang province, in the central Region and Quang Ninh province in the north.

PROJECT FINANCING

Saigon Postel expects to accomplish its goals by entering into several Business Cooperation Contracts (BCCs) with foreign equipment suppliers and network operators. BCCs are revenue sharing contracts, in which the foreign partner does not have control or operating authority over the network. Currently Saigon Postel is negotiating with a range of foreign companies that could provide technology and investment capital to help Saigon Postel develop its network. Many of the potential partners are internationally known names in the industry while others, such as the Charoen Pokphand Group from Thailand ("CP Group"), are regional players in the telecommunications market but strategic partners to U.S. firms (Bell Atlantic).

STATUS OF PROJECT DEVELOPMENT

In the telecommunications sector, licenses have been granted to Saigon Postel to provide the following services:

- Mobile phone
- Wireless local loop telephone
- Paging
- Some value added services.

In Import - Export service

- Export: Postal and Telecommunications Products, equipment, and components.
- Import: Postal and Telecommunications equipment, machinery, raw materials, spare-parts.

Building post and telecommunications works

- Designing, installing and maintaining subscriber's equipment and post and telecom networks.
- Construction of post and telecommunications networks.

Saigon Postel expects to seek a total capital commitment of $450 million by the year 2000. Plans include developing a fixed line network within several under-served districts of Ho Chi Minh City (HCMC), a mobile cellular network to handle 200,000 customers by the year 2000, a paging network, and several manufacturing facilities. Company representatives of Saigon Postel have stated that "We are aiming for a five-percent share of Vietnam's telecom market by 2000, with 200,000 subscribers."

Saigon Postel's combined expansion plans include installing 150,000 to 200,00 fixed telephone lines and expanding satellite uplinks. Additional plans include establishing of a foreign joint-venture factory to produce telephony equipment and develop a 100 acre high-tech industrial park.

As with any new operator that must compete against an established state owned network, interconnection is a key issue facing the new operators competitive position (and ability to attract investment capital) and it is not clear that Saigon Postel has established a long term interconnection agreement with VNPT. The company plans to use the VNPT backbone network and form a fixed line network in HCMC and in the surrounding provinces of Tay Ninh, Dong Nai, Song Be, Vung Tau, and in the Mekong Delta. Eventually, Saigon Postel plans to expand the network to Hanoi, Hai Phong and Danang.

U.S. Competitiveness and Export Potential

The scope of trading and manufacturing activities for Saigon Postel present numerous opportunities for involvement with U.S. firms.

The main activities include:

- Producing and assembling telecom equipment.
- Undertaking the import and/or export and trade of telecom equipment.
- Designing, installing and maintaining subscriber's equipment systems and professional post and telecom networks. Constructing post and telecommunications works (telecommunications build out).
- Trading of post and telecommunications services within the fields and areas allowed by the government.

In the summer of 1997, Saigon Postel Corporation actively began recruiting foreign firms to cooperate in the following fields:

- Establishing a network and providing telecommunications services for mobile phones, fixed lines and paging. Cooperation will be based on Business Cooperation Contract (BCC) according to the Foreign Investment Law in Vietnam.

- Developing an enterprise to manufacture telecommunications, informatics, and electronics equipment. Cooperation shall be based on Joint-Venture Contract (JVC) according to the Foreign Investment Law in Vietnam.

- Package forwarding services, express postal services, money remittances. Cooperation shall base on Business Cooperation Contract (BCC), according to the Foreign Investment Law in Vietnam or Agency Contract.

- Saigon Postel Corporation needs to cooperate in the field of trading telecommunications, electronics, informatics equipment and providing data and internet services (Under the forms of Agency, Consignment, Business Cooperation)

DECISION MAKING PROCESS

Saigon Postel offers a broad range of potential opportunities to U.S. firms. However, the complex share holding arrangement of Saigon Postel along with the interconnected business activities of the shareholders requires that interested U.S. firms take a careful look at the internal dynamics of Saigon Postel in order to determine how sales could best be made or investment best be protected within Saigon Postel organization.

CONTACTS

Mr. Trinh Dinh Khuong
General Director
Saigon Postel Corporation
(Saigon Post & Telecom Joint-Stock Corporation)
45 Le Duan Street, District 1
Ho Chi Minh City, Vietnam
Tel: (848) 824-1605
Fax: (848) 829-4602

VIETNAM

MILITARY ELECTRONIC AND TELECOMMUNICATIONS COMPANY (VIETEL)

PROJECT DESCRIPTION

Project Summary

Project Cost: $500 million

Project Sponsor: License granted by the Prime Minister

Required Technology:
Switching equipment
Tandem switches
Local exchange switches
Wireless equipment
Transmission equipment
Multipliers and digital cross connects

The first company, which was expected to compete with VNPT, was the Military Electronic and Telecommunications Company (Vietel), a company under the Ministry of Defense. Vietel (originally known as Sigelco) was organized under the Telecommunications Command of the Ministry of Defense (MOD) and was given broad permission to develop a revenue generating enterprise which could help fund activities conducted by the Army. Initially, Vietel's master plan included the establishment of a parallel network to VNPT, which would be competing directly for VNPT customers. Joint Ventures with Army organizations started receiving attention after the U.S. embargo was lifted with Vietnam as the Army provided a politically strong ally and could help cut much of the bureaucracy required to move forward on a project in Vietnam. METC's permission to enter into the telecom field captured the interest of various potential foreign partners and plans included raising over $2 billion of foreign investment.

In 1995, Vietel began to negotiate with many of the largest international telecom companies with the hope of rapidly achieving the established goals of the company. Some of the companies rumored to have negotiated with METC included US West, SBC, AT&T and Motorola. However, concerns about Ministry of Defense infighting regarding the role of METC and METC managerial capability caused many international firms to shy away from completely embracing the newly licensed entity.

PROJECT FINANCING

Vietal has revised its network deployment plans and partnerships with the Ministry of Defense will be done on a BCC basis. Vietel plans to raise US$500 million to construct a fully competitive and commercial. The foreign partners will be expected to help provide technical expertise and raise offshore financing although the expected debt-equity ratio will be determined later.

STATUS OF PROJECT DEVELOPMENT

Initially, Vietel's master plan included the establishment of a parallel network to VNPT, which would be competing directly for VNPT customers. So far, it appears that Vietel has not made progress towards this goal. To date Vietel has not been able to resolve a number of internal and external issues and has not begun the development of the network. Some of these outstanding issues which prevent METC progress include the role of DGPT in regulating Vietel, the expectations of the Army with respect to commercial operations, and the inability of the Army to adopt a clear path to developing the business. In early 1997, the Ministry of Defense reshuffled the leadership of METC. Then General Manager Mr. Dam Roi was sent to manage the Telecommunications Command within the Ministry and Mr. Nguyen Huu Dang became METC's General Director.

A foreign technology partner is necessary for the venture to move forward. Once the Ministry of Defense negotiates an agreement with a foreign partner, the BCC must be submitted to the Ministry of Planning and Investment. MPI will grant the BCC within 45 days. Vietel expects to have a BCC agreement signed and approved by the end of 1997. RFP's will be released in early 1998 for the for the equipment and financing requirements and procurement should be finished by mid 1998. Installation and a trial network will be rolled out during the second quarter of 1998 with operation by early 1999.

U.S. COMPETITIVENESS AND EXPORT POTENTIAL

The network advocated by METC is nationwide in scope so opportunities for a range of equipment suppliers will be available once the firm becomes established. At the present time, ventures are being developed between METC and foreign

partners in the hope that a strong working relationship will lead to influence over the future direction and buildout of the project.

In 1995, a joint venture by NewTel Limited (a consortium consisting of Goldman Sachs and Nikko Securities and Thailand's Jasmine) established a $20 million joint-venture with the Army's M1 communications factory to manufacture printed circuit boards for the domestic market and export. The company, Vietel Technologies Limited, is now constructing a factory 12 kilometers from Hanoi. According to experts, the joint venture was established by the consortium, in order to establish a working relationship with Vietel and has a 40 year license to manufacture telephone, paging, fax equipment, as well as PC boards and small switching equipment. The consortium hopes to be a possible investor in the Vietel national network.

Firms interested in working with METC must be willing to devote a considerable amount of managerial and technical expertise to ensure that METC understands both range and complexity of issues involved in developing the network.

If the RFP for equipment procurement is released in early 1998 as expected, there will be opportunities for U.S. suppliers of switching equipment, tandem switches, local exchange switches, wireless equipment (CDMA is unofficially the preferred technology), digital cross connects and multiplexers, as well as transmission equipment.

DECISION MAKING PROCESS

Sources close to the project admit that the decision making process within Vietnam is convoluted and unclear. Although the license for this project was awarded with the strong backing of the Prime Minister's office, the lack of an interconnection agreement between METC and VNPT creates a strong barrier to attracting foreign interest and the foreign capital required to move this project to the implementation stage. Although DGPT has been charged with regulating the telecommunications sector, DGPT is financially dependent on VNPT. This provides little incentive for DGPT to act in a way that would create competition in the sector.

During the current environment of uncertainty, U.S. suppliers could take this opportunity to make their equipment and capabilities known to Vietel management before procurement takes place in 1998.

CONTACTS

Mr. Nguyen Huu Dang
Director
Vietel Corporation
(Military Electronics & Telecom Corporation)
16 Cat Linh Street
Hanoi, Vietnam
Tel: (844) 823-0782
Fax: (844) 846-3550